NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

PROJECT ID: PW357MOCS

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

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

LAW

VOLUME 1 OF 3

BID BOOKLET

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR:

Mayor's Office of Contract Services Renovation

LOCATION: 253 Broadway, 9th Floor
BOROUGH: Manhattan 10007
CITY OF NEW YORK

CONTRACT NO. 1 GENERAL CONSTRUCTION WORK

Department of Human Services

Joseph R. Loring & Associates, Inc.

Date: August 1, 2013

14-019

NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

DAVID J. BURNEY, FAIA
Commissioner

CAROL DIAGOSTINO
Agency Chief
Contracting Officer

September 24, 2013

CERTIFIED MAIL - RETURN RECEIPT REQUEST
The Urban Group LTD.
76-08 Rockaway Boulevard
Woodhaven, NY 11421

RE: FMS ID: PW357MOCS
E-PIN: 85014B0025001
DDC PIN: 8502014HR0001C
Mayor's Office of Contract Services
Renovation - Borough of Manhattan
NOTICE OF AWARD

Dear Contractor:

You are hereby awarded the above referenced contract based upon your bid in the amount of $2,749,398.00 submitted at the bid opening on August 16, 2013. Within ten (10) days of your receipt of this notice of award, you are required to take the actions set forth in Paragraphs (1) through (3) below. For your convenience, attached please find a copy of Schedule A of the General Conditions to the Contract, which sets forth the types and amounts of insurance coverage required for this contract.

(1) Execute four copies of the Agreement in the Contracts Unit, 30-30 Thomson Avenue, 1st Floor, Long Island City, New York (IDCNY Building). A Commissioner of Deeds will be available to witness and notarize your signature. The Agreement must be signed by an officer of the corporation or a partner of the firm.

(2) Submit to the Contracts Unit four properly executed performance and payment bonds. If required for this contract, copies of performance and payment bonds are attached.

(3) Submit to the Contracts Unit the following insurance documentation: (a) original certificate of insurance for general liability in the amount required by Schedule A, and (b) original certificates of insurance or other proof of coverage for workers' compensation and disability benefits, as required by New York State Law. The insurance documentation specified in this paragraph is required for registration of the contract with the Comptroller's Office.

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

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

Sincerely,

Carol DiAgostino

Qualification Form

Project ID: PW357MOCS

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: The Urban Group Ltd.

Name of Project: PS916M - St. Joseph's Lease Conversion

Location of Project: 168 Morningside Avenue, Harlem, NY 10027

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

Name: Gewan Bharatlall

Title: President Phone Number: 718-521-1141

Brief description of work completed: Sheetrock, Millwork, Concrete, Painting, Firestopping, Windows, Metal stairs, Structural Stairs, GWB walls, Epoxy, Ceilings and Tiling.

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

Amount of Contract: $12,900,000

Date of Completion: November 2012

****

Name of Contractor: The Urban Group Ltd.

Name of Project: Coney Island Hospital - Emergency Room Extension

Location of Project: 2601 Ocean parkway, Brooklyn, NY 11235

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

Name: Gewan Bharatlall

Title: President Phone Number: 718-521-1141

Brief description of work completed: Acoustical Ceiling, Patient Lifts, Tiling, Finish Flooring, Painting. Furniture, Wall Protection, Automatic Doors, Skylights, Windows

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

Amount of Contract: $5,200,000.00

Date of Completion: November 2012

MWBE PROGRAM

M/WBE UTILIZATION PLAN

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

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

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

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

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

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

Tax ID #: 11-3528566

APT E-PIN#: 85014B0025

Contract # 1 - General Construction Work

SCHEDULE B - M/WBE Utilization Plan

Part I: M/WBE Participation Goals

Part I to be completed by contracting agency

Contract Overview

APT E-Pin #	85014B0025	FMS Project ID#:	PW357MOCS
Project Title/Agency	Mayor's Office of Contract Services Renovation		
PIN #	8502014HR0001C		
Bid/Proposal Response Date:	August 16, 2013		
Contracting Agency	Department of Design and Construction		
Agency Address	30-30 Thomson Avenue	City Long Island City State NY	Zip Code 11101
Contact Person	Jim Cerasoli	Title Deputy Director	
Telephone #	(718) 391-1549	Email cerasoli@ddc.nyc.gov	

Project Description *(attach additional pages if necessary)*

This project includes interior renovation work: the demolition of all existing interior walls, mechanical equipment and floor finishes. The new construction work includes installation of new mechanical system, ADA toilet, pantry, new walls and floor finishes and furniture layout as per DCAS open floor guideline and a new ceiling system.

M/WBE Participation Goals for Services

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

Prime Contract Industry: **Construction**

Group	Percentage		
Unspecified	15	%	
or			
Black American	0	%	
Hispanic American	0	%	
Asian American	0	%	
Women	0	%	
Total Participation Goals	15	%	Line 1

Tax ID #: 11-3528566 APT E-

PIN#: 85014B0025

SCHEDULE B - Part II: M/WBE Participation Plan

Part II to be completed by the bidder/proposer:

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

Section I: Prime Contractor Contact Information

Tax ID #	11-3528566	**FMS Vendor ID #**	
Business Name	The Urban Group Ltd.	**Contact Person**	Gewan Bharatlall
Address	76-08 Rockaway Blvd. Woodhaven, NY 11421		
Telephone #	718-521-1141	**Email**	ken@theurbangroupltd.com

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

PRIME CONTRACTOR ADOPTING AGENCY M/WBE PARTICIPATION GOALS

☒ For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Agency M/WBE Participation Goals.	Total Bid/Proposal Value		Agency Total Participation Goals (Line 1, Page 1)		Calculated M/WBE Participation Amount
Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	CB 8/20/13 $ 2,749,398	x	CB 8/21/13 15%	=	CB 8/20/13 $ 412409.70 Line 2

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

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

Tax ID #: 11-3528566 APT E- PIN#: 85014B0025

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

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

☒ MBE ☐ WBE 8/20/2013

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

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

Section IV: General Contract Information

What is the expected percentage of the total contract dollar value that you expect to award in subcontracts for services, regardless of M/WBE status? % 45 GP 8/20/2013

✓ Scopes of Subcontract Work

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

GP 8/20/2013

1. Plumbing (Non MWBE) 55 K
2. OCT 2013 - Dec 2013
3. HVAC (Non MWBE) 490 K.
4. OCT 2013 - DEC 2013
5. Electrical (WBE) 693 K.
6. OCT 2013 - DEC 2013
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.

Section V: Vendor Certification and Required Affirmations

I hereby:

1) acknowledge my understanding of the M/WBE participation requirements as set forth herein and the pertinent provisions of Section 6-129 of the Administrative Code of the City of New Yo9rk (Section 6-129), and the rules promulgated thereunder;

2) affirm that the information supplied in support of this M/WBE Utilization Plan is true and correct;

3) agree, if awarded this Contract, to comply with the M/WBE participation requirements of this Contract, the pertinent provisions of Section 6-129, and the rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract

4) agree and affirm that it is a maerial term of this Contract that the Vendor will award the total dollar value of the M/WBE Participation Goals to certified MBEs and/or WBEs, unless a full waiver is obtained or such goals are modfied by the Agency; and

5) agree and affirm, if awarded this Contract, to make all reasonable, good faith efforts to meet the M/WBE Participation Goals, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms.

Signature _____ Date 08/16/13

Print Name Gewan Bharatlall Title President

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

Contract Overview

Tax ID # ______________ FMS Vendor ID # ______________

Business Name ______________

Contact Name ______________ Telephone # ______________ Email ______________

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

APT E-PIN # (for this procurement): ______________ Contracting Agency: ______________

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

______________ % Agency M/WBE Participation Goal

Proposed M/WBE Participation Goal *as anticipated by vendor seeking waiver*

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

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

☐ Vendor does not subcontract services, and has the capacity and good faith intention to perform all such work itself with its own employees.

☐ Vendor subcontracts *some* of this type of work but at a *lower* % than bid/solicitation describes, and has the capacity and good faith intention to do so on this contract. (Attach subcontracting plan outlining services that the vendor will self-perform and subcontract to other vendors or consultants.)

☐ Vendor has other legitimate business reasons for proposing the M/WBE Participation Goal above. Explain under separate cover.

References

List 3 most recent contracts performed for NYC agencies (if any). Include information for each subcontract awarded in performance of such contracts. Add more pages if necessary.

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

List 3 most recent contracts performed for other entities. Include information for each subcontract awarded in performance of such contracts. Add more pages if necessary.

(Complete ONLY if vendor has performed fewer than 3 New York City contracts.)

TYPE OF Contract _____ **ENTITY** _____ **DATE COMPLETED** _____

Manager at entity that hired vendor (Name/Phone No./Email) _____

Total Contract Amount $ _____ **Total Amount Subcontracted** $ _____ _____

Type of Work Subcontracted _____ _____ _____

_____

TYPE OF Contract _____ **AGENCY/ENTITY** _____ **DATE COMPLETED** _____

Manager at agency/entity that hired vendor (Name/Phone No./Email) _____

Total Contract Amount $ _____ **Total Amount Subcontracted** $ _____ _____

Item of Work Subcontracted and Value of subcontract _____ Item of Work Subcontracted and Value of subcontract _____ Item of Work Subcontracted and Value of subcontract _____

_____

TYPE OF Contract _____ **AGENCY/ENTITY** _____ **DATE COMPLETED** _____

Manager at entity that hired vendor (Name/Phone No./Email) _____

Total Contract Amount $ _____ **Total Amount Subcontracted** $ _____ _____

Item of Work Subcontracted and Value of subcontract _____ Item of Work Subcontracted and Value of subcontract _____ Item of Work Subcontracted and Value of subcontract _____

_____

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

Signature: _____ **Date:** _____

Print Name: _____ **Title:** _____

Shaded area below is for agency completion only

AGENCY CHIEF CONTRACTING OFFICER APPROVAL

Signature: _____ **Date:** _____

CITY CHIEF PROCUREMENT OFFICER APPROVAL

Signature: _____ **Date:** _____

Waiver Determination:

Full Waiver Approved: ☐

Waiver Denied: ☐

Partial Waiver Approved: ☐

Revised Participation Goal: _____ %

#1

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

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

PROJECT ID: PW357MOCS

Mayor's Office of Contract Services Renovation
253 Broadway, 9th Floor
Manhattan 10007

Name of Bidder: The Urban Group Ltd.

Date of Bid Opening: 08/16/13

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

Place of Business of Bidder: 76-08 Rockaway Blvd. Woodhaven, NY 11421

Bidder's Telephone Number: 718-521-1141 Bidder's Fax Number: 718-521-1142

Bidder's Email Address: ken@theurbangroupltd.com

Residence of Bidder (If Individual): _____

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

Names of Partners	Residence of Partners

If Bidder is a Corporation, fill in the following blanks:
Organized under the laws of the State of New York

Name and Home Address of President: Gewan Bharatlall
35-48 87th Street Jackson Heights, NY 11372

Name and Home Address of Secretary: _____

Name and Home Address of Treasurer:

BID FORM

The above-named Bidder affirms and declares:

1. The said bidder is of lawful age and the only one interested in this bid; and no person, firm or corporation other than hereinbefore named has any interest in this bid, or in the Contract proposed to be taken.

2. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) unless otherwise required by law, the prices quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

3. No councilman or other officer or employee or person whose salary is payable in whole or in part from the City Treasury is directly or indirectly interested in this bid, or in the supplies, materials, equipment, work or labor to which it relates, or in any of the profits thereof.

4. The bidder is not in arrears to the City of New York upon debt or contract or taxes, and is not a defaulter, as surety or otherwise, upon any obligation of the City of New York, and has not been declared not responsible, or disqualified, by any agency of the City of New York or State of New York, nor is there any proceeding pending relating to the responsibility or qualification of the bidder to receive public contracts except as set forth on the Affirmation included as page 17 of this Bid Booklet.

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

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

6. Compliance Report

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

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

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

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

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

BID FORM

PROJECT ID: PW357MOCS

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

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

Total Price for Material Sold and Delivered		Total Price For Labor		
$ 1,099,759.20	+	$ 1,640,638.80	Total Price for Item A=	$ 2,734,398.00

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

TOTAL BID PRICE (Add A + B) (a/k/a BID PROPOSAL) $ 2,749,398.00

8/16/13 P.8

BIDDER'S SIGNATURE AND AFFIDAVIT

* **SUBCONTRACTOR IDENTIFICATION: You MUST complete and submit the form entitled "Bidder's Identification of Subcontractors" (page 17) at the time you submit your bid. You must submit this form in a separate, sealed envelope (BID ENVELOPE #2). In the event an award of contract is not made to the Bidder, the Bidder hereby authorizes the Agency to shred the form entitled "Bidder's Identification of Subcontractors".** X **Yes** _____ **No**

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

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

Bidder: The Urban Group Ltd.

By: _____
(Signature of Partner or corporate officer)

Gewan Bharatlall
Secretary of Corporate Bidder

Attest:
(Corporate Seal)

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

BID FORM (TO BE NOTARIZED)

****

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

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

_____

(Signature of the person who signed the Bid)

Subscribed and sworn to before me this

____ day of _____, _____

_____

Notary Public

****

AFFIDAVIT WHERE BIDDERS IS A PARTNERSHIP

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

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

_____

(Signature of Partner who signed the Bid)

Subscribed and sworn to before me this

____ day of _____, _____

_____

Notary Public

****

AFFIDAVIT WHERE BIDDERS IS A CORPORATION

STATE OF NEW YORK, COUNTY OF Queens ss:

Gewan Bharatlall 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 76-08 Rockaway Blvd. Woodhaven, NY 11421.

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

15th day of August, 2013

Yonette J. Graham

Notary Public

YONETTE J GRAHAM
Notary Public, State of New York
No. 01GR6198232
Qualified in New York County
Commission Expires December 15, 2016

AFFIRMATION

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

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

Full Name of Bidder: The Urban Group Ltd.
Address: 76-08 Rockaway Blvd.
City: Woodhaven State: New York Zip Code: 11421

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: 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.

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

Project ID: PW357MOCS

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:**

MAR-SAL PLUMBING & HEATING INC.

(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ 55,000.00

2. **HVAC CONTRACTOR:**

MIDTOWN HVAC ENTERPRISES LTD.

(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ 481,800.00

3. **ELECTRICAL CONTRACTOR:**

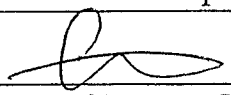
EPOCH ELECTRICAL, INC.

(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ 693,000.00

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

Name of Bidder: The Urban Group Ltd.

By: 

Signature of Partner or Corporate Officer

Print Name: Gewan Bharatlall

Title: President

BID BOND 1
FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS. That we,
The Urban Group, Ltd.

hereinafter referred to as the "Principal", and
The Ohio Casualty Insurance Company

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

ten percent of bid amount $2,749,398.00

($2,749,398), 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

Mayor's Office of Contract Services Renovation, Manhattan, NY

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

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

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

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

BID BOND 2

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

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

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

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

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the 16th day of August, 2013.

(Seal) The Urban Group Ltd. (L.S.)
Principal

By: _____

(Seal) The Ohio Casualty Insurance Company
Surety

By: _____

Lisa Nosal, Atty-in-fact

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:
On this 16th day of August, 2013, before me personally came Gewan Bharatlall to me known, who, being by me duly sworn, did depose and say that he resides at 76-08 Rockaway Blvd. Woodhaven, NY 11421
that he is the President of The Urban Group Ltd.
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.

YONETTE J GRAHAM
Notary Public, State of New York
No. 01GR6198232
Qualified in New York County
Commission Expires December 15, 2016

Yonette J. Graham
Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF A PARTNERSHIP

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

_____
Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL

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

_____
Notary Public

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES

ACKNOWLEDGEMENT OF SURETY

State of New Jersey]
|-ss
County of Passaic]

On August 16, 2013 , before me personally came Lisa Nosal to me known, who, being by me duly sworn, did depose and say that she is an attorney-in-fact of The Ohio Casualty Insurance Company the corporation described in and which executed the within instrument; that she knows the corporate seal of said corporation, and that the seal affixed to the within instrument is such corporate seal, and that she signed the said instrument and affixed the 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.

My Commission expires:

Stephanie L. Foy
Notary Public

STEPHANIE F. FOY
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires October 27, 2013

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 6098468

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Joseph W. Mallory; Lisa Nosal; Louis A. Vlahakes; Pamela J. Boyle; Robert E. Culnen

all of the city of Totowa, state of NJ each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 26th day of April, 2013.

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: _____
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss
COUNTY OF KING

On this 26th day of April, 2013, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of American Fire and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.

By: _____
KD Riley , Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 16 day of August, 20 13.

By: _____
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Liberty Mutual. SURETY

THE OHIO CASUALTY INSURANCE COMPANY

FINANCIAL STATEMENT — DECEMBER 31, 2012

Assets

Cash and Bank Deposits	$161,199,261
*Bonds — U.S Government	377,344,263
*Other Bonds	2,720,695,206
*Stocks	653,169,702
Real Estate	27,623,539
Agents' Balances or Uncollected Premiums	719,172,780
Accrued Interest and Rents	34,142,770
Other Admitted Assets	407,161,007
Total Admitted Assets	**$5,100,508,528**

Liabilities

Unearned Premiums		$1,070,033,142
Reserve for Claims and Claims Expense		2,216,154,467
Funds Held Under Reinsurance Treaties		0
Reserve for Dividends to Policyholders		286,452
Additional Statutory Reserve		0
Reserve for Commissions, Taxes and Other Liabilities		539,402,179
Total		**$3,825,876,240**
Special Surplus Funds	$ 3,579,638	
Capital Stock	4,500,000	
Paid in Surplus	532,278,647	
Unassigned Surplus	734,274,003	
Surplus to Policyholders		1,274,632,288
Total Liabilities and Surplus		**$5,100,508,528**

THE OHIO CASUALTY INSURANCE COMPANY INCORPORATED 1919 NEW HAMPSHIRE

* Bonds are stated at amortized or investment value; Stocks at Association Market Values.
The foregoing financial information is taken from The Ohio Casualty Insurance Company's financial statement filed with the state of Ohio Department of Insurance.

I, TIM MIKOLAJEWSKI, Assistant Secretary of The Ohio Casualty Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2012, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 25th day of March, 2013.

T A Mikolajewski

Assistant Secretary

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
CONTRACT 1 - GENERAL CONSTRUCTION WORK						
01	**DIVISION 1 - GENERAL REQUIREMENTS**					
010000	**GENERAL CONDITIONS**					
	Mobilization	1	LS		24,288.40	
	subtotal				24,288.40	
02	**DIVISION 2 - EXISTING CONDITIONS**					
020000	**DEMOLITION AND STRUCTURE MOVING**					
020700	New opening in Existing Load bearing walls @ new ramp	1	LS	14,000.00	14,000.00	21,000.00
	subtotal				14,000.00	
03	**DIVISION 3 - CONCRETE**					
033000	**CAST-IN- PLACE CONCRETE**					
033100-033300	**Miscellaneous Cast in Place Concrete**					
	Concrete Ramp	21	LF	457.00	9,597.00	686.00
	subtotal				9,597.00	
06	**DIVISION 6 - WOOD, PLASTICS AND COMPOSITES**					
064000	**ARCHITECTURAL WOODWORK**					
064100	**Architectural Wood Casework**					
	Base cabinets and countertops @ pantry	1.00	LF	3,400.00	3,400.00	5,100.00
	Base cabinets and countertops	15.00	LF	173.00	2,595.00	260.00
	(6) Adjustable shelving @ lap top charging closet	6.00	EA	233.00	1,398.00	350.00
	Cap @ low partitions; "Oak"	31	LF	123.00	3,813.00	184.00
	subtotal				11,206.00	
07	**DIVISION 7 - THERMAL AND MOISTURE PROTECTION**					
072100	**BUILDING INSULATION**	included w/other sections				
079000	**JOINT SEALANTS**	included w/other sections				

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
08	**DIVISION 08 - DOORS AND WINDOWS / OPENINGS**					
081000	**DOORS AND FRAMES**					
081110	**Steel Doors and Frames**					
	Hollow metal doors and frames					
	HM Door, 36" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1	4	EA	950.00	3,800.00	1,425.00
	HM Door, 30" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1	2	EA	900.00	1,800.00	1,350.00
	HM Door, 36" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1N, Label C f.r. 3/4 Hr.	6	EA	1,080.00	6,480.00	1,620.00
	HM Door, 36" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1N, Label B f.r.1-1/2 Hr.	1	EA			
	HM Door, 30" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1N, w/ 2'x1' vent louver		EA		1,024.00	
	f.r. 1-/2 Hr.		EA			
	Additional cost for door louver		EA			
	HM Door, PR, 72" x 7'0" , ptd HM frame, H/W 2A		EA			
	HM Door, PR, 48" x 7'0" , ptd HM frame, H/W 2C		EA			
	HM Door, PR, 60" x 7'0" , ptd HM frame, H/W 2E, w/ half glass 1/4' temp.		EA			
	HM Door, PR, (36"+16") x 7' ptd fr, H/W 2B, w/ 5"x20" lite Lab B	1	EA	2,240.00	2,240.00	3,360.00
	Additional cost for narrow lite		EA			
	subtototal				15,344.00	
	Additional Items:					
	HM, PR, 72" X 7', ptd HM frame, H/W 2C, f.r 3/4 hrs	**2**	EA	1,300.00	2,600.00	1,950.00
	HM, PR, 60" x 7' x 1-3/4" thk, ptdHM frame, H/W 2C	**1**	EA	1,240.00	1,240.00	1,860.00
084100	**Aluminum / Glass Doors**					
	Alum/glass Door, PR, 72" x 8'0", anod alum frame, H/W IN	1	EA	2,600.00	2,600.00	3,900.00
	Alum/glass Door, PR, 72" x 8'0", anod alum frame, H/W IN	2	EA	2,500.00	5,000.00	3,750.00
	36" x 7" x 1 3/4" thick single leaf 1/4" tempered glass door	2	EA	1,900.00	3,800.00	2,850.00
	subtototal				15,240.00	
	Additional Items:					

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	Alum/glass Door, PR 28" x 8', anod alum frame, H/W IN	**2**	EA	1,484.00	2,968.00	2,226.00
087000	**HARDWARE**					
087100	**Door Hardware**					
	Type H/W 1	5	EA	520.00	2,600.00	780.00
	Type H/W 1F	1	EA	260.00	260.00	390.00
	Type H/W 1C		EA			
	Type H/W 1N	8	EA	407.00	3,256.00	610.00
	Type H/W 2A		EA			
	Type H/W 2B	1	EA	501.60	501.60	752.00
	Type H/W 2C	3	EA	425.00	1,275.00	638.00
	Type H/W 2E		EA			
	subtototal				10,860.60	
	Additional Items					
	Type H/W 1D	1	EA	484.00	484.00	727.00
	Type H/W 1P	1	EA	594.00	594.00	891.00
088000	**GLAZING**					
088100	**Glass Glazing**					
	Borrowed lights					
	Glass partitions; tempered glass, borrowed lights		SF			
	3'-4" length x 8' height 1/2" tempered glazing with structural silicone glazing butt joint	27	SF	74.00	1,998.00	111.00
	12'-8 3/8" length x 2'-10" height 1/2" tempered glazing with structural silicone glazing butt join	36	SF	73.00	2,628.00	110.00
	8'-3" length x 2'-10" height 1/2" tempered glazing with structural silicone glazing butt joint	24	SF	81.00	1,944.00	122.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	19'-3" length x4" height 1/2" tempered glazing with structural silicone glazing butt joint	77	SF	62.00	4,774.00	94.00
	comprising of 14'-' 3/8" x 2'-10" height and 8'-8" x 4'-9"; 1/2" tempered glazing with structural silicone glazing butt joint	165	SF	52.00	8,580.00	78.00
	8'-2 1/8" length x 8'-0" height 1/2" tempered glazing with structural silicone glazing butt joint	66	SF	50.00	3,300.00	75.00
	Glass partitions; wire glass, borrowed lights	80	SF	12.00	960.00	18.00
	(X-Cost) Framing system	420	LF	18.00	7,560.00	26.00
	Note 24 replace glazing @ w/w AC removals (25 No.)	25	SF	79.00	1,975.00	119.00
	subtototal				34,797.00	
09	**DIVISION 09 - FINISHES**					
092000	**PLASTER AND GYPSUM BOARD**					
092600	**Plaster and Gypsum Board Assemblies**					
	Wall Type 1					
	Metal stud partitions; one layer 5/8" GWB both sides; 3 5/8" studs; 2-3/4" fiberglass sound blanket, non-rated	1,936	SF	5.00	9,680.00	8.00
	Wall Type 2					
	Metal stud partitions; one layer 5/8" GWB both sides; 3 5/8" studs; 2-3/4" fiberglass sound blanket, one-hour rated	1,232	SF	6.00	7,392.00	9.00
	Wall Type 3					
	Metal stud partitions; two layers 5/8" GWB both sides; 3 5/8" studs; 2-3/4" fiberglass sound blanket,two-hour rated	116	SF	13.00	1,508.00	20.00
	Wall Type 4					
	Double metal stud partitions; two layers 5/8" GWB both sides; 3 5/8" studs; 3-1/2" thermafiber friction fit acoustic blanket, two-hour rated	754	SF	8.00	6,032.00	12.00
	Wall Type 5					

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	Double metal stud partitions; two layers 5/8" water resistant GWB both sides; 1- 5/8" studs; 2-3/4" fiberglass sound blanket,two-hour rated, plumbing chase	122	SF	16.00	1,952.00	24.00
	Wall Type 8					
	Metal stud partitions; one layer 5/8" GWB both sides; 3 5/8" studs; continuous wood cap	31	SF	13.00	403.00	19.00
	Wall Type 11					
	furring on masonry wall	8,151	SF	6.00	48,906.00	8.50
	Wall Type 15					
	One layer 5/8" GWB; furring on masonry wall	420	SF	5.00	2,100.00	7.00
	Wall Type 6					
	board furring on masonry wall	825	SF	8.00	6,600.00	12.00
	Furring encloures around columns, 2HR F.R.	614	SF	9.00	5,526.00	14.00
	Additional Items:					
	Two hour rated partition at new and existing locations. At existing locations contractor to certify and firesafe all voids/penetrations to ensure two hour rated assembly	4,350	SF	10.00	43,500.00	14.00
	One hour rated partition at new and existing locations. At exisiting locations contractor to certify and firesafe all voids/penetrations to ensure one hour rated assembly	158	SF	9.00	1,422.00	13.00
	Gypsum Board					
	GWB Ceiling soffits and bulkheads at window pockets	1,656	SF	8.00	13,248.00	12.00
	subtototal				148,269.00	
093000	**TILE**					
093100	**Ceramic Tile**					
	Ceramic floor tiling @ HC Toilet	46	SF	12.00	552.00	18.00
	Supply and install carpet tile	10,011	SF	4.00	40,044.00	6.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	ceramic wall tiling @ HC Toilet	222	SF	9.00	1,998.00	13.00
	subtototal				42,594.00	
095000	**CEILINGS**					
095100	**Acoustical Ceilings**					
	2' x 2' t suspended clg.with exposed " T" grid, Type I fine fissured	10,258	SF	6.00	61,548.00	8.75
	subtototal				61,548.00	
096000	**FLOORING**					
096500	**Resilient Flooring**					
	1 Resilient tile flooring	1,674	SF	2.00	3,348.00	3.00
	Provide ARDEX self-levling flooring throughout	11,729	SF	1.00	11,729.00	2.00
	Resilient Base and Accessories					
	Vinyl cove base	443	LF	3.00	1,329.00	4.00
	subtototal				16,406.00	
099000	**PAINTING AND COATING**					
099000	**Painting**					
	Paint @ new doors and frames; single	15	EA	174.00	2,610.00	261.00
	Paint @ new doors and frames; double	1	EA	180.00	180.00	270.00
	Paint @ new GWB perimeter and interior partition and furred walls	36,571	SF	1.00	36,571.00	1.80
	Paint @ new GWB ceilings and soffits	1,656	SF			
	subtototal				39,361.00	
10	**DIVISION 10 - SPECIALTIES**					
102800	**TOILET ACCESSORIES**					
108100	**Toilet and Bath Accessories**					
	C soap dispenser	1	EA	50.00	50.00	75.00
	D Toilet tissue dispenser (2 rolls)	1	EA	100.00	100.00	150.00
	E Paper towel dispenser	1	EA	180.00	180.00	270.00
	H Stainless steel fixed mirror, 18" x 30"	1	EA	500.00	500.00	750.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	subtototal				830.00	
108400	**Grab Bars**					
	A2 Steel grab bar 42"	1	EA	100.00	100.00	150.00
	A3 Steel grab bar 48"	1	EA	100.00	100.00	150.00
	subtototal				200.00	
12	**DIVISION 12 - FURNISHINGS**					
122000	**WINDOW TREATMENTS**					
125000	**Window Blinds**					
	blinds		SF			
	Windows shades to be provided	22	EA	581.00	12,782.00	422.00
	Remove and replace extg window with architectural louver at MEC room	2	EA	1,800.00	3,600.00	2,700.00
	subtototal				16,382.00	
22	**DIVISION 22 - PLUMBING**					
220000	**COMMON WORK RESULTS FOR PLUMBING**					
220500-220553	***Plumbing Miscellaneous***					
	Core Drills, Firestopping,	1	ls	3,940.00	3,940.00	5,910.00
	subtototal				3,940.00	
220700	**PLUMBING INSULATION**	included w/other sections				
221000	**PLUMBING PIPING**					
221100	**Facility Water Distribution**					
	Domestic Water System					
	Copper Pipe, wrought Fittings, hangers - 2"	30	lf	60.00	1,800.00	90.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	Copper Pipe, wrought Fittings, hangers - 1.5"	40	lf	59.00	2,360.00	88.50
	Copper Pipe, wrought Fittings, hangers - 1"	50	lf	55.00	2,750.00	82.80
	Copper Pipe, wrought Fittings, hangers - 3/4"	100	lf	32.00	3,200.00	47.40
	Copper Pipe, wrought Fittings, hangers - 1/2"	1	lf	60.00	60.00	90.00
	Domestic water pipe insulation	210	lf	5.00	1,050.00	8.00
	Domestic water pipe shut-off valves	16	ea	73.00	1,168.00	109.00
	Trap primer valves & runouts - allowance	1	ea	60.00	60.00	90.00
	Refrigerator valve box	1	ea	116.00	116.00	174.00
	Filter for water to coffee & frig	1	ea	216.00	216.00	324.00
	Thermostatic mixing valve	1	ea	188.00	188.00	282.00
	Connect to existing piping	1	ea	244.00	244.00	366.00
	Domestic water misc specialties	1	ls	60.00	60.00	90.00
	subtototal				13,272.00	
221300	**Facility Sanitary Sewerage**					
	Sanitary Waste System					
	CI Pipe, no-hub, fittings, hangers - 1.5"	130	lf	29.00	3,770.00	43.00
	CI Pipe, no-hub, fittings, hangers - 2"	50	lf	54.00	2,700.00	82.00
	CI Pipe, no-hub, fittings, hangers - 4"	25	lf	40.00	1,000.00	60.00
	Connect to existing piping	3	ea	127.00	381.00	190.00
	Cleanouts	11	ea	55.00	605.00	82.00
	Floor drains @ Mech Rooms		ea			
	subtototal				8,456.00	
223300	**Plumbing Equipment**					
	Plumbing Equipment					
	Instantaneous water heaters	2	ea	500.00	1,000.00	750.00
	subtototal				1,000.00	
224000	**Plumbing Fixtures**					
	Plumbing Fixtures					

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	Water Closet, wall mnt, sensor flush - P-1	1	ea	740.00	740.00	1,110.00
	Lavatory, wall hung, sensor faucet - P-2	1	ea	1,000.00	1,000.00	1,500.00
	Counter Sink, faucet - P-3	1	ea	940.00	940.00	1,410.00
	subtototal				2,680.00	
23	**DIVISION 23 - HVAC**					
230000	**HEATING, VENTILATING AND AIR CONDITIONING (HVAC)**					
230500-230993	***General Mechanical Requirements***					
	General Mechanical Requirements	1	ls	8,000.00	8,000.00	12,000.00
	Commissioning and TAB	1	ls	58,000.00	58,000.00	87,000.00
	Exterior wall penetrations	1	ls	1,600.00	1,600.00	2,400.00
	Metal covers to existing convertor, including GKD stainless steel mesh		lf	3,800.00	3,800.00	5,700.00
	subtototal				71,400.00	
232000	**HVAC PIPING AND PUMPS**					
232116-232216	**Steam and Condensate Piping and Pumps**					
	Steam Piping, Sch 80 seamless, fittings, hangers - 2.5"	50	lf	28.00	1,400.00	42.00
	Steam Piping, Sch 80 seamless, fittings, hangers - 2"		lf		1,400.00	
	CONDENSER WATER PIPING					
	Steam Condensate Piping, Sch 80 seamless, fittings, hangers - 2"		lf		600.00	
	Steam Condensate Piping, Sch 80 seamless, fittings, hangers - 1.5"	17	lf	35.00	595.00	53.00
	Steam & Steam Condensate Pipe Insulation	225	lf	1.00	225.00	1.00
	Condenser Water Piping, Sch 40, fittings, hangers - 4"	120	lf	50.00	6,000.00	75.00
	Condenser Water Piping Insulation		lf		180.00	
	Connect to existing condenser water riser	2	ea	370.00	740.00	555.00
	Condensate Drain Piping	20	lf	130.00	2,600.00	195.00
	Equipment & Coil Hook-up Assemblies	2	ea	1,560.00	3,120.00	2,340.00
	subtototal				16,860.00	
233000	**HVAC AIR DISTRIBUTION**					

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
233100-233700	**HVAC Ducts and Casings**					
	Ductwork - galvanized	13,000	lbs	10.65	138,450.00	15.97
	Smoke & Fire Dampers	2	ea	800.00	1,600.00	1,200.00
	Fire Dampers w/ access doors	16	ea	40.00	640.00	60.00
	Motorized Dampers	12	ea	183.00	2,196.00	425.00
	Duct wrap insulation, fiberglass, 1.5"	2,517	sf	1.00	2,517.00	2.00
	Duct internal liner, fiberglass - 1"	2,513	sf	2.00	5,026.00	3.00
	Supply air diffusers	50	ea	108.00	5,400.00	162.00
	Return air grilles	42	ea	71.00	2,982.00	7.00
	Linear supply & return	31	lf	30.00	930.00	45.00
	Linear supply plenum boxes	3	ea	227.00	681.00	340.00
	Mechanical Louvers	44	sf	83.00	3,652.00	129.00
	Convection Heating and Cooling Units					
	VAV boxes w/ sound attenuator	20	ea	460.00	9,200.00	690.00
	Fans RF-9-1 & OAF-9-1	1	ea	1,280.00	1,280.00	1,920.00
	Fan RF-9-2	1	ea	640.00	640.00	960.00
	Fan OAF-9-2	1	ea	640.00	640.00	960.00
	Fan TEF-9-1	1	ea	640.00	640.00	960.00
	Variable Frequency Drives (Furnish Only)	2	ea	1,000.00	2,000.00	1,500.00
	subtototal				178,474.00	
238000	**AIR HANDLING UNITS**					
238119	***HVAC Equipment***					
	Self Contained Air Cooled Air Conditioner - AC-9-1	1	ea	4,000.00	4,000.00	6,000.00
	Self Contained Water Cooled Air Conditioner - AC-9-2	1	ea	4,000.00	4,000.00	6,000.00
	Condensate Pumps @ AC units	2	ea	100.00	200.00	150.00
	subtototal				8,200.00	
	DIVISION 26 - ELECTRICAL					
260000	**ELECTRICAL WORK**					
260500-260923	***General Electrical Requirements***					

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	General Electrical Requirements		ls		30,000.00	
	Temporary Lighting		ls		11,800.00	
	subtototal				41,800.00	
262000	**LOW-VOLTAGE ELECTRICAL TRANSMISSION**					
262416-262819	**Low-Voltage Electrical Transmission**					
	Branch Circuitry :					
	Lighting Circuitry					
	3/4" Emt, 4#12	1,000	LF	2.00	2,000.00	3.00
	MC Cable	1,800	LF	1.00	1,800.00	2.00
	3/4" Emt, 8#12	1,200	LF	2.00	2,400.00	2.00
	Plenum Cable	600	LF	6.00	3,600.00	10.00
	Chop Floor	600	LF	6.00	3,600.00	10.00
	Switches	50	EA	100.00	5,000.00	150.00
	OS Power Pack	27	EA	38.00	1,026.00	57.00
	Occupancy Sensor LV	8	EA	158.00	1,264.00	235.00
	Duplex Receptacles	23	EA	43.00	989.00	65.00
	Receptacles GFI	20	EA	37.00	740.00	56.00
	Receptacles Quad	9	EA	200.00	1,800.00	300.00
	Receptacle Simplex	7	EA	143.00	1,001.00	241.00
	Receptacles Dedic Copier	8	EA	125.00	1,000.00	188.00
	DDC Panel 120v Connection	2	EA	1,300.00	2,600.00	1,950.00
	Motorized Damper Connection	2	EA	1,300.00	2,600.00	1,950.00
	VAV Connection	4	EA	2,150.00	8,600.00	3,225.00
	Manual Snap Switch Starter	15	EA	39.00	585.00	58.00
	Workstation	16	EA	875.00	14,000.00	1,313.00
	Power Furniture Wall In-feed		EA		18,000.00	
	Install Furniture Recept FBO	36	EA	233.00	8,388.00	350.00
	subtototal				80,993.00	
	Power Circuitry					

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	3/4" Emt, 4#10	2,300	LF	11.00	25,300.00	17.00
	1 1/4" Emt, 4#2	500	LF	20.00	10,000.00	30.00
	2" Emt, 3 3/0, #6G	600	LF	30.00	18,000.00	45.00
	Term @ Ex 100 Amp Fused Switch	1	EA		4,000.00	
	100 Amp Splice in Ex Riser Pullbox	1	EA		4,000.00	
	200 Amp Splice in Ex Riser Pullbox	2	EA	2,000.00	4,000.00	3,000.00
	subtototal				65,300.00	
	Power Equipment					
	100 Amp Panel Board	2	EA	1,300.00	2,600.00	1,950.00
	225 Amp Panel Board	2	EA	1,300.00	2,600.00	1,950.00
	30/2 Amp Disconnect	2	EA	900.00	1,800.00	1,350.00
	30 Amp Disconnect	1	EA		1,800.00	
	100 Amp Disconnect A/C	1	EA	1,900.00	1,900.00	2,850.00
	200 Amp Disconnect A/C	2	EA	364.00	728.00	456.00
	Install 10 HP VFD FBO	6	EA	304.00	1,824.00	456.00
	Install 20 HP VFD FBO		EA		2,600.00	
	Install 50 HP VFD FBO		EA		3,800.00	
	100 Amp Disconnect @ Pullbox	1	EA	1,000.00	1,000.00	1,500.00
	200 Amp Disconnect @ Pullbox	1	EA	1,000.00	1,400.00	2,100.00
	100 Amp Fuse		EA		1,000.00	
	subtototal				23,052.00	
	Telecommunications System					
	Term Boards	2	EA	500.00	1,000.00	750.00
	1" EMT Cdt	300	LF	3.00	900.00	5.00
	Data Outlet Backbox w/ Stubup	6	EA	100.00	600.00	150.00
	Tel Outlet Backbox w/ Stubup	1	EA	840.00	840.00	1,260.00
	Floor T/D Outlet	3	EA	467.00	1,401.00	700.00
	T/D Furniture Wall In-feed	36	EA	39.00	1,404.00	58.00
	Install Furniture Device Backbox FBO	36	EA			

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	subtototal				6,145.00	
	Security System (Empty Conduit)					
	3/4" Emt, 4#12		LF		1,800.00	
	Card Reader Backbox, Stubup	1	EA	840.00	840.00	1,260.00
	Door Contact DC Backbox, Stubup	1	EA	1,824.00	1,824.00	2,736.00
	Electric Lock EL Roughin	1	EA	1,800.00	1,800.00	2,700.00
	Security Panel Backbox	1	EA	3,800.00	3,800.00	5,700.00
	Misc Demo, Removals		LS	2,160.00	2,160.00	3,240.00
	subtototal				12,224.00	
265000	**LIGHTING**					
265100-265200	**Interior and Emergency Lighting**					
	Lighting Fixtures					
	Type F1 2x2 Fluor Layin Dir/Indir	125	EA	186.00	23,250.00	278.00
	Type F1EM	26	EA	1,138.00	29,588.00	1,708.00
	Type F6 Indust Fluor Pend	6	EA	240.00	1,440.00	360.00
	Exit	14	EA			
	Type F2 Linear LED Pend	36	LF	72.00	2,592.00	108.00
	Type F2EM	12	LF	317.00	3,804.00	475.00
	Type F3 Linear LED Pend	92	LF	91.00	8,372.00	137.00
	Type F3EM	12	LF	150.00	1,800.00	225.00
	Type F5 UC	6	LF	300.00	1,800.00	450.00
	subtototal				72,646.00	
28	**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**					
283000	**ELECTRONIC DETECTION AND ALARM**					
283100	**Fire Detection and Alarm**					
	3" Rigid, Riser Cables	340	LF	8.00	2,720.00	11.00
	Riser Cables in ex Empty Cdt	120	LF	15.00	1,800.00	23.00
	3/4" Emt, 4#12	300	LF	5.00	1,500.00	7.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#:
AGENCY:

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $
	3/4" EMT Cdt	1,300	LF	1.00	1,300.00	2.00
	Teflon Cable	3,900	LF	1.00	3,900.00	1.00
	Pull Station	5	EA	248.00	1,240.00	372.00
	Audible/Visual	13	EA	98.00	1,274.00	148.00
	Smoke Detector	40	EA	65.00	2,600.00	98.00
	Strobe	11	EA	165.00	1,815.00	246.00
	Duct Detector	10	EA	164.00	1,640.00	246.00
	Warden Station	4	EA	185.00	740.00	278.00
	Central Equipment (tie into exist)	1	LS	3,800.00	3,800.00	5,700.00
	FSD Connections, 120v	4	EA	785.00	3,140.00	1,178.00
	subtototal				27,469.00	
CONTRACT 1 - GENERAL CONSTRUCTION WORK					**1,094,834.00**	

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
38,001.20	62,289.60
38,001.20	62,289.60
21,000.00	35,000.00
21,000.00	35,000.00
14,406.00	24,003.00
14,406.00	24,003.00
5,100.00	8,500.00
3,900.00	6,495.00
2,100.00	3,498.00
5,704.00	9,517.00
16,804.00	28,010.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
5,700.00	9,500.00
2,700.00	4,500.00
9,720.00	16,200.00
1,536.00	2,560.00
3,360.00	5,600.00
23,016.00	38,360.00
3,900.00	6,500.00
1,860.00	3,100.00
3,900.00	6,500.00
7,500.00	12,500.00
5,700.00	9,500.00
22,860.00	38,100.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
4,452.00	7,420.00
3,900.00	6,500.00
390.00	650.00
4,880.00	8,136.00
752.00	1,253.60
1,914.00	3,189.00
16,288.00	27,148.60
727.00	1,211.00
891.00	1,485.00
2,997.00	4,995.00
3,960.00	6,588.00
2,928.00	4,872.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
7,238.00	12,012.00
12,870.00	21,450.00
4,950.00	8,250.00
1,440.00	2,400.00
10,920.00	18,480.00
2,975.00	4,950.00
51,896.00	86,693.00
15,488.00	25,168.00
11,088.00	18,480.00
2,320.00	3,828.00
9,048.00	15,080.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
2,928.00	4,880.00
589.00	992.00
69,283.50	118,189.50
2,940.00	5,040.00
9,900.00	16,500.00
8,596.00	14,122.00
60,900.00	104,400.00
2,054.00	3,476.00
19,872.00	33,120.00
215,006.50	363,275.50
828.00	1,380.00
60,066.00	100,110.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
2,886.00	4,884.00
63,780.00	106,374.00
89,757.50	151,305.50
89,757.50	151,305.50
5,022.00	8,370.00
23,458.00	35,187.00
1,772.00	3,101.00
30,252.00	46,658.00
3,915.00	6,525.00
270.00	450.00
65,827.80	102,398.80
70,012.80	109,373.80
75.00	125.00
150.00	250.00
270.00	450.00
750.00	1,250.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
1,245.00	2,075.00
150.00	250.00
150.00	250.00
300.00	500.00
9,284.00	22,066.00
5,400.00	9,000.00
14,684.00	31,066.00
5,910.00	9,850.00
5,910.00	9,850.00
2,700.00	4,500.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
3,540.00	5,900.00
4,140.00	6,890.00
4,740.00	7,940.00
90.00	150.00
1,680.00	2,730.00
1,744.00	2,912.00
90.00	150.00
174.00	290.00
324.00	540.00
282.00	470.00
366.00	610.00
90.00	150.00
19,960.00	33,232.00
5,590.00	9,360.00
4,100.00	6,800.00
1,500.00	2,500.00
570.00	951.00
902.00	1,507.00
12,662.00	21,118.00
1,500.00	2,500.00
1,500.00	2,500.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
1,110.00	1,850.00
1,500.00	2,500.00
1,410.00	2,350.00
4,020.00	6,700.00
12,000.00	20,000.00
87,000.00	145,000.00
2,400.00	4,000.00
5,700.00	9,500.00
107,100.00	178,500.00
2,100.00	3,500.00
2,100.00	3,500.00
900.00	1,500.00
901.00	1,496.00
225.00	450.00
9,000.00	15,000.00
270.00	450.00
1,110.00	1,850.00
3,900.00	6,500.00
4,680.00	7,800.00
25,186.00	42,046.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
207,610.00	346,060.00
2,400.00	4,000.00
960.00	1,600.00
5,100.00	7,296.00
5,034.00	7,551.00
7,539.00	12,565.00
8,100.00	13,500.00
294.00	3,276.00
1,395.00	2,325.00
1,020.00	1,701.00
5,676.00	9,328.00
13,800.00	23,000.00
1,920.00	3,200.00
960.00	1,600.00
960.00	1,600.00
960.00	1,600.00
3,000.00	5,000.00
266,728.00	445,202.00
6,000.00	10,000.00
6,000.00	10,000.00
300.00	500.00
12,300.00	20,500.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
45,000.00	75,000.00
17,700.00	29,500.00
62,700.00	104,500.00
3,000.00	5,000.00
3,600.00	5,400.00
2,400.00	4,800.00
6,000.00	9,600.00
6,000.00	9,600.00
7,500.00	12,500.00
1,539.00	2,565.00
1,880.00	3,144.00
1,495.00	2,484.00
1,120.00	1,860.00
2,700.00	4,500.00
1,687.00	2,688.00
1,504.00	2,504.00
3,900.00	6,500.00
3,900.00	6,500.00
12,900.00	21,500.00
870.00	1,455.00
21,008.00	35,008.00
27,000.00	45,000.00
12,600.00	20,988.00
122,603.00	203,596.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
39,100.00	64,400.00
15,000.00	25,000.00
27,000.00	45,000.00
6,000.00	10,000.00
6,000.00	10,000.00
6,000.00	10,000.00
99,100.00	164,400.00
3,900.00	6,500.00
3,900.00	6,500.00
2,700.00	4,500.00
2,700.00	4,500.00
2,850.00	4,750.00
912.00	1,640.00
2,736.00	4,560.00
3,900.00	6,500.00
5,700.00	9,500.00
1,500.00	2,500.00
2,100.00	3,500.00
1,500.00	2,500.00
34,398.00	57,450.00
1,500.00	2,500.00
1,500.00	2,400.00
900.00	1,500.00
1,260.00	2,100.00
2,100.00	3,501.00
2,088.00	3,492.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
9,348.00	15,493.00
2,700.00	4,500.00
1,260.00	2,100.00
2,736.00	4,560.00
2,700.00	4,500.00
5,700.00	9,500.00
3,240.00	5,400.00
18,336.00	30,560.00
34,750.00	58,000.00
44,408.00	73,996.00
2,160.00	3,600.00
3,888.00	6,480.00
5,700.00	9,504.00
12,604.00	20,976.00
2,700.00	4,500.00
2,700.00	4,500.00
108,910.00	181,556.00
3,740.00	6,460.00
2,760.00	4,560.00
2,100.00	3,600.00

[redacted]

PW357MOCS
Dept of Human Services

Cost	Total Material + Labor
2,600.00	3,900.00
3,900.00	7,800.00
1,860.00	3,100.00
1,924.00	3,198.00
3,920.00	6,520.00
2,706.00	4,521.00
2,460.00	4,100.00
1,112.00	1,852.00
5,700.00	9,500.00
4,712.00	7,852.00
39,494.00	66,963.00
1,639,564.00	**2,734,398.00**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
CONTRACT 1 - GENERAL CONSTRUCTION WORK								
01	**DIVISION 1 - GENERAL REQUIREMENTS**							
010000	**GENERAL CONDITIONS**							
	Mobilization	1	LS		25334.2		38001.2	63335.4
	subtotal							
02	**DIVISION 2 - EXISTING CONDITIONS**							
020000	**DEMOLITION AND STRUCTURE MOVING**							
020700	New opening in Existing Load bearing walls @ new ramp	1	LS	14000	14000.00	21000	21000.00	35,000.00
	subtotal							
03	**DIVISION 3 - CONCRETE**							
033000	**CAST-IN- PLACE CONCRETE**							
033100-033300	**Miscellaneous Cast in Place Concrete**							
	Concrete Ramp	21	LF	457.00	9,597.00	686.00	14,406.00	24,003.00
	subtotal							
06	**DIVISION 6 - WOOD, PLASTICS AND COMPOSITES**							
064000	**ARCHITECTURAL WOODWORK**							
064100	**Architectural Wood Casework**							
	Base cabinets and countertops @ pantry	1	LF	3,400.00	3,400.00	5,100.00	5,100.00	8,500.00
	Base cabinets and countertops	15	LF	173.00	2,595.00	260.00	3,900.00	6,495.00
	(6) Adjustable shelving @ lap top charging closet	6	EA	233.00	1,398.00	350.00	2,100.00	3,498.00
	Cap @ low partitions; "Oak"	31	LF	123.00	3,813.00	184.00	5,704.00	9,517.00
	subtotal							
07	**DIVISION 7 - THERMAL AND MOISTURE PROTECTION**							
072100	**BUILDING INSULATION**	included w/other sections						
079000	**JOINT SEALANTS**	included w/other sections						
08	**DIVISION 08 - DOORS AND WINDOWS / OPENINGS**							
081000	**DOORS AND FRAMES**							
081110	**Steel Doors and Frames**							
	Hollow metal doors and frames							
	HM Door, 36" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1	4	EA	950.00	3,800.00	1,425.00	5,700.00	9500.00
	HM Door, 30" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1	2	EA	900.00	1,800.00	1,350.00	2,700.00	4,500.00
	HM Door, 36" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1N, Label C f.r. 3/4 Hr.	6	EA	1,080.00	6,480.00	1,620.00	9,720.00	16,200.00
	HM Door, 36" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1N, Label B f.r.1-1/2 Hr.	1	EA					
	HM Door, 30" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1N, w/ 2'x1' vent louver		EA		1,024.00		1,536.00	2,560.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	f.r. 1-/2 Hr.		EA					
	Additional cost for door louver		EA					
	HM Door, PR, 72" x 7'0" , ptd HM frame, H/W 2A		EA					
	HM Door, PR, 48" x 7'0" , ptd HM frame, H/W 2C		EA					
	HM Door, PR, 60" x 7'0" , ptd HM frame, H/W 2E, w/ half glass 1/4' temp.		EA					
	HM Door, PR, (36"+16") x 7' ptd fr, H/W 2B, w/ 5"x20" lite Lab B	1	EA	2,240.00	2,240.00	3,360.00	3,360.00	5,600.00
	Additional cost for narrow lite		EA					
	subtototal							
	Additional Items:							
	HM, PR, 72" X 7', ptd HM frame, H/W 2C, f.r 3/4 hrs	2	EA	1,300.00	2,600.00	**1,950.00**	**3,900.00**	**6,500.00**
	HM, PR, 60" x 7' x 1-3/4" thk, ptdHM frame, H/W 2C	1	EA	1,240.00	1,240.00	**1,860.00**	**1,860.00**	**3,100.00**
084100	**Aluminum / Glass Doors**							
	Alum/glass Door, PR, 72" x 8'0", anod alum frame, H/W IN	1	EA	2,600.00	2,600.00	3,900.00	3,900.00	6,500.00
	Alum/glass Door, PR, 72" x 8'0", anod alum frame, H/W IN	2	EA	2,500.00	5,000.00	3,750.00	7,500.00	12500.00
	36" x 7" x 1 3/4" thick single leaf 1/4" tempered glass door	2	EA	1,900.00	3,800.00	2,850.00	5,700.00	9500.00
	subtototal							
	Additional Items:							
	Alum/glass Door, PR 28" x 8', anod alum frame, H/W IN	2	EA	1,484.00	2,968.00	**2,226.00**	**4,452.00**	**7,420.00**
087000	**HARDWARE**							
087100	**Door Hardware**							
	Type H/W 1	5	EA	520.00	2,600.00	780.00	3,900.00	6,500.00
	Type H/W 1F	1	EA	260.00	260.00	390.00	390.00	650.00
	Type H/W 1C		EA					
	Type H/W 1N	8	EA	407.00	3,256.00	610.00	4,880.00	8,136.00
	Type H/W 2A		EA					
	Type H/W 2B	1	EA	501.60	501.60	752.00	752.00	1,253.60
	Type H/W 2C	3	EA	425.00	1,275.00	638.00	1,914.00	3,189.00
	Type H/W 2E		EA					
	subtototal							
	Additional Items							
		1	EA	484.00	484.00	**727.00**	**727.00**	1,211.00
	Type H/W 1D	1	EA	594.00	594.00	**891.00**	**891.00**	1,485.00
	Type H/W 1P							
088000	**GLAZING**							

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
088100	**Glass Glazing**							
	Borrowed lights							
	Glass partitions; tempered glass, borrowed lights		SF					
	3'-4" length x 8' height 1/2" tempered glazing with structural silicone glazing butt joint	27	SF	74.00	1,998.00	111.00	2,997.00	4,995.00
	12'-8 3/8" length x 2'-10" height 1/2" tempered glazing with structural silicone glazing butt join	36	SF	73.00	2,628.00	110.00	3,960.00	6,588.00
	8'-3" length x 2'-10" height 1/2" tempered glazing with structural silicone glazing butt joint	24	SF	81.00	1,944.00	122.00	2,928.00	4,872.00
	19'-3" length x4" height 1/2" tempered glazing with structural silicone glazing butt joint	77	SF	62.00	4,774.00	94.00	7,238.00	12,012.00
	comprising of 14'-' 3/8" x 2'-10" height and 8'-8" x 4'-9"; 1/2" tempered glazing with structural silicone glazing butt joint	165	SF	52.00	8,580.00	78.00	12870.00	21,450.00
	8'-2 1/8" length x 8'-0" height 1/2" tempered glazing with structural silicone glazing butt joint	66	SF	50.00	3,300.00	75.00	4,950.00	8,250.00
	Glass partitions; wire glass, borrowed lights	80	SF	12.00	960.00	18.00	1,440.00	2,400.00
	(X-Cost) Framing system	420	LF	18.00	7,560.00	26.00	10920	18480
	Note 24 replace glazing @ w/w AC removals (25 No.)	25	SF	79.00	1,975.00	119.00	2,975.00	4,950.00
	subtototal							
09	**DIVISION 09 - FINISHES**							
092000	**PLASTER AND GYPSUM BOARD**							
092600	**Plaster and Gypsum Board Assemblies**							
	Wall Type 1							
	Metal stud partitions; one layer 5/8" GWB both sides; 3 5/8" studs; 2-3/4" fiberglass sound blanket, non-rated	1,936	SF	5.00	9,680.00	8.00	15488.00	25,168.00
	Wall Type 2							
	Metal stud partitions; one layer 5/8" GWB both sides; 3 5/8" studs; 2-3/4" fiberglass sound blanket, one-hour rated	1,232	SF	6.00	7,392.00	9.00	11088	18480
	Wall Type 3							
	Metal stud partitions; two layers 5/8" GWB both sides; 3 5/8" studs; 2-3/4" fiberglass sound blanket,two-hour rated	116	SF	13.00	1,508.00	20.00	2,320.00	3,828.00
	Wall Type 4							
	Double metal stud partitions; two layers 5/8" GWB both sides; 3 5/8" studs; 3-1/2" thermafiber friction fit acoustic blanket, two-hour rated	754	SF	8.00	6,032.00	12.00	9,048.00	15,080.00
	Wall Type 5							

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	1- 5/8" studs; 2-3/4" fiberglass sound blanket,two-hour rated, plumbing chase	122	SF	16.00	1,952.00	24.00	2,928.00	4,880.00
	Wall Type 8							
	Metal stud partitions; one layer 5/8" GWB both sides; 3 5/8" studs; continuous wood cap	31	SF	13.00	403.00	19.00	589.00	992.00
	Wall Type 11							
	furring on masonry wall	8,151	SF	6.00	48906	9.00	73359	122265
	Wall Type 15							
	One layer 5/8" GWB; furring on masonry wall	420	SF	5.00	2,100.00	7.00	2,940.00	5,040.00
	Wall Type 6							
	board furring on masonry wall	825	SF	8.00	6,600.00	12.00	9,900.00	16,500.00
	Furring encloures around columns, 2HR F.R.	614	SF	9.00	5,526.00	14.00	8,596.00	14,122.00
	Additional Items:							
	Two hour rated partition at new and existing locations. At existing locations contractor to certify and firesafe all voids/penetrations to ensure two hour rated assembly	4,350	SF	10.00	43500	14.00	60900	104400
	One hour rated partition at new and existing locations. At exisiting locations contractor to certify and firesafe all voids/penetrations to ensure one hour rated assembly	158	SF	9.00	1,422.00	13.00	2,054.00	3,476.00
	Gypsum Board							
	GWB Ceiling soffits and bulkheads at window pockets	1,656	SF	8.00	13248	12.00	19872	33120
	subtototal							
093000	**TILE**							
093100	**Ceramic Tile**							
	Ceramic floor tiling @ HC Toilet	46	SF	12.00	552.00	18.00	828.00	1,380.00
	Supply and install carpet tile	10,011	SF	4.00	40044	6.00	60066	100110
	ceramic wall tiling @ HC Toilet	222	SF	9.00	1,998.00	13.00	2,886.00	4,884.00
	subtototal							
095000	**CEILINGS**							
095100	**Acoustical Ceilings**							
	2' x 2' t suspended clg.with exposed " T" grid, Type I fine fissured	10,258	SF	6.00	61548	9.00	92322	153870
	subtototal							
096000	**FLOORING**							
096500	**Resilient Flooring**							

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	1 Resilient tile flooring	1,674	SF	2.00	3,348.00	3.00	5,022.00	8,370.00
	Provide ARDEX self-levling flooring throughout	11,729	SF	1.00	11729	2.00	23458	35187
	Resilient Base and Accessories							
	Vinyl cove base	443	LF	3.00	1,329.00	4.00	1,772.00	3,101.00
	subtotal							
099000	**PAINTING AND COATING**							
099000	**Painting**							
	Paint @ new doors and frames; single	15	EA	174.00	2,610.00	261.00	3,915.00	6,525.00
	Paint @ new doors and frames; double	1	EA	180.00	180.00	270.00	270.00	450.00
	Paint @ new GWB perimeter and interior partition and furred walls	36,571	SF	1.00	36571	2.00	73142	109713
	Paint @ new GWB ceilings and soffits	1,656	SF					
	subtotal							
10	**DIVISION 10 - SPECIALTIES**							
102800	**TOILET ACCESSORIES**							
108100	**Toilet and Bath Accessories**							
	C soap dispenser	1	EA	50.00	50.00	75.00	75.00	125.00
	D Toilet tissue dispenser (2 rolls)	1	EA	100.00	100.00	150.00	150.00	250.00
	E Paper towel dispenser	1	EA	180.00	180.00	270.00	270.00	450.00
	H Stainless steel fixed mirror, 18" x 30"	1	EA	500.00	500.00	750.00	750.00	1,250.00
	subtotal							
108400	**Grab Bars**							
	A2 Steel grab bar 42"	1	EA	100.00	100.00	150.00	150.00	250.00
	A3 Steel grab bar 48"	1	EA	100.00	100.00	150.00	150.00	250.00
	subtotal							
12	**DIVISION 12 - FURNISHINGS**							
122000	**WINDOW TREATMENTS**							
125000	**Window Blinds**							
	blinds		SF					
	Windows shades to be provided	22	EA	581.00	12,782.00	422.00	9,284.00	22,066.00
	Remove and replace extg window with architectural louver at MEC room	2	EA	1,800.00	3,600.00	2,700.00	5,400.00	9,000.00
	subtotal							
22	**DIVISION 22 - PLUMBING**							
220000	**COMMON WORK RESULTS FOR PLUMBING**							

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
220500-220553	***Plumbing Miscellaneous***							
	Core Drills, Firestopping,	1	ls	3,940.00	3,940.00	5,910.00	5,910.00	9,850.00
	subtototal							
220700	**PLUMBING INSULATION**	uded w/other secti						
221000	**PLUMBING PIPING**							
221100	**Facility Water Distribution**							
	Domestic Water System							
	Copper Pipe, wrought Fittings, hangers - 2"	30	lf	60.00	1,800.00	90.00	2,700.00	4,500.00
	Copper Pipe, wrought Fittings, hangers - 1.5"	40	lf	59.00	2,360.00	88.50	3,540.00	5,900.00
	Copper Pipe, wrought Fittings, hangers - 1"	50	lf	55.00	2,750.00	82.80	4,140.00	6,890.00
	Copper Pipe, wrought Fittings, hangers - 3/4"	100	lf	32.00	3,200.00	47.40	4,740.00	7,940.00
	Copper Pipe, wrought Fittings, hangers - 1/2"	1	lf	60.00	60.00	90.00	90.00	150.00
	Domestic water pipe insulation	210	lf	5.00	1,050.00	8.00	1,680.00	2730.00
	Domestic water pipe shut-off valves	16	ea	73.00	1,168.00	109.00	1,744.00	2912.00
	Trap primer valves & runouts - allowance	1	ea	60.00	60.00	90.00	90.00	150.00
	Refrigerator valve box	1	ea	116.00	116.00	174.00	174.00	290.00
	Filter for water to coffee & frig	1	ea	216.00	216.00	324.00	324.00	540.00
	Thermostatic mixing valve	1	ea	188.00	188.00	282.00	282.00	470.00
	Connect to existing piping	1	ea	244.00	244.00	366.00	366.00	610.00
	Domestic water misc specialties	1	ls	60.00	60.00	90.00	90.00	150.00
	subtototal							
221300	**Facility Sanitary Sewerage**							
	Sanitary Waste System							
	CI Pipe, no-hub, fittings, hangers - 1.5"	130	lf	29.00	3,770.00	43.00	5,590.00	9360.00
	CI Pipe, no-hub, fittings, hangers - 2"	50	lf	54.00	2,700.00	82.00	4,100.00	6800.00
	CI Pipe, no-hub, fittings, hangers - 4"	25	lf	40.00	1,000.00	60.00	1,500.00	2500.00
	Connect to existing piping	3	ea	127.00	381.00	190.00	570.00	951.00
	Cleanouts	11	ea	55.00	605.00	82.00	902.00	1507.00
	Floor drains @ Mech Rooms		ea					
	subtototal							
223300	**Plumbing Equipment**							
	Plumbing Equipment							
	Instantaneous water heaters	2	ea	500.00	1,000.00	750.00	1,500.00	2500.00
	subtototal							
224000	**Plumbing Fixtures**							
	Plumbing Fixtures							

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	Water Closet, wall mnt, sensor flush - P-1	1	ea	740.00	740.00	1,110.00	1,110.00	1,850.00
	Lavatory, wall hung, sensor faucet - P-2	1	ea	1,000.00	1,000.00	1,500.00	1,500.00	2,500.00
	Counter Sink, faucet - P-3	1	ea	940.00	940.00	1,410.00	1,410.00	2,350.00
	subtototal							
23	**DIVISION 23 - HVAC**							
230000	**HEATING, VENTILATING AND AIR CONDITIONING (HVAC)**							
230500-230993	***General Mechanical Requirements***							
	General Mechanical Requirements	1	ls	8,000.00	8,000.00	12000.00	12000.00	20000.00
	Commissioning and TAB	1	ls	58000.00	58000.00	87000.00	87000.00	145,000.00
	Exterior wall penetrations	1	ls	1,600.00	1,600.00	2,400.00	2,400.00	4,000.00
	Metal covers to existing convertor, including GKD stainless steel mesh		lf	3,800.00	3,800.00	5,700.00	5,700.00	9500.00
	subtototal							
232000	**HVAC PIPING AND PUMPS**							
232116-232216	**Steam and Condensate Piping and Pumps**							
	Steam Piping, Sch 80 seamless, fittings, hangers - 2.5"	50	lf	28.00	1,400.00	42.00	2,100.00	3,500.00
	Steam Piping, Sch 80 seamless, fittings, hangers - 2"		lf		1,400.00		2,100.00	3,500.00
	CONDENSER WATER PIPING							
	Steam Condensate Piping, Sch 80 seamless, fittings, hangers - 2"		lf		600.00		900.00	1,500.00
	Steam Condensate Piping, Sch 80 seamless, fittings, hangers - 1.5"	17	lf	35.00	595.00	53.00	901.00	1,496.00
	Steam & Steam Condensate Pipe Insulation	225	lf	1.00	225.00	1.00	225.00	450.00
	Condenser Water Piping, Sch 40, fittings, hangers - 4"	120	lf	50.00	6,000.00	75.00	9,000.00	15,000.00
	Condenser Water Piping Insulation		lf		180.00		270.00	450.00
	Connect to existing condenser water riser	2	ea	370.00	740.00	555.00	1,110.00	1,850.00
	Condensate Drain Piping	20	lf	130.00	2,600.00	195.00	3,900.00	6,500.00
	Equipment & Coil Hook-up Assemblies	2	ea	1,560.00	3,120.00	2,340.00	4,680.00	7,800.00
	subtototal							
233000	**HVAC AIR DISTRIBUTION**							
233100-233700	**HVAC Ducts and Casings**							
	Ductwork - galvanized	13,000	lbs	10.65	138450	15.97	207610	346060
	Smoke & Fire Dampers	2	ea	800.00	1,600.00	1,200.00	2,400.00	4,000.00
	Fire Dampers w/ access doors	16	ea	40.00	640.00	60.00	960.00	1,600.00
	Motorized Dampers	12	ea	183.00	2,196.00	425.00	5,100.00	7,296.00
	Duct wrap insulation, fiberglass, 1.5"	2,517	sf	1.00	2,517.00	2.00	5,034.00	7,551.00
	Duct internal liner, fiberglass - 1"	2,513	sf	2.00	5,026.00	3.00	7,539.00	12,565.00
	Supply air diffusers	50	ea	108.00	5,400.00	162.00	8,100.00	13,500.00
	Return air grilles	42	ea	71.00	2,982.00	7.00	294.00	3,276.00
	Linear supply & return	31	lf	30.00	930.00	45.00	1,395.00	2,325.00
	Linear supply plenum boxes	3	ea	227.00	681.00	340.00	1,020.00	1,701.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	Mechanical Louvers	44	sf	83.00	3,652.00	129.00	5,676.00	9,328.00
	Convection Heating and Cooling Units							
	VAV boxes w/ sound attenuator	20	ea	460.00	9,200.00	690.00	13800	23000
	Fans RF-9-1 & OAF-9-1	1	ea	1,280.00	1,280.00	1,920.00	1,920.00	3,200.00
	Fan RF-9-2	1	ea	640.00	640.00	960.00	960.00	1,600.00
	Fan OAF-9-2	1	ea	640.00	640.00	960.00	960.00	1,600.00
	Fan TEF-9-1	1	ea	640.00	640.00	960.00	960.00	1,600.00
	Variable Frequency Drives (Furnish Only)	2	ea	1,000.00	2,000.00	1,500.00	3,000.00	5,000.00
	subtototal							
238000	**AIR HANDLING UNITS**							
238119	***HVAC Equipment***							
	Self Contained Air Cooled Air Conditioner - AC-9-1	1	ea	4,000.00	4,000.00	6,000.00	6,000.00	10,000.00
	Self Contained Water Cooled Air Conditioner - AC-9-2	1	ea	4,000.00	4,000.00	6,000.00	6,000.00	10,000.00
	Condensate Pumps @ AC units	2	ea	100.00	200.00	150.00	300.00	500.00
	subtototal							
	DIVISION 26 - ELECTRICAL							
260000	**ELECTRICAL WORK**							
260500-260923	***General Electrical Requirements***							
	General Electrical Requirements		ls		30000		45000	75000
	Temporary Lighting		ls		11,800.00		17,700.00	29,500.00
	subtototal							
262000	**LOW-VOLTAGE ELECTRICAL TRANSMISSION**							
262416-262819	**Low-Voltage Electrical Transmission**							
	Branch Circuitry :							
	Lighting Circuitry							
	3/4" Emt, 4#12	1,000	LF	2.00	2,000.00	3.00	3,000.00	5,000.00
	MC Cable	1,800	LF	1.00	1,800.00	2.00	3,600.00	5,400.00
	3/4" Emt, 8#12	1,200	LF	2.00	2,400.00	2.00	2,400.00	4,800.00
	Plenum Cable	600	LF	6.00	3,600.00	10.00	6,000.00	9,600.00
	Chop Floor	600	LF	6.00	3,600.00	10.00	6,000.00	9,600.00
	Switches	50	EA	100.00	5,000.00	150.00	7,500.00	12,500.00
	OS Power Pack	27	EA	38.00	1,026.00	57.00	1,539.00	2,565.00
	Occupancy Sensor LV	8	EA	158.00	1,264.00	235.00	1,880.00	3,144.00
	Duplex Receptacles	23	EA	43.00	989.00	65.00	1,495.00	2,484.00
	Receptacles GFI	20	EA	37.00	740.00	56.00	1,120.00	1,860.00
	Receptacles Quad	9	EA	200.00	1,800.00	300.00	2,700.00	4,500.00
	Receptacle Simplex	7	EA	143.00	1,001.00	241.00	1,687.00	2,688.00
	Receptacles Dedic Copier	8	EA	125.00	1,000.00	188.00	1,504.00	2,504.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	DDC Panel 120v Connection	2	EA	1,300.00	2,600.00	1,950.00	3,900.00	6,500.00
	Motorized Damper Connection	2	EA	1,300.00	2,600.00	1,950.00	3,900.00	6,500.00
	VAV Connection	4	EA	2,150.00	8,600.00	3,225.00	12900	21500
	Manual Snap Switch Starter	15	EA	39.00	585.00	58.00	870.00	1,455.00
	Workstation	16	EA	875.00	14000	1,313.00	21008	35008
	Power Furniture Wall In-feed		EA		18000		27000	45000
	Install Furniture Recept FBO	36	EA	233.00	8,388.00	350.00	12600	20988.00
	subtototal							
	Power Circuitry							
	3/4" Emt, 4#10	2,300	LF	11.00	25300	17.00	39100	64400
	1 1/4" Emt, 4#2	500	LF	20.00	10000	30.00	15000	25000
	2" Emt, 3 3/0, #6G	600	LF	30.00	18000	45.00	27000	45000
	Term @ Ex 100 Amp Fused Switch	1	EA		4,000.00		6,000.00	10,000.00
	100 Amp Splice in Ex Riser Pullbox	1	EA		4,000.00		6,000.00	10,000.00
	200 Amp Splice in Ex Riser Pullbox	2	EA	2,000.00	4,000.00	3,000.00	6,000.00	10,000.00
	subtototal							
	Power Equipment							
	100 Amp Panel Board	2	EA	1,300.00	2,600.00	1,950.00	3,900.00	6,500.00
	225 Amp Panel Board	2	EA	1,300.00	2,600.00	1,950.00	3,900.00	6,500.00
	30/2 Amp Disconnect	2	EA	900.00	1,800.00	1,350.00	2,700.00	4,500.00
	30 Amp Disconnect	1	EA		1,800.00		2,700.00	4,500.00
	100 Amp Disconnect A/C	1	EA	1,900.00	1,900.00	2,850.00	2,850.00	4,750.00
	200 Amp Disconnect A/C	2	EA	364.00	728.00	456.00	912.00	1,640.00
	Install 10 HP VFD FBO	6	EA	304.00	1,824.00	456.00	2,736.00	4,560.00
	Install 20 HP VFD FBO		EA		2,600.00		3,900.00	6,500.00
	Install 50 HP VFD FBO		EA		3,800.00		5,700.00	9,500.00
	100 Amp Disconnect @ Pullbox	1	EA	1,000.00	1,000.00	1,500.00	1,500.00	2,500.00
	200 Amp Disconnect @ Pullbox	1	EA	1,000.00	1,400.00	2,100.00	2,100.00	3,500.00
	100 Amp Fuse		EA		1,000.00		1,500.00	2,500.00
	subtototal							
	Telecommunications System							
	Term Boards	2	EA	500.00	1,000.00	750.00	1,500.00	2,500.00
	1" EMT Cdt	300	LF	3.00	900.00	5.00	1,500.00	2,400.00
	Data Outlet Backbox w/ Stubup	6	EA	100.00	600.00	150.00	900.00	1,500.00
	Tel Outlet Backbox w/ Stubup	1	EA	840.00	840.00	1,260.00	1,260.00	2,100.00
	Floor T/D Outlet	3	EA	467.00	1,401.00	700.00	2,100.00	3,501.00
	T/D Furniture Wall In-feed	36	EA	39.00	1,404.00	58.00	2,088.00	3,492.00
	Install Furniture Device Backbox FBO	36	EA					

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material		Labor		Total
				Unit $	Cost	Unit $	Cost	Material + Labor
	subtototal							
	Security System (Empty Conduit)							
	3/4" Emt, 4#12		LF		1,800.00		2,700.00	4,500.00
	Card Reader Backbox, Stubup	1	EA	840.00	840.00	1,260.00	1,260.00	2,100.00
	Door Contact DC Backbox, Stubup	1	EA	1,824.00	1,824.00	2,736.00	2,736.00	4,560.00
	Electric Lock EL Roughin	1	EA	1,800.00	1,800.00	2,700.00	2,700.00	4,500.00
	Security Panel Backbox	1	EA	3,800.00	3,800.00	5,700.00	5,700.00	9,500.00
	Misc Demo, Removals		LS	2,160.00	2,160.00	3,240.00	3,240.00	5,400.00
	subtototal							
265000	**LIGHTING**							
265100-265200	**Interior and Emergency Lighting**							
	Lighting Fixtures							
	Type F1 2x2 Fluor Layin Dir/Indir	125	EA	186.00	23250	278.00	34750	58000
	Type F1EM	26	EA	1,138.00	29588	1,708.00	44408	73996
	Type F6 Indust Fluor Pend	6	EA	240.00	1,440.00	360.00	2,160.00	3,600.00
	Exit	14	EA					
	Type F2 Linear LED Pend	36	LF	72.00	2,592.00	108.00	3,888.00	6,480.00
	Type F2EM	12	LF	317.00	3,804.00	475.00	5,700.00	9,504.00
	Type F3 Linear LED Pend	92	LF	91.00	8,372.00	137.00	12604	20976
	Type F3EM	12	LF	150.00	1,800.00	225.00	2,700.00	4,500.00
	Type F5 UC	6	LF	300.00	1,800.00	450.00	2,700.00	4,500.00
	subtototal							
28	**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**							
283000	**ELECTRONIC DETECTION AND ALARM**							
283100	**Fire Detection and Alarm**							
	3" Rigid, Riser Cables	340	LF	8.00	2,720.00	11.00	3,740.00	6,460.00
	Riser Cables in ex Empty Cdt	120	LF	15.00	1,800.00	23.00	2,760.00	4,560.00
	3/4" Emt, 4#12	300	LF	5.00	1,500.00	7.00	2,100.00	3,600.00
	3/4" EMT Cdt	1,300	LF	1.00	1,300.00	2.00	2,600.00	3,900.00
	Teflon Cable	3,900	LF	1.00	3,900.00	1.00	3,900.00	7,800.00
	Pull Station	5	EA	248.00	1,240.00	372.00	1,860.00	3,100.00
	Audible/Visual	13	EA	98.00	1,274.00	148.00	1,924.00	3,198.00
	Smoke Detector	40	EA	65.00	2,600.00	98.00	3,920.00	6,520.00
	Strobe	11	EA	165.00	1,815.00	246.00	2,706.00	4,521.00
	Duct Detector	10	EA	164.00	1,640.00	246.00	2,460.00	4,100.00
	Warden Station	4	EA	185.00	740.00	278.00	1,112.00	1,852.00
	Central Equipment (tie into exist)	1	LS	3,800.00	3,800.00	5,700.00	5,700.00	9,500.00
	FSD Connections, 120v	4	EA	785.00	3,140.00	1,178.00	4,712.00	7,852.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material		Labor		Total
				Unit $	Cost	Unit $	Cost	Material + Labor
	subtotal							
	CONTRACT 1 - GENERAL CONSTRUCTION WORK				**1095879.8**		**1653518.2**	**2749398**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	Type F3 Linear LED Pend		LF					
	Type F3EM		LF					
	Type F5 UC		LF					
	subtotal							
28	**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**							
283000	**ELECTRONIC DETECTION AND ALARM**							
283100	**Fire Detection and Alarm**							
	3" Rigid, Riser Cables		LF					
	Riser Cables in ex Empty Cdt		LF					
	3/4" Emt, 4#12		LF					
	3/4" EMT Cdt		LF					
	Teflon Cable		LF					
	Pull Station		EA					
	Audible/Visual		EA					
	Smoke Detector		EA					
	Strobe		EA					
	Duct Detector		EA					
	Warden Station		EA					
	Central Equipment (tie into exist)		LS					
	FSD Connections, 120v		EA					
	subtotal				SEE COMPUTER PRINT-OUT ATTACHED			
	CONTRACT 1 - GENERAL CONSTRUCTION WORK				$1,099,759.20		$1,640,638.80	$2,734,398.00

DDC: MAYOR'S OFFICE OF CONTRACT SERVICES RENOVATION AT 253 BROADWAY, 9TH FLOOR NEW YORK 10007

Csi No	Ref.	Description	UNIT	QTY	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material & Labor
		CONTRACT 1 - GENRAL CONSTRUCTION WORK							
	01	**DIVISION 1 - GENERAL REQUIREMENTS**							
	010000	**GENERAL CONDITIONS**							
		Mobilization	LS	1					65,000.00
	02	**DIVISION 2 - EXISTING CONDITIONS**							
	020000	**DEMOLITION AND STRUCTURE MOVING**							
	020700	New Opening in existing load bearing walls at new ramp	LS	1					35,000.00
	03	**DIVISION 3 - CONCRETE**							
	033000	**CAST-IN-PLACE CONCRETE**							
	033100-033300	**Msicellaneous Cast-in-place Concrete**							
		Concrete Ramp	LF	21					24,000.00
	06	**DIVISION 6 - WOOD, PLASTICS AND COMPOSITES**							
	064000	**ARCHITECTURAL WOODWORK**							
	064100	**Architectural Wood Casework**							
		Base cabinets and countertops at pantry; Overall 15'-2" length x 7'-6" height	LS	1					8,500.00
		Base cabinets and countertops	LF	15					**6,500.00**
		(6) Adjustable shelving at laptop charging closet	EA	6					**3,500.00**
		Cap at low partitions; "OAK" - 5 1/2" wide	LF	31					**9,500.00**
	07	**DIVISION 7 - THERMAL AND MOISTURE PROTECTION**							
	072100	**BUILDING INSULATION**							
	079000	**JOINT SEALANTS**							
	08	**DIVISION 8 - DOORS AND WINDOWS/OPENINGS**							
	081000	**DOORS AND FRAMES**							

	081110	**Steel Doors and Frames**							
		Hollow metal doors and frames							
	1	HM Door, 36" x 7' x 1 3/4" thk, ptd HM frame, H/W 1	EA	4					9,500.00
	2	HM Door, 30" x 7' x 1 3/4" thk, ptd HM frame, H/W 1	EA	2					4,500.00
	3	HM Door, 36" x 7' x 1 3/4" thk, ptd HM frame, H/W 1N, Label C f.r 3/4 Hr	EA	6					16,200.00
	4	HM Door, 36" x 7' x 1 3/4" thk, ptd HM frame, H/W 1N, Label B f.r 1- 1/2 Hr	EA	1					2,560.00
	5	HM Door, 30" x 7' x 1 3/4" thk, ptd HM frame, H/W 1N, w/ 2' x 1' vent louver f.r 1/2 Hr	EA						
	6	Additional cost for door louver							
	7	HM Door, PR, 72" x 7', ptd HM frame, H/W 2A	EA						
	8	HM Door, PR, 48" x 7', ptd HM frame, H/W 2C	EA						
	9	HM Door, PR, 60" x 7', ptd HM frame, H/W 2E, w/ half glass 1/4' temp	EA						
	10	HM Door, PR, (36" + 16") x 7' ptd fr, H/W 2B, w/ 5" x 20" lite Lab B	EA	1					5,600.00
	11	Additional Cost for narrow lite	EA						
		Additional Items:							
	1	HM Door, PR, 72" x 7', ptd HM frame, H/W 2C, f.r 3/4 hrs	EA	2					6,500.00
	2	HM Door, PR, 60" x 7' x 1-3/4" thk, ptd HM frame, H/W 2C	EA	1					3,100.00
	084100	**Aluminium/Glass Doors**							
	1	Alum/glass Door, PR, 72" x 8', anod alum frame, H/W IN	EA	1					6,500.00
	2	Alum/glass Door, PR, 72" x 8', anod alum frame, H/W IN	EA	2					12,500.00
	3	36" x 7" x 1 3/4" thick single leaf 1/4" tempered glass door	EA	2					9,500.00
		Additional Items:							
	1	Alum/glass Door, PR, 28" x 8', anod alum frame, H/W IN	EA	2					7,420.00
	087000	**HARDWARE**							
	087100	**Door Hardware**							
	1	Type H/W1	EA	5					6,500.00
	2	Type H/W 1F	EA	1					650.00
	3	Type H/W 1C	EA						
	4	Type H/W 1N	EA	8					8,140.00

	5	Type H/W 2A	EA						
	6	Type H/W 2B	EA	1					1,254.00
	7	Type H/W 2C	EA	3					3,188.00
	8	Type H/W 2E	EA						
		Additional Items:							
	1	Type H/W 1D	EA	1					1,211.00
	2	Type H/W 1P	EA	1					1,485.00
	088000	**GLAZING**							
	088100	**Glass Glazing**							
		Borrowed Lights							
	1	Glass Partitions: tempered glass, borrowed lights							
	1.1	3'-4" length x 8' height 1/2" tempered glazing with structural silicone glazing butt joint	SF	27					4,980.00
	1.2	12'-8 3/8" length x 2'-10" height 1/2" tempered glazing with structural silicone glazing butt joint	SF	36					6,580.00
	1.3	8'-3" length x 2'-10" height 1/2" tempered glazing with structural silicone glazing butt joint	SF	24					4,880.00
	1.4	19'-3" length x 4' height 1/2" tempered glazing with structural silicone glazing butt joint	SF	77					12,000.00
	1.5	comprising of 14'-6 3/8" x 2'-10" height and 8'-8" x 4'-9"; 1/2" tempered glazing with structural silicone glazing butt joint	SF	165					21,400.00
	1.6	8'-2 1/8" length x 8'-0" height 1/2" tempered glazing with structural silicone glazing butt joint	SF	66					8,200.00
	2	Glass Partitions: wire glass, borrowed lights	SF	80					2,410.00
	3	(X-cost) Framing System	LF	420					18,500.00
	4	Note 24 replace glazing at w/w AC removals (25 No.)	SF						4,950.00
	09	**DIVISION 09 - FINISHES**							
	092000	**PLASTER AND GYPSUM BOARD**							
	092600	**Plaster and Gypsum Board Assemblies**							
		Wall Type 1							
	1	Metal stud partitions: One layer 5/8" GWB both sides, 3 5/8" studs, 2-3/4" fiberglass sound blanket, non-rated	SF	1936					24,500.00

		Wall Type 2							
	2	Metal stud partitions: One layer 5/8" GWB both sides, 3 5/8" studs, 2-3/4" fiberglass sound blanket, one hour rated	SF	1232					18,500.00
		Wall Type 3							
	3	Metal stud partitions: Two layers 5/8" GWB both sides, 3 5/8" studs, 2-3/4" fiberglass sound blanket, two hour rated	SF	116					3,800.00
		Wall Type 4							
	4	Double metal stud partitions: Two layers 5/8" GWB both sides, 3 5/8" studs, 3-1/2" thermafiber friction fit acoustic blanket, two-hour rated	SF	754					14,500.00
		Wall Type 5							
	5	Double metal stud partitions: Two layers 5/8" water resistant GWB both sides, 1 5/8" studs, 2 3/4" fiberglass sound blanket, two-hour rated, plumbing chase	SF	122					4,950.00
		Wall Type 8							
	6	Metal stud partitions: One layer 5/8" GWB both sides, 3 5/8" studs; continuous wood cap	SF	31					1,000.00
		Wall Type 11							
	7	One layer 5/8" GWB, 2 1/2" metal studs w/ 3 1/2" foil faced batt insulation furring on masonry wall	SF	8151					124,000.00
		Wall Type 15							
	8	One layer 5/8" GWB, furring on masonry wall	SF	420					4,850.00
		Wall Type 6							
	9	One layer 5/8" GWB, 1-5/8" metal studs with 1-1/2" foil faced rigid insulation board furring on masonry wall	SF	825					16,500.00
	10	Furring enclosures around columns, 2HR F.R	SF	614					14,500.00
		Additonal Items:							
	1	Two hour rated partition at new and existing locations. At existing locations contractor to certify and firesafe all voids/penetrations to ensure two hour rated assembly	SF	4350					105,000.00

	2	One hour rated partition at new and existing locations. At existing locations contractor to certify and firesafe all voids/penetrations to ensure one hour rated assembly	SF	158					3,500.00
		Gypsum Board							
	1	GWB ceiling soffits and bulkheads at window pockets	SF	1656					34,200.00
	093000	**TILE**							
	093100	**Ceramic Tile**							
	1	Ceramic floor tiling @ HC Toilet	SF	46					1,400.00
	1.1	Supply and install carpet tile	SF	10011					95,000.00
	2	Ceramic wall tiling @ HC Toilet	SF	222					4,850.00
	095000	**CEILINGS**							
	095100	**Acoustical Ceilings**							
	1	2' x 2' t suspended ceiling with exposed "T" grid, Type I fine fissured	SF	10258					148,500.00
	096000	**FLOORING**							
	096500	**Resilient Flooring**							
	1	Resilient tile flooring - Supply and install VCT	SF	1674					9,560.00
	2	Provide ARDEX self-leveling flooring throughout	SF	11729					38,500.00
		Resilient Base and Accessories							
	1	Vinyl cover base	LF	443					2,950.00
	099000	**PAINTING AND COATING**							
	099000	**Painting**							
	1	Paint at new doors and frames; singlke	EA	15					6,520.00
	2	Paint at new doors and frames; double	EA	1					450.00
	3	Paint at new GWB perimeter and interior partition and furred walls	SF	36571					91,500.00
	4	Paint at new GWB ceilings and soffits	SF	1656					
	10	**DIVISION 10 - SPECIALTIES**							
	102800	**TOILET ACCESSORIES**							
	108100	**Toilet and Bath Accessories**							
	1	C soap dispoenser	EA	1					125.00
	2	D Toilet tissue dispenser (2 rolls)	EA	1					250.00

	3	E Paper towel dispenser	EA	1					450.00
	4	H Stainless steel fixed mirror, 18" x 30"	EA	1					1,250.00
	108400	**Grab Bars**							
	1	A2 Steel grab bar 42"	EA	1					250.00
	2	A3 Steel grab bar 48"	EA	1					250.00
	12	**DIVISION 12 - FURNISHINGS**							
	122000	**WINDOW TREATMENTS**							
	125000	**Window Blinds**							
	1	Blinds; horizontal; "Levelor Sheerview", 8 gauge perforated aluminium mini blinds	SF						
	2	Window shades to be provided	EA	22					**15,480.00**
	3	Remove and replace extg window with architectural louver at MEC room	EA	2					**9,000.00**
	22	**DIVISION 22 - PLUMBING**							
	220000	**COMMON WORK RESULTS FOR PLUMBING**							
	220500-220553	**Plumbing Miscellaneous**							
	1	Core Drills, Firestopping	LS	1					9,850.00
	220700	**PLUMBING INSULATION**							
	221000	**PLUMBING PIPING**							
	221100	**Facility Water Distribution**							
		Domestic Water System							
	1	Copper Pipe, wrought Fittings, hangers - 2"	LF	30					4,500.00
	2	Copper Pipe, wrought Fittings, hangers - 1.5"	LF	40					5,900.00
	3	Copper Pipe, wrought Fittings, hangers - 1"	LF	50					6,900.00
	4	Copper Pipe, wrought Fittings, hangers - 3/4"	LF	100					7,900.00
	5	Copper Pipe, wrought Fittings, hangers - 1/2"	LF	1					150.00
	6	Domestic water pipe insulation	LF	210					2,700.00
	7	Domestic water pipe shut-off valves	EA	16					2,900.00
	8	Trap primer valves and runouts - allowance	EA	1					150.00
	9	Refrigerator valve box	EA	1					290.00
	10	Filter water to coffee and frig	EA	1					540.00
	11	Thermostatic mixing valve	EA	1					470.00
	12	Connect to existing piping	EA	1					610.00

	13	Domestic water misc specialties	LS	1					150.00
	221300	**Facility Sanitary Sewerage**							
		Sanitary Waste System							
	1	CI Pipe, no-hub, fittings, hangers - 1.5"	LF	130					9,300.00
	2	CI Pipe, no-hub, fittings, hangers - 2"	LF	50					6,800.00
	3	CI Pipe, no-hub, fittings, hangers - 4"	LF	25					2,500.00
	4	Connect to existing piping	EA	3					950.00
	5	Cleanouts	EA	11					1,500.00
	6	Floor drains at Mech Rooms	EA						
	223300	**Plumbing Equipment**							
		Plumbing Equipment							
	1	Instantaneous water heaters	EA	2					2,500.00
	224000	**Plumbing Fixtures**							
		Plumbing Fixtures							
	1	Water Closet, wall mnt, sensor flush - P-1	EA	1					1,850.00
	2	Lavatory, wall hung, sensor faucet - P-2	EA	1					2,500.00
	3	Counter sink, faucet - P-3	EA	1					2,350.00
	23	**DIVISION 23 -HVAC**							
	230000	**HEATING, VENTILATING AND AIR CONDITIONING (HVAC)**							
	230993	***General Mechanical Requirements***							
	1	General Mechanical Requirements	LS	1					20,000.00
	2	Commissioning and TAB	LS	1					145,000.00
	3	Exterior wall penetrations	LS	1					4,000.00
	4	Metal covers to existing convector, including GKD stainless steel mesh	LF						9,500.00
	232000	**HVAC PIPING AND PUMPS**							
	232116-232216	**Steam and Condensate Piping and Pumps**							
	1	Steam Piping, Sch 80 seamless, fittings, hangers - 2.5"	LF						3,500.00
	2	Steam Piping, Sch 80 seamless, fittings, hangers - 2"	LF						3,500.00
		CONDENSER WATER PIPING							
	1	Steam Condensate Piping, Sch 80 seamless, fittings, hangers - 2"	LF						1,500.00
	2	Steam Condensate Piping, Sch 80 seamless, fittings, hangers - 1.5"	LF						1,500.00

	3	Steam and Steam Condensate Pipe Insulation	LF						350.00
	4	Condenser Water Piping, Sch 40, fittings, hangers - 4"	LF						15,000.00
	5	Condenser Water Piping Insulation	LF						450.00
	6	Connect to existing condenser water riser	EA						1,850.00
	7	Condensate Drain Piping	LF						6,500.00
	8	Equipment and Coil Hook-up Assemblies	EA						7,800.00
	233000	**HVAC AIR DISTRIBUTION**							
	233100-233700	**HVAC Ducts and Casings**							
	1	Ductwork - galvanized	LBS						346,000.00
	2	Smoke and Fire Dampers	EA						4,000.00
	3	Fire Dampers w/ access doors	EA						1,600.00
	4	Motorized Dampers	EA						8,500.00
	5	Duct wrap insulation fiberglass, 1.5"	SF						8,500.00
	6	Duct Internal Liner, fiberglass - 1"	SF						12,000.00
	7	Supply Air Diffusers	EA						13,500.00
	8	Return Air Grilles	EA	28					7,500.00
	9	Linear Supply and return	LF						2,300.00
	10	Linear supply plenum boxes	EA						1,700.00
	11	Mechanical Louvers	SF						9,100.00
		Convection Heating and Cooling Units							
	1	VAV boxes with sound attenuator	EA						23,000.00
	2	Fans RF-9-1 & OAF 9-1	EA						3,200.00
	3	Fan RF 9-2	EA						1,600.00
	4	Fan OAF 9-2	EA						1,600.00
	5	Fan TEF 9-1	EA						1,600.00
	6	Variable Frequency Drives (Furnish Only)	EA						5,000.00
	238000	**AIR HANDLING UNITS**							
	238119	**HVAC Equipment**							
	1	Self Contained Air Cooled Air Conditioner - AC 9-1	EA						10,000.00
	2	Self Contained Water Cooled Air Conditioner - AC 9-2	EA						10,000.00
	3	Condensate Pumps at AC units	EA						500.00
		DIVISION 26 - ELECTRICAL							
	260000	**ELECTRICAL WORK**							
	260500-260923	***General Electrical Requirements***							
	1	General Electrical Requirements	LS						75,000.00

	2	Temporary Lighting	LS						29,500.00
	262000	**LOW VOLTAGE ELECTRICAL TRANSMISSION**							
	262416-262819	**Low Voltage Eelctrical Transmission**							
		Branch Circuitry							
		Lighting Circuitry							
	1	3/4" Emt, 4#12	LF						5,000.00
	2	MC Cable	LF						5,000.00
	3	3/4" Emt, 8#12	LF						4,500.00
	4	Plenum Cable	LF						9,560.00
	5	Chop Floor	LF						9,700.00
	6	Switches	EA						12,500.00
	7	OS Power Pack	EA						2,560.00
	8	Occupancy Sensor LV	EA						3,155.00
	9	Duplex Receptacles	EA						2,500.00
	10	Receptacles GFI	EA						1,850.00
	11	Receptacles Quad	EA						4,500.00
	12	Receptacles Simplex	EA						2,500.00
	13	Receptacles Dedic Copier	EA						2,500.00
	14	DDC Panel 120V Connection	EA						6,500.00
	15	Motorized Damper Connection	EA						6,500.00
	16	VAV Connection	EA						21,500.00
	17	Manual Snap Switch Starter	EA						1,450.00
	18	Workstation	EA						35,000.00
	19	Power Furniture Wall in-feed	EA						45,000.00
	20	Install Furniture Recept FBO	EA						21,000.00
		Power Circuitry							
	1	3/4" Emt, 4#10	LF						65,000.00
	2	1 1/4" Emt, 4#2	LF						25,000.00
	3	2" Emt, 3 3/0, #6G	LF						45,000.00
	4	Term @ Ex 100 Amp Fused Switch	EA						10,000.00
	5	100 Amp Splice in Ex Riser Pullbox	EA						10,000.00
	6	200 Amp Splice in Ex Riser Pullbox	EA						10,000.00
		Power Equipment							
	1	100 Amp Panel Board	EA						6,500.00
	2	225 Amp Panel Board	EA						6,500.00
	3	30/2 Amp Disconnect	EA						4,500.00
	4	30 Amp Disconnect	EA						4,500.00
	5	100 Amp Disconnect A/C	EA						9,500.00
	6	200 Amp Disconnect A/C	EA						9,500.00
	7	Install 10 HP VFD FBO	EA						4,560.00
	8	Install 20 HP VFD FBO	EA						6,500.00
	9	Install 50 HP VFD FBO	EA						9,500.00
	10	100 Amp Disconnect @ Pullbox	EA						2,500.00

	11	200 Amp Disconnect @ Pullbox	EA						3,500.00
	12	100 Amp Fuse	EA						2,500.00
		Telecommunications System							
	1	Term Boards	EA						2,500.00
	2	1" EMT Cdt	LF						2,500.00
	3	Data Outlet Bckbox with Stubup	EA						1,500.00
	4	Tel Outlet Backbox with Stubup	EA						2,100.00
	5	Floor T/D Outlet	EA						3,500.00
	6	T/D Furniture Wall in-feed	EA						3,500.00
	7	Install Furniture Device Backbox FBO	EA						
		Security System (Empty Conduit)							
	1	3/4" Emt, 4#12	LF						4,500.00
	2	Card Reader Backbox, Stubup	EA						2,100.00
	3	Door Contact DC Backbox, Stubup	EA						4,560.00
	4	Electric Lock EL Roughin	EA						4,500.00
	5	Security Panel Backbox	EA						9,500.00
	6	Misc Demo, Removals	LS						5,400.00
	265000	**LIGHTING**							
	265100-265200	**Interior and Emergency Lighting**							
		Lighting Fixtures							
	1	Type F1 2 x 2 Fluor Layin Dir/Indir	EA	129					58,000.00
	2	Type F1EM	EA	158					74,000.00
	3	Type F6 Indust Fluor Pend	EA	8					3,600.00
	4	Exit	EA						
	5	Type F2 Linear LED Pend	LF	22.1					6,500.00
	6	Type F2EM	LF	28.1					9,500.00
	7	Type F3 Linear LED Pend	LF	102.3					21,000.00
	8	Type F3EM	LF	8.2					4,500.00
	9	Type F5 UC	LF	6.2					4,500.00
	28	**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**							
	283000	**Electronic Detection and Alarm**							
	283100	**Fire Detection and Alarm**							
	1	3" Rigid, Riser Cables	LF						6,500.00
	2	Riser Cables in ex Empty Cdt	LF						4,500.00
	3	3/4" Emt, 4#12	LF						3,500.00
	4	3/4" Emt, Cdt	LF						3,500.00
	5	Teflon Cable	LF						2,500.00
	6	Pull Station	EA						3,100.00
	7	Audible/Visual	EA						3,200.00
	8	Smoke Detector	EA	40					6,500.00
	9	Strobe	EA						4,500.00

SAFETY QUESTIONNAIRE

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

1. Bidder Information:

Company Name: The Urban Group, Ltd

DDC Project Number: RFQ - Reconstruction and Restoration of Landmark and Landmark Quality Buildings

Company Size: _____ Ten (10) employees or less

35 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	X	X
Residential Building Construction		
Nonresidential Building Construction	X	X
Heavy Construction, except building		
Highway and Street Construction		
Heavy Construction, except highways		
Plumbing, Heating, HVAC		
Painting and Paper Hanging	X	X
Electrical Work		
Masonry, Stonework and Plastering	X	X
Carpentry and Floor Work	X	X
Roofing, Siding, and Sheet Metal	X	X
Concrete Work	X	X
Specialty Trade Contracting		
Asbestos Abatement		
Other (specify)		
_____	_____	_____

3. Experience Modification Rate:

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

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

YEAR	INTRASTATE RATE	INTERSTATE RATE
2012	.87	.87
2011	.88	.88
2010	.93	.93

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

NONE — 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	55,500	0
2011	48,000	0
2010	42,240	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)

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

DDC Project Number(s): _____

NONE — Accident on previous DDC Project(s).

NONE — 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: 8/1/13

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

Title: PRESIDENT

Year 20 10

Department of Consumer & Business Services
Oregon Occupational Safety & Health Division (OR-OSHA)

OSHA Form 300
Log of Work-Related Injuries and Illnesses

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

You must record information about every work- related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity, job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related illnesses that are diagnosed by a physician or licensed health-care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in OAR 437-001-0700. Use more lines for each case if needed. You must complete an Injury and Illness Incident Report (DCBS form 801) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OR-OSHA office for help.

Establishment name: The Urban Group, Ltd.

City: Woodhaven State: NY

Identify the person		Describe the case				Classify the case											
						Using these 4 categories, enter "1" in only the most serious result for each case:*				**Enter the number of days the injured / worker was:**		**Enter "1" in the "injury" column or choose one type of illness:*** (M)					
(A) Case no.	(B) Employee's name	(C) Job title (*e.g., "welder"*)	(D) Date of injury or illness	(E) Where the event occurred (*e.g., "loading dock - north end"*)	(F) Describe Injury/Illness, parts of body affected, and object/substance that directly injured or made person ill (*e.g., "second degree burns on right forearm from acetylene torch"*)	Death (G)	Days away from work (H)	Remained at work: Job transfer or restriction (I)	Remained at work: Other recordable cases (J)	Away from work (K)	On job transfer or restriction (L)	Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)
NONE						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
					Page Totals	0	0	0	0	0 days	0 days	0	0	0	0	0	0
												Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)

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

*** Using "1" instead of an "x" allows the columns to total automatically.**

OSHA Form 300A
Summary of Work-Related Injuries and Illnesses

Year 20 10

Department of Consumer & Business Services
Oregon Occupational Safety &
Health Division (OR-OSHA)

Form approved OMB no. 1218-0176

All establishments covered by OAR 437-001-0700 must complete this Summary, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the *Log*: count the individual entries you made for each category, write the totals below, make sure you've added the entries from every page of the *Log*. If you haven't had any cases, write "0".

Employees, former employees, and their representatives, have the right to review the OSHA Form 300 in its entirety. They also have limited access to the *DCBS Form 801* or its equivalent. See OAR 437-001-0700(20)

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of...	(M)		
(1) Injuries	0	(4) Poisonings	0
(2) Skin disorders	0	(5) Hearing Loss	0
(3) Respiratory conditions	0	(6) All other illnesses	0

Keep this Summary posted from February 1 to April 30 of the year following the year covered by this form.

440-3353B (11/01)

(OR-OSHA/COM)

Establishment Information

Your establishment name The Urban Group, Ltd.

Street 76-08 Rockaway Blvd

City Woodhaven State NY ZIP 11421

Industry description *(e.g., Manufacturer of motor truck trailers)*
General Construction

Standard Industrial Classification (NAICS), if known (e.g.,336212)

____ ____ ____ ____

Employment Information (If you don't have these figures, see the worksheet on the back of this page to estimate.)

Annual average number of employees 25

Total hours worked by all employees last year 45,500

Sign here
Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that , to the best of my knowledge, the entries are true, accurate, and complete.

Gewan Bharatlall — *Company Executive*

President — *Title*

Phone: (718) 521-1141 x 203 Date: 04 / 7 / 2010

OSHA Form 300

Log of Work-Related Injuries and Illnesses

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

Year 20 11

Department of Consumer & Business Services
Oregon Occupational Safety & Health Division (OR-OSHA)

You must record information about every work- related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity, job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related illnesses that are diagnosed by a physician or licensed health-care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in OAR 437-001-0700. Use more lines for each case if needed. You must complete an Injury and Illness Incident Report (DCBS form 801) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OR-OSHA office for help.

Establishment name: The Urban Group, Ltd.

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Identify the person			Describe the case			Classify the case											
						Using these 4 categories, enter "1" in only the most serious result for each case:*				**Enter the number of days the injured / worker was:**		**Enter "1" in the "injury" column or choose one type of illness:*** (M)					
(A) Case no.	(B) Employee's name	(C) Job title (*e.g., "welder"*)	(D) Date of injury or illness	(E) Where the event occurred (*e.g., "loading dock - north end"*)	(F) Describe Injury/Illness, parts of body affected, and object/substance that directly injured or made person ill (*e.g., "second degree burns on right forearm from acetylene torch"*)	Death (G)	Days away from work (H)	Remained at work: Job transfer or restriction (I)	Remained at work: Other record-able cases (J)	Away from work (K)	On job transfer or restriction (L)	Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)
NONE						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
					Page Totals	0	0	0	0	0 days	0 days	0	0	0	0	0	0
												Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)

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

*** Using "1" instead of an "x" allows the columns to total automatically.**

OSHA Form 300A
Summary of Work-Related Injuries and Illnesses

Year 20 11

Department of Consumer & Business Services
Oregon Occupational Safety &
Health Division (OR-OSHA)

Form approved OMB no. 1218-0176

All establishments covered by OAR 437-001-0700 must complete this Summary, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the *Log*: count the individual entries you made for each category, write the totals below, make sure you've added the entries from every page of the *Log*. If you haven't had any cases, write "0".

Employees, former employees, and their representatives, have the right to review the OSHA Form 300 in its entirety. They also have limited access to the *DCBS Form 801* or its equivalent. See OAR 437-001-0700(20)

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0 (G)	0 (H)	0 (I)	0 (J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0 (K)	0 (L)

Injury and Illness Types

Total number of...	(M)		
(1) Injuries	0	(4) Poisonings	0
(2) Skin disorders	0	(5) Hearing Loss	0
(3) Respiratory conditions	0	(6) All other illnesses	0

Keep this Summary posted from February 1 to April 30 of the year following the year covered by this form.

440-3353B (11/01)

(OR-OSHA/COM)

Establishment Information

Your establishment name The Urban Group, Ltd.

Street 76-08 Rockaway Blvd

City Woodhaven State NY ZIP 11421

Industry description *(e.g., Manufacturer of motor truck trailers)*
General Construction

Standard Industrial Classification (NAICS), if known (e.g.,336212)

____ ____ ____ ____

Employment Information (If you don't have these figures, see the worksheet on the back of this page to estimate.)

Annual average number of employees 25

Total hours worked by all employees last year 45,500

Sign here
Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that , to the best of my knowledge, the entries are true, accurate, and complete.

Gewan Bharatlall — *Company Executive*
President — *Title*

Phone: (718) 521-1141 x 203 Date: 12 / 14 / 2011

OSHA Form 300
Log of Work-Related Injuries and Illnesses

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

Year 20 12

Department of Consumer & Business Services
Oregon Occupational Safety & Health Division (OR-OSHA)

You must record information about every work- related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity, job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related illnesses that are diagnosed by a physician or licensed health-care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in OAR 437-001-0700. Use more lines for each case if needed. You must complete an Injury and Illness Incident Report (DCBS form 801) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OR-OSHA office for help.

Establishment name: The Urban Group, Ltd.
City: Woodhaven State: NY

Identify the person		Describe the case				Classify the case											
						Using these 4 categories, enter "1" in only the most serious result for each case:*				Enter the number of days the injured / worker was:		Enter "1" in the "injury" column or choose one type of illness:* (M)					
(A) Case no.	(B) Employee's name	(C) Job title (*e.g., "welder"*)	(D) Date of injury or illness	(E) Where the event occurred (*e.g., "loading dock - north end"*)	(F) Describe Injury/Illness, parts of body affected, and object/substance that directly injured or made person ill (*e.g., "second degree burns on right forearm from acetylene torch"*)	Death (G)	Days away from work (H)	Remained at work: Job transfer or restriction (I)	Remained at work: Other record-able cases (J)	Away from work (K)	On job transfer or restriction (L)	Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)
NONE						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
						0	0	0	0	days	days	0	0	0	0	0	0
					Page Totals	0	0	0	0	0 days	0 days	0	0	0	0	0	0
												Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)

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

*** Using "1" instead of an "x" allows the columns to total automatically.**

OSHA Form 300A
Summary of Work-Related Injuries and Illnesses

Year 20 12

Department of Consumer & Business Services
Oregon Occupational Safety &
Health Division (OR-OSHA)

Form approved OMB no. 1218-0176

All establishments covered by OAR 437-001-0700 must complete this Summary, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the *Log*: count the individual entries you made for each category, write the totals below, make sure you've added the entries from every page of the *Log*. If you haven't had any cases, write "0".

Employees, former employees, and their representatives, have the right to review the OSHA Form 300 in its entirety. They also have limited access to the *DCBS Form 801* or its equivalent. See OAR 437-001-0700(20)

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of...	(M)		
(1) Injuries	0	(4) Poisonings	0
(2) Skin disorders	0	(5) Hearing Loss	0
(3) Respiratory conditions	0	(6) All other illnesses	0

Keep this Summary posted from February 1 to April 30 of the year following the year covered by this form.

440-3353B (11/01)

(OR-OSHA/COM)

Establishment Information

Your establishment name The Urban Group, Ltd.

Street 76-08 Rockaway Blvd

City Woodhaven State NY ZIP 11421

Industry description *(e.g., Manufacturer of motor truck trailers)*
General Construction

Standard Industrial Classification (NAICS), if known (e.g.,336212)

____ ____ ____ ____

Employment Information (If you don't have these figures, see the worksheet on the back of this page to estimate.)

Annual average number of employees 35

Total hours worked by all employees last year 55,500

Sign here
Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that , to the best of my knowledge, the entries are true, accurate, and complete.

Gewan Bharatlall — *Company Executive*

President — *Title*

Phone: (718) 521-1141 x 203

Date: 12 / 14 / 2012

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
M916 - St Joseph The Holy Family 168 Morning Side Ave. Manhattan, NY 10027	Lump Sum	13,9994,000	September 2012	NYCSCA Michael Natale 917-208-7499	SBLM Architects 212-995-5600
Coney Island Hospital - Emergency Room Extension 2601 Ocean Parkway, Brooklyn, NY 11235	Lump Sum	$5,200,000	November 2012	NYC HHC Thomas Kaczur 718-648-3374	Goldman Copelan Associates 520 Eight Ave. New York, NY 10018
Medgar Evers College - New Technical Building Site Work & Flooring Contract 123 Crown Street, Brooklyn, NY 11225	Lump Sum	$2,500,000	December 2010	DASNY Robert Thelian 718-467-0340	Polshex Partnership Architects 212-807-7171
Richmond Supreme Court - Home Front Location 18 Richmond Terrace, Staten Island, NY	Lump Sum	$2,300,000	October 2010	DCAS Greg Gerfolo 212-669-4044	NYCDCAS Arthur Arnold 212-669-7022

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
PS 97(X) 1375 Mace Ave. Bronx, NY 10469	PLA Lump Sum	$3,680,068	$1,100,000		November, 2014	NYCSCA 718-472-8000	Di Domenico & Partners 212-337-0400
PS 233 (Q) 114-34 142nd Street Jamaica, NY 11436	PLA Lump Sum	#3,610,000	$1,000,000		August, 2014	NYCSCA 718-472-8000	Susan Doban Architect 718-798-1041
PS 54 (K) 195 Sandford Street Brooklyn, NY 11205	PLA Lump Sum	$1,304,000	$600,000		August 2014	NYC SCA 718-472-8000	Shenoy Engineering 212-807-9500
MTA ESA GCT 48th and Madison NY, NY 10017	Lump Sum	$1,889,501	$400,000		November 2013	MTA Capital Construction 718-391-4743	Nick Schiavone 917-705-4385

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

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: The Urban Group Ltd.
Bidder's Address: 76-08 Rockaway Blvd. Woodhaven, NY 11421
Bidder's Telephone Number: 718-521-1141
Bidder's Fax Number: 718-521-1142
Date of Bid Opening: 08/16/13
Project ID: PW357MOCS

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

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

Date of Submission: _____

By: _____
(Signature of Partner or corporate officer)

Print Name: _____

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

By: _____
(Signature of Partner or corporate officer)

Print Name: Gewan Bharatlall

Certificate of No Change Form

Mayor's Office of Contract Services

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

I, Gewan Bharatlall, 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: The Urban Group Ltd.

Vendor's Address: 76-08 Rockaway Blvd. Woodhaven, NY 11421

Vendor's EIN or TIN: 11-3528566 Requesting Agency: Department of Design and Construction

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: 6/29/2010

Signature date on change submission for the submitting vendor: N/A

incipal Questionnaire

s section refers to the most recent principal questionnaire submissions.

NYC
Mayor's Office of Contract Services

Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
Gewan Bharatlall	6/29/2010	N/A

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

ertification *This section is required.*

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

Certified By:

Gewan Bharatlall
Name (Print)

President
Title

The Urban Group Ltd.
Name of Submitting Entity

Signature

08/16/13
Date

Notarized By:

Yonette J. Graham
Notary Public

New York
County License Issued

01GR6198232
License Number

Sworn to before me on: 08/16/13
Date

YONETTE J GRAHAM
Notary Public, State of New York
No. 01GR6198232
Qualified in New York County
Commission Expires December 15, 2016

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: August, New York
16th, 20 13

SIGNATURE

Gewan Bharatlall
PRINTED NAME

President
TITLE

Sworn to before me this
15th day of Aug, 2013

Yonette J. Graham
Notary Public

Dated:

YONETTE J GRAHAM
Notary Public, State of New York
No. 01GR6198232
Qualified in New York County
Commission Expires December 15, 2016

CITY OF NEW YORK

DIVISION OF LABOR SERVICES

CONSTRUCTION EMPLOYMENT REPORT

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 X Subcontractor ____

1a. Are M/WBE goals attached to this project? Yes ____ No X

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:
X Minority Owned Business Enterprise
___Women Owned Business Enterprise
___Locally based Business Enterprise
___Emerging Business Enterprise

2a. If you are certified as an **MBE, WBE,** or **LBE,** what city/state agency are you certified with?
New York State Are you DBE certified? Yes X No ____

3. Please indicate if you would like assistance from SBS in identifying certified M/WBEs for contracting opportunities: Yes X No ___

4. Is this project subject to a project labor agreement? Yes X No ____

PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION

5. 11-3528566 ken@theurbangroupltd.com
Employer Identification Number or Federal Tax I.D./ Email Address

6. The Urban Group Ltd.
Company Name

7. 76-08 Rockaway Blvd. Woodhaven NY 11421
Company Address and Zip Code

8. Gewan Bharatlall 718-521-1141
Chief Operating Officer Telephone Number

9 same 718-521-1142
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: 30+

FOR OFFICIAL USE ONLY: File No.

12. Contract information:

(a) DDC
Contracting Agency (City Agency)

(b) _____
Contract Amount

(d) 8502014HR0001C
Procurement Identification Number (PIN)

(e) _____
Contract Registration Number (CT#)

(f) 08/16/13
Projected Commencement Date

(g) 100 ccds
Projected Completion Date

(h) Description and location of proposed contract:
Mayor's Office of Contract Services Renovation

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 X

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 X

If yes, attach a copy of certificate.

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

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 X 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 X

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 X

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 X

If yes, is the medical examination given:

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

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

_____

_____

22. Do you have a written equal employment opportunity (EEO) policy? Yes___ No X

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

_____

_____

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 X

If yes, please attach a copy of this policy.

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

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 X

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 X

If yes, attach a log. See instructions.

27. Are there any jobs for which there are physical qualifications? Yes___ No X

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

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 X

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

SIGNATURE PAGE

I, (print name of authorized official signing) Gewan Bharatlall 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.

The Urban Group Ltd.
Contractor's Name

Ryan Naipaul — Office Manager
Name of person who prepared this Employment Report — Title

Gewan Bharatlall — President
Name of official authorized to sign on behalf of the contractor — Title

718-521-1141
Telephone Number

Signature of authorized official — 08/16/13 Date

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

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

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

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

Only original signatures accepted.

Sworn to before me this 15TH day of August 20 13

Ynette J. Graham — Notary Public
Authorized Signature
8/15/13 — Date

YONETTE J GRAHAM
Notary Public, State of New York
No. 01GR6198232
Qualified in New York County
Commission Expires December 15, 2016

FOR OFFICIAL USE ONLY: File No._____

NOTICE TO BIDDERS:

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

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

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

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

SPECIAL NOTICE TO BIDDERS

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

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

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

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

BID BOOKLET
PART A

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PROJECT ID: PW357MOCS

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

BID BOOKLET

TABLE OF CONTENTS

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

SPECIAL NOTICE TO BIDDERS

BID SUBMISSION REQUIREMENTS

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

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

- Bid Form, including Affirmation
- Bid Security (if required, see page 22)
- Schedule B: M/WBE Utilization Plan (if participation goals have been established)

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

- Bidder's Identification of Subcontractors (see pages 16 & 17)

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

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

- Bid Breakdown (if required, see page 21)
- Safety Questionnaire
- Construction Employment Report (if bid is $1,000,000 or more)
- Contract Certificate (if bid is less than $1,000,000)
- Confirmation of Vendex Compliance
- Bidder's Certification of Compliance with Iran Divestment Act
- Special Experience Requirements Qualification Form (if required, see pages 3, 4)
- Any Addenda issued prior to the receipt of bids

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

NOTES: (1) All of the above referred to blank forms to be completed and submitted with the bid are included in the BID BOOKLET.

(2) If the bidder has any questions or requires additional information, please contact the Department of Design and Construction by phone (718-391-2601) or by fax (718-391-2615).

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

(4) SPECIAL EXPERIENCE REQUIREMENTS: The Bidder is advised that Special Experience Requirements may apply to this contract. Such requirements are set forth on pages 3 and 4 of this Bid Booklet.

(5) SPECIAL EXPERIENCE REQUIREMENTS FOR ASBESTOS: The Bidder is advised that this contract contains strict requirements regarding the prior experience and licensing of the subcontractor who will perform any required asbestos abatement work. These special experience requirements are set forth in the section of the specifications which describes any required asbestos abatement work.

SPECIAL EXPERIENCE REQUIREMENTS

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: PW357MOCS

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

Name of Contractor: _____

Name of Project: _____

Location of Project: _____

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

Name: _____

Title: _____ Phone Number: _____

Brief description of work completed: _____

_____

_____

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

Amount of Contract: _____

Date of Completion: _____

****

Name of Contractor: _____

Name of Project: _____

Location of Project: _____

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

Name: _____

Title: _____ Phone Number: _____

Brief description of work completed: _____

_____

_____

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

Amount of Contract: _____

Date of Completion: _____

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MWBE PROGRAM

M/WBE UTILIZATION PLAN

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

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

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

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

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

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

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NOTICE TO ALL PROSPECTIVE CONTRACTORS

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

ARTICLE I. M/WBE PROGRAM

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

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

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

PART A

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PART B: MISCELLANEOUS

1. The Contractor shall take notice that, if this solicitation requires the establishment of an **M/WBE** Utilization Plan, the resulting contract may be audited by DSBS to determine compliance with Section 6-129. See §6-129(e)(10). Furthermore, such resulting contract may also be examined by the City's Comptroller to assess compliance with the **M/WBE** Utilization Plan.

2. Pursuant to DSBS rules, construction contracts that include a requirement for an **M/WBE** Utilization Plan shall not be subject to the law governing Locally Based Enterprises set forth in Section 6-108.1 of the Administrative Code of the City of New York.

3. DSBS is available to assist contractors and potential contractors in determining the availability of MBEs and/or WBEs to participate as subcontractors, and in identifying opportunities that are appropriate for participation by MBEs and/or WBEs in contracts.

4. Prospective contractors are encouraged to enter into qualified joint venture agreements with MBEs and/or WBEs as defined by Section 6-129(c)(30).

5. By submitting a bid or proposal the Contractor hereby acknowledges its understanding of the M/WBE Program requirements set forth herein and the pertinent provisions of Section 6-129, and any rules promulgated thereunder, and if awarded this Contract, the Contractor hereby agrees to comply with the M/WBE Program requirements of this Contract and pertinent provisions of Section 6-129, and any rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract. The Contractor hereby agrees to make all reasonable, good faith efforts to solicit and obtain the participation of MBEs and/or WBEs to meet the required **Participation Goals.**

ARTICLE II. ENFORCEMENT

1. If Agency determines that a bidder or proposer, as applicable, has, in relation to this procurement, violated Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, Agency may disqualify such bidder or proposer, as applicable, from competing for this Contract and the Agency may revoke such bidder's or proposer's prequalification status, if applicable.

2. Whenever Agency believes that the Contractor or a subcontractor is not in compliance with Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to any **M/WBE** Utilization Plan, Agency shall send a written notice to the Contractor describing the alleged noncompliance and offering the Contractor an opportunity to be heard. Agency shall then conduct an investigation to determine whether such Contractor or subcontractor is in compliance.

3. In the event that the Contractor has been found to have violated Section 6-129, the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to, any **M/WBE** Utilization Plan, Agency may determine that one of the following actions should be taken:

(a) entering into an agreement with the Contractor allowing the Contractor to cure the violation;
(b) revoking the Contractor's pre-qualification to bid or make proposals for future contracts;
(c) making a finding that the Contractor is in default of the Contract;
(d) terminating the Contract;
(e) declaring the Contractor to be in breach of Contract;
(f) withholding payment or reimbursement;
(g) determining not to renew the Contract;
(h) assessing actual and consequential damages;

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

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

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

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

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

Tax ID #: _____

APT E-PIN#: **85014B0025**

Contract # 1 - General Construction Work

SCHEDULE B - M/WBE Utilization Plan

Part I: M/WBE Participation Goals

Part I to be completed by contracting agency

Contract Overview

APT E-Pin #	**85014B0025**	**FMS Project ID#:**	**PW357MOCS**
Project Title/Agency	Mayor's Office of Contract Services Renovation		
PIN #	**8502014HR0001C**		
Bid/Proposal Response Date:	**August 16, 2013**		
Contracting Agency	Department of Design and Construction		
Agency Address	30-30 Thomson Avenue **City** Long Island City **State** NY **Zip Code** 11101		
Contact Person	Jim Cerasoli **Title** Deputy Director		
Telephone #	(718) 391-1549 **Email** cerasoli@ddc.nyc.gov		

Project Description *(attach additional pages if necessary)*

This project includes interior renovation work: the demolition of all existing interior walls, mechanical equipment and floor finishes. The new construction work includes installation of new mechanical system, ADA toilet, pantry, new walls and floor finishes and furniture layout as per DCAS open floor guideline and a new ceiling system.

M/WBE Participation Goals for Services

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

Prime Contract Industry: **Construction**

Group	Percentage	
Unspecified	**15**	%
or		
Black American	**0**	%
Hispanic American	**0**	%
Asian American	**0**	%
Women	**0**	%
Total Participation Goals	**15**	% **Line 1**

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Tax ID #: _____ APT E-

PIN#: _____

SCHEDULE B - Part II: M/WBE Participation Plan

Part II to be completed by the bidder/proposer:

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

Section I: Prime Contractor Contact Information

Tax ID # _____ **FMS Vendor ID #** _____

Business Name _____ **Contact Person** _____

Address _____

Telephone # _____ **Email** _____

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

PRIME CONTRACTOR ADOPTING AGENCY M/WBE PARTICIPATION GOALS

☐ **For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Agency M/WBE Participation Goals.**

Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture.

Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.

Total Bid/Proposal Value		Agency Total Participation Goals (Line 1, Page 1)		Calculated M/WBE Participation Amount
$	X		=	$ Line 2

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

☐ **For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Modified M/WBE Participation Goals.**

Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture.

Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.

Total Bid/Proposal Value		Adjusted Participation Goal (From Partial Waiver)		Calculated M/WBE Participation Amount
$	X		=	$ Line 3

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

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

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

☐ MBE ☐ WBE

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

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

Section IV: General Contract Information

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

✓ Scopes of Subcontract Work

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

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

Section V: Vendor Certification and Required Affirmations

I hereby:

1) acknowedge my understanding of the M/WBE participation requirements as set forth herein and the pertinent provisions of Section 6-129 of the Administrative Code of the City of New Yo9rk (Section 6-129), and the rules promulgated thereunder;

2) affirm that the information supplied in support of this M/WBE Utilization Plan is true and correct;

3) agree, if awarded this Contract, to comply with the M/WBE participation requirements of this Contract, the pertinent provisions of Section 6-129, and the rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract

4) agree and affirm that it is a maerial term of this Contract that the Vendor will award the total dollar value of the M/WBE Participation Goals to certified MBEs and/or WBEs, unless a full waiver is obtained or such goals are modfied by the Agency; and

5) agree and affirm, if awarded this Contract, to make all reasonable, good faith efforts to meet the M/WBE Participation Goals, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms.

Signature _____ Date _____

Print Name _____ Title _____

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

Contract Overview

Tax ID # ______________________ **FMS Vendor ID #** ______________________

Business Name ____

Contact Name ________________ **Telephone #** ________________ **Email** ________________

Type of Procurement ☐ **Competitive Sealed Bids** ☐ **Other** **Bid/Response Due Date** ________________

APT E-PIN # (for this procurement): ______________________ **Contracting Agency:** ______________________

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

__________ % **Agency M/WBE Participation Goal**

Proposed M/WBE Participation Goal ***as anticipated by vendor seeking waiver***

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

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

☐ **Vendor does not subcontract services, and has the capacity and good faith intention to perform all such work itself with its own employees.**

☐ **Vendor subcontracts *some* of this type of work but at a *lower* % than bid/solicitation describes, and has the capacity and good faith intention to do so on this contract. (Attach subcontracting plan outlining services that the vendor will self-perform and subcontract to other vendors or consultants.)**

☐ **Vendor has other legitimate business reasons for proposing the M/WBE Participation Goal above. Explain under separate cover.**

References

List 3 most recent contracts performed for NYC agencies (if any). Include information for each subcontract awarded in performance of such contracts. Add more pages if necessary.

CONTRACT NO. __________ **AGENCY** __________ **DATE COMPLETED** __________

Total Contract Amount $ __________ **Total Amount Subcontracted** $ __________

Item of Work Subcontracted and Value of subcontract __________ Item of Work Subcontracted and Value of subcontract __________ Item of Work Subcontracted and Value of subcontract __________

CONTRACT NO. __________ **AGENCY** __________ **DATE COMPLETED** __________

Total Contract Amount $ __________ **Total Amount Subcontracted** $ __________

Item of Work Subcontracted and Value of subcontract __________ Item of Work Subcontracted and Value of subcontract __________ Item of Work Subcontracted and Value of subcontract __________

CONTRACT NO. __________ **AGENCY** __________ **DATE COMPLETED** __________

Total Contract Amount $ __________ **Total Amount Subcontracted** $ __________

Item of Work Subcontracted and Value of subcontract __________ Item of Work Subcontracted and Value of subcontract __________ Item of Work Subcontracted and Value of subcontract __________

List 3 most recent contracts performed for other entities. Include information for each subcontract awarded in performance of such contracts. Add more pages if necessary.

(Complete ONLY if vendor has performed fewer than 3 New York City contracts.)

TYPE OF Contract _____ **ENTITY** _____ **DATE COMPLETED** _____

Manager at entity that hired vendor (Name/Phone No./Email) _____

Total Contract Amount $ _____ **Total Amount Subcontracted** $ _____

Type of Work Subcontracted _____ _____ _____

_____

TYPE OF Contract _____ **AGENCY/ENTITY** _____ **DATE COMPLETED** _____

Manager at agency/entity that hired vendor (Name/Phone No./Email) _____

Total Contract Amount $ _____ **Total Amount Subcontracted** $ _____

Item of Work Subcontracted and Value of subcontract _____ Item of Work Subcontracted and Value of subcontract _____ Item of Work Subcontracted and Value of subcontract _____

_____

TYPE OF Contract _____ **AGENCY/ENTITY** _____ **DATE COMPLETED** _____

Manager at entity that hired vendor (Name/Phone No./Email) _____

Total Contract Amount $ _____ **Total Amount Subcontracted** $ _____

Item of Work Subcontracted and Value of subcontract _____ Item of Work Subcontracted and Value of subcontract _____ Item of Work Subcontracted and Value of subcontract _____

_____

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

Signature: _____ **Date:** _____

Print Name: _____ **Title:** _____

Shaded area below is for agency completion only

AGENCY CHIEF CONTRACTING OFFICER APPROVAL

Signature: _____ **Date:** _____

CITY CHIEF PROCUREMENT OFFICER APPROVAL

Signature: _____ **Date:** _____

Waiver Determination

Full Waiver Approved: ☐

Waiver Denied: ☐

Partial Waiver Approved: ☐

Revised Participation Goal: _____%

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

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

PROJECT ID: PW357MOCS

Mayor's Office of Contract Services Renovation
253 Broadway, 9th Floor
Manhattan 10007

Name of Bidder: _____

Date of Bid Opening: _____

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

Place of Business of Bidder: _____

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

Bidder's Email Address: _____

Residence of Bidder (If Individual): _____

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

Names of Partners	Residence of Partners
_____	_____
_____	_____
_____	_____

If Bidder is a Corporation, fill in the following blanks:
Organized under the laws of the State of _____

Name and Home Address of President: _____
_____

Name and Home Address of Secretary: _____
_____

Name and Home Address of Treasurer:
_____

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BID FORM

The above-named Bidder affirms and declares:

1. The said bidder is of lawful age and the only one interested in this bid; and no person, firm or corporation other than hereinbefore named has any interest in this bid, or in the Contract proposed to be taken.

2. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) unless otherwise required by law, the prices quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

3. No councilman or other officer or employee or person whose salary is payable in whole or in part from the City Treasury is directly or indirectly interested in this bid, or in the supplies, materials, equipment, work or labor to which it relates, or in any of the profits thereof.

4. The bidder is not in arrears to the City of New York upon debt or contract or taxes, and is not a defaulter, as surety or otherwise, upon any obligation of the CIty of New York, and has not been declared not responsible, or disqualified, by any agency of the City of New York or State of New York, nor is there any proceeding pending relating to the responsibility or qualification of the bidder to receive public contracts except as set forth on the Affirmation included as page 17 of this Bid Booklet.

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

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

6. Compliance Report

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

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

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

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

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

BID FORM

PROJECT ID: PW357MOCS

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

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

Total Price for Material Sold and Delivered		Total Price For Labor		
$_____	+	$_____	Total Price for Item A=	$_____

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

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

BIDDER'S SIGNATURE AND AFFIDAVIT

* **SUBCONTRACTOR IDENTIFICATION: You MUST complete and submit the form entitled "Bidder's Identification of Subcontractors" (page 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**

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

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

Bidder: _____

By: _____
(Signature of Partner or corporate officer)

Attest: Secretary of Corporate Bidder
(Corporate Seal)

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

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BID FORM (TO BE NOTARIZED)

****

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

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

_____

(Signature of the person who signed the Bid)

Subscribed and sworn to before me this

____ day of _____, _____

_____

Notary Public

****

AFFIDAVIT WHERE BIDDERS IS A PARTNERSHIP

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

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

_____

(Signature of Partner who signed the Bid)

Subscribed and sworn to before me this

____ day of _____, _____

_____

Notary Public

****

AFFIDAVIT WHERE BIDDERS IS A CORPORATION

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

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

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

_____

(Signature of Corporate Officer who signed the Bid)

Subscribed and sworn to before me this

____ day of _____, _____

_____

Notary Public

AFFIRMATION

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

_____

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

Full Name of Bidder: _____

Address: _____

City: _____ State: _____ Zip Code: _____

CHECK ONE BOX AND INCLUDE APPROPRIATE NUMBER:

☐ A - Individual or Sole Proprietorship *
SOCIAL SECURITY NUMBER

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

☐ C - Corporation
EMPLOYER IDENTIFICATION NUMBER

By: _____
Signature:

Title: _____

If a corporation, place seal here

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

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

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

NOTICE TO BIDDERS

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

****

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

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

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

The list of subcontractors is to be submitted in a separate sealed envelope by completing the form on the next page entitled "Bidder's Identification of Subcontractors". This form provides for the identification of any subcontractors intended to be used in any of the three trades listed above. If bidder intends to use its own forces for any of the above listed work, bidder should so indicate on the form.

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

PLEASE NOTE: for any contract that is subject to M/WBE Participation Goals under Section 6-129 of the Administrative Code of the City of New York, if the bidder's intention to use its own forces to do any of the above-referenced work would result in Bidder's failure to attain the Participation Goals identified in the M/WBE Utilization Plan, the bid will be non-responsive unless the bidder requests and obtains a full or partial waiver of the Participation Goals (M/WBE Utilization Plan, Part III) in advance of bid submission. For more information see Notice to All Prospective Contractors, Participation by Minority-Owned and Women-Owned Business Enterprises in City Procurement.

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

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

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

Project ID: PW357MOCS

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

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

1. **PLUMBING CONTRACTOR:**

_____
(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ _____

2. **HVAC CONTRACTOR:**

_____
(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ _____

3. **ELECTRICAL CONTRACTOR:**

_____
(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ _____

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

Name of Bidder: _____

By: _____
Signature of Partner or Corporate Officer

Print Name: _____

Title: _____

BID BOND 1
FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS. That we, _____

_____

_____

hereinafter referred to as the "Principal", and _____

_____

_____

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

_____

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

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

_____

_____

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

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

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

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

BID BOND 2

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

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

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

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

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

(Seal) _____ (L.S.)
Principal

By: _____

(Seal) _____
Surety

By: _____

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

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

_____
Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF A PARTNERSHIP

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

_____
Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL

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

_____
Notary Public

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES

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BID BREAKDOWN

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

X	YES		NO

Limitations on Use of Bid Breakdown:

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

Instructions for Preparing Bid Breakdown:

(A) The Bid Breakdown is set forth on the following pages of this Bid Booklet and is in accordance with the Construction Specification Institute (CSI) format. For all items of work listed in the Bid Breakdown, the bidder must indicate the price for labor and the price for material, as well as the estimated quantities required.

(B) In preparing its Bid Breakdown, the bidder shall submit prices that include all costs for overhead and profit. Overhead shall include, without limitation, all costs in connection with the following: administration, management, superintendence, small tools, insurance, bonds, and provision of services or items required by the General Conditions [except for Security/Fire Guard Services and Temporary Heat]. If the Project requires Security/Fire Guard Services and/or Temporary Heat, such service(s) will be included as separate line items in the Bid Breakdown.

(C) If an item is set forth in the Bid Breakdown, but is not included in the Contract Documents (Drawings, Specifications, General Conditions, and/or Addenda), the bidder is advised to leave the item blank and exclude the cost of the item from its grand total. In an attachment to its Bid Breakdown, the bidder shall provide a list of all items left blank.

(D) If an item is not set forth in the Bid Breakdown, but is included in the Contract Documents (Drawings, Specifications, General Conditions, and/or Addenda), the bidder is advised to add the item to its Bid Breakdown and include the cost of the item in its grand total. In an attachment to its Bid Breakdown, the bidder shall provide a list of all items added.

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
CONTRACT 1 - GENERAL CONSTRUCTION WORK								
01	**DIVISION 1 - GENERAL REQUIREMENTS**							
010000	**GENERAL CONDITIONS**							
	Mobilization		LS					
	subtotal							
02	**DIVISION 2 - EXISTING CONDITIONS**							
020000	**DEMOLITION AND STRUCTURE MOVING**							
020700	New opening in Existing Load bearing walls @ new ramp		LS					
	subtotal							
03	**DIVISION 3 - CONCRETE**							
033000	**CAST-IN- PLACE CONCRETE**							
033100-033300	**Miscellaneous Cast in Place Concrete**							
	Concrete Ramp		LF					
	subtotal							
06	**DIVISION 6 - WOOD, PLASTICS AND COMPOSITES**							
064000	**ARCHITECTURAL WOODWORK**							
064100	**Architectural Wood Casework**							
	Base cabinets and countertops @ pantry		LF					
	Base cabinets and countertops		LF					
	(6) Adjustable shelving @ lap top charging closet		EA					
	Cap @ low partitions; "Oak"		LF					
	subtotal							
07	**DIVISION 7 - THERMAL AND MOISTURE PROTECTION**							
072100	**BUILDING INSULATION**	included w/other sections						
079000	**JOINT SEALANTS**	included w/other sections						

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Location: 253 Broadway, 9th Floor New York 10007
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DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
08	**DIVISION 08 - DOORS AND WINDOWS / OPENINGS**							
081000	**DOORS AND FRAMES**							
081110	**Steel Doors and Frames**							
	Hollow metal doors and frames							
	HM Door, 36" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1		EA					
	HM Door, 30" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1		EA					
	HM Door, 36" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1N, Label C f.r. 3/4 Hr.		EA					
	HM Door, 36" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1N, Label B f.r.1-1/2 Hr.		EA					
	HM Door, 30" x 7'0" x 1-3/4" th, ptd HM frame, H/W 1N, w/ 2'x1' vent louver		EA					
	f.r. 1-/2 Hr.		EA					
	Additional cost for door louver		EA					
	HM Door, PR, 72" x 7'0" , ptd HM frame, H/W 2A		EA					
	HM Door, PR, 48" x 7'0" , ptd HM frame, H/W 2C		EA					
	HM Door, PR, 60" x 7'0" , ptd HM frame, H/W 2E, w/ half glass 1/4' temp.		EA					
	HM Door, PR, (36"+16") x 7' ptd fr, H/W 2B, w/ 5"x20" lite Lab B		EA					
	Additional cost for narrow lite		EA					
	subtototal							
084100	**Aluminum / Glass Doors**							
	Alum/glass Door, PR, 72" x 8'0", anod alum frame, H/W IN		EA					
	Alum/glass Door, PR, 72" x 8'0", anod alum frame, H/W IN		EA					
	subtototal							
087000	**HARDWARE**							
087100	**Door Hardware**							
	Type H/W 1		EA					
	Type H/W 1F		EA					
	Type H/W 1C		EA					
	Type H/W 1N		EA					
	Type H/W 2A		EA					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

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CONTRACT 1 - GENERAL CONSTRUCTION

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DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	Type H/W 2B		EA					
	Type H/W 2C		EA					
	Type H/W 2E		EA					
	subtototal							
088000	**GLAZING**							
088100	**Glass Glazing**							
	Borrowed lights							
	Glass partitions; tempered glass, borrowed lights		SF					
	Glass partitions; wire glass, borrowed lights		SF					
	(X-Cost) Framing system		LF					
	Note 24 replace glazing @ w/w AC removals (25 No.)		SF					
	subtototal							
09	**DIVISION 09 - FINISHES**							
092000	**PLASTER AND GYPSUM BOARD**							
092600	**Plaster and Gypsum Board Assemblies**							
	Wall Type 1							
	Metal stud partitions; one layer 5/8" GWB both sides; 3 5/8" studs; 2-3/4" fiberglass sound blanket, non-rated		SF					
	Wall Type 2							
	Metal stud partitions; one layer 5/8" GWB both sides; 3 5/8" studs; 2-3/4" fiberglass sound blanket, one-hour rated		SF					
	Wall Type 3							
	Metal stud partitions; two layers 5/8" GWB both sides; 3 5/8" studs; 2-3/4" fiberglass sound blanket,two-hour rated		SF					
	Wall Type 4							
	Double metal stud partitions; two layers 5/8" GWB both sides; 3 5/8" studs; 3-1/2" thermafiber friction fit acoustic blanket, two-hour rated		SF					
	Wall Type 5							
	Double metal stud partitions; two layers 5/8" water resistant GWB both sides; 1- 5/8" studs; 2-3/4" fiberglass sound blanket,two-hour rated, plumbing chase		SF					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

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Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder:

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	Wall Type 8							
	Metal stud partitions; one layer 5/8" GWB both sides; 3 5/8" studs; continuous wood cap		SF					
	Wall Type 11							
	One layer 5/8" GWB; 2-1/2" metal studs w/ 3-1/2" foil faced batt insulation furring on masonry wall		SF					
	Wall Type 15							
	One layer 5/8" GWB; furring on masonry wall		SF					
	Wall Type 6							
	One layer 5/8" GWB; 1-5/8" metal studs w/ 1-1/2" foil faced rigid insulation board furring on masonry wall		SF					
	Furring encloures around columns, 2HR F.R.		SF					
	Gypsum Board							
	GWB Ceiling soffits and bulkheads at window pockets		SF					
	subtototal							
093000	**TILE**							
093100	**Ceramic Tile**							
	Ceramic floor tiling @ HC Toilet		SF					
	subtototal							
095000	**CEILINGS**							
095100	**Acoustical Ceilings**							
	2' x 2' t suspended clg.with exposed " T" grid, Type I fine fissured		SF					
	subtototal							
096000	**FLOORING**							
096500	**Resilient Flooring**							
	1 Resilient tile flooring		SF					
	Resilient Base and Accessories							
	Vinyl cove base		LF					
	subtototal							

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DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
099000	**PAINTING AND COATING**							
099000	**Painting**							
	Paint @ new doors and frames; single		EA					
	Paint @ new doors and frames; double		EA					
	Paint @ new GWB perimeter and interior partition and furred walls		SF					
	Paint @ new GWB ceilings and soffits		SF					
	subtototal							
10	**DIVISION 10 - SPECIALTIES**							
102800	**TOILET ACCESSORIES**							
108100	**Toilet and Bath Accessories**							
	C soap dispenser		EA					
	D Toilet tissue dispenser (2 rolls)		EA					
	E Paper towel dispenser		EA					
	H Stainless steel fixed mirror, 18" x 30"		EA					
	subtototal							
108400	**Grab Bars**							
	A2 Steel grab bar 42"		EA					
	A3 Steel grab bar 48"		EA					
	subtototal							
12	**DIVISION 12 - FURNISHINGS**							
122000	**WINDOW TREATMENTS**							
125000	**Window Blinds**							
	Blinds; horizontal; ""Levelor Sheerview", 8-gauge perforated aluminum mini blinds		SF					
	subtototal							

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Project: Mayor's Office of Contract Services Renovation
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DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
22	**DIVISION 22 - PLUMBING**							
220000	**COMMON WORK RESULTS FOR PLUMBING**							
220500-220553	***Plumbing Miscellaneous***							
	Core Drills, Firestopping,		ls					
	subtototal							
220700	**PLUMBING INSULATION**	uded w/other secti						
221000	**PLUMBING PIPING**							
221100	**Facility Water Distribution**							
	Domestic Water System							
1	Copper Pipe, wrought Fittings, hangers - 2"		lf					
2	Copper Pipe, wrought Fittings, hangers - 1.5"		lf					
3	Copper Pipe, wrought Fittings, hangers - 1"		lf					
4	Copper Pipe, wrought Fittings, hangers - 3/4"		lf					
5	Copper Pipe, wrought Fittings, hangers - 1/2"		lf					
6	Domestic water pipe insulation		lf					
7	Domestic water pipe shut-off valves		ea					
8	Trap primer valves & runouts - allowance		ea					
9	Refrigerator valve box		ea					
10	Filter for water to coffee & frig		ea					
11	Thermostatic mixing valve		ea					
12	Connect to existing piping		ea					
13	Domestic water misc specialties		ls					
	subtototal							
221300	**Facility Sanitary Sewerage**							
	Sanitary Waste System							
1	CI Pipe, no-hub, fittings, hangers - 1.5"		lf					
2	CI Pipe, no-hub, fittings, hangers - 2"		lf					
3	CI Pipe, no-hub, fittings, hangers - 4"		lf					

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DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
4	Connect to existing piping		ea					
5	Cleanouts		ea					
6	Floor drains @ Mech Rooms		ea					
	subtotal							
223300	**Plumbing Equipment**							
	Plumbing Equipment							
	Instantaneous water heaters		ea					
	subtotal							
224000	**Plumbing Fixtures**							
	Plumbing Fixtures							
	Water Closet, wall mnt, sensor flush - P-1		ea					
	Lavatory, wall hung, sensor faucet - P-2		ea					
	Counter Sink, faucet - P-3		ea					
	subtotal							
23	**DIVISION 23 - HVAC**							
230000	**HEATING, VENTILATING AND AIR CONDITIONING (HVAC)**							
230500-230993	***General Mechanical Requirements***							
	General Mechanical Requirements		ls					
	Commissioning and TAB		ls					
	Exterior wall penetrations		ls					
	Metal covers to existing convertor, including GKD stainless steel mesh		lf					
	subtotal							
232000	**HVAC PIPING AND PUMPS**							
232116-232216	**Steam and Condensate Piping and Pumps**							
	Steam Piping, Sch 80 seamless, fittings, hangers - 2.5"		lf					
	Steam Piping, Sch 80 seamless, fittings, hangers - 2"		lf					

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DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	CONDENSER WATER PIPING							
	Steam Condensate Piping, Sch 80 seamless, fittings, hangers - 2"		lf					
	Steam Condensate Piping, Sch 80 seamless, fittings, hangers - 1.5"		lf					
	Steam & Steam Condensate Pipe Insulation		lf					
	Condenser Water Piping, Sch 40, fittings, hangers - 4"		lf					
	Condenser Water Piping Insulation		lf					
	Connect to existing condenser water riser		ea					
	Condensate Drain Piping		lf					
	Equipment & Coil Hook-up Assemblies		ea					
	subtotal							
233000	**HVAC AIR DISTRIBUTION**							
233100-233700	**HVAC Ducts and Casings**							
	Ductwork - galvanized		lbs					
	Smoke & Fire Dampers		ea					
	Fire Dampers w/ access doors		ea					
	Motorized Dampers		ea					
	Duct wrap insulation, fiberglass, 1.5"		sf					
	Duct internal liner, fiberglass - 1"		sf					
	Supply air diffusers		ea					
	Return air grilles		ea					
	Linear supply & return		lf					
	Linear supply plenum boxes		ea					
	Mechanical Louvers		sf					
	Convection Heating and Cooling Units							
	VAV boxes w/ sound attenuator		ea					
	Fans RF-9-1 & OAF-9-1		ea					
	Fan RF-9-2		ea					
	Fan OAF-9-2		ea					
	Fan TEF-9-1		ea					
	Variable Frequency Drives (Furnish Only)		ea					
	subtotal							

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

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Project: Mayor's Office of Contract Services Renovation
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DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
238000	**AIR HANDLING UNITS**							
238119	***HVAC Equipment***							
	Self Contained Air Cooled Air Conditioner - AC-9-1		ea					
	Self Contained Water Cooled Air Conditioner - AC-9-2		ea					
	Condensate Pumps @ AC units		ea					
	subtotal							
	DIVISION 26 - ELECTRICAL							
260000	**ELECTRICAL WORK**							
260500-260923	***General Electrical Requirements***							
	General Electrical Requirements		ls					
	Temporary Lighting		ls					
	subtotal							
262000	**LOW-VOLTAGE ELECTRICAL TRANSMISSION**							
262416-262819	**Low-Voltage Electrical Transmission**							
	Branch Circuitry :							
	Lighting Circuitry							
	3/4" Emt, 4#12		LF					
	MC Cable		LF					
	3/4" Emt, 8#12		LF					
	Plenum Cable		LF					
	Chop Floor		LF					
	Switches		EA					
	OS Power Pack		EA					
	Occupancy Sensor LV		EA					
	Duplex Receptacles		EA					
	Receptacles GFI		EA					
	Receptacles Quad		EA					
	Receptacle Simplex		EA					

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DDC ID#: PW357MOCS
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CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	Receptacles Dedic Copier		EA					
	DDC Panel 120v Connection		EA					
	Motorized Damper Connection		EA					
	VAV Connection		EA					
	Manual Snap Switch Starter		EA					
	Workstation		EA					
	Power Furniture Wall In-feed		EA					
	Install Furniture Recept FBO		EA					
	subtototal							
	Power Circuitry							
	3/4" Emt, 4#10		LF					
	1 1/4" Emt, 4#2		LF					
	2" Emt, 3 3/0, #6G		LF					
	Term @ Ex 100 Amp Fused Switch		EA					
	100 Amp Splice in Ex Riser Pullbox		EA					
	200 Amp Splice in Ex Riser Pullbox		EA					
	subtototal							
	Power Equipment							
	100 Amp Panel Board		EA					
	225 Amp Panel Board		EA					
	30/2 Amp Disconnect		EA					
	30 Amp Disconnect		EA					
	100 Amp Disconnect A/C		EA					
	200 Amp Disconnect A/C		EA					
	Install 10 HP VFD FBO		EA					
	Install 20 HP VFD FBO		EA					
	Install 50 HP VFD FBO		EA					
	100 Amp Disconnect @ Pullbox		EA					
	200 Amp Disconnect @ Pullbox		EA					

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CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	100 Amp Fuse		EA					
	subtototal							
	Telecommunications System							
	Term Boards		EA					
	1" EMT Cdt		LF					
	Data Outlet Backbox w/ Stubup		EA					
	Tel Outlet Backbox w/ Stubup		EA					
	Floor T/D Outlet		EA					
	T/D Furniture Wall In-feed		EA					
	Install Furniture Device Backbox FBO		EA					
	subtototal							
	Security System (Empty Conduit)							
	3/4" Emt, 4#12		LF					
	Card Reader Backbox, Stubup		EA					
	Door Contact DC Backbox, Stubup		EA					
	Electric Lock EL Roughin		EA					
	Security Panel Backbox		EA					
	Misc Demo, Removals		LS					
	subtototal							
265000	**LIGHTING**							
265100-265200	**Interior and Emergency Lighting**							
	Lighting Fixtures							
	Type F1 2x2 Fluor Layin Dir/Indir		EA					
	Type F1EM		EA					
	Type F6 Indust Fluor Pend		EA					
	Exit		EA					
	Type F2 Linear LED Pend		LF					
	Type F2EM		LF					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Mayor's Office of Contract Services Renovation
Location: 253 Broadway, 9th Floor New York 10007
Bidder: _____

DDC ID#: PW357MOCS
AGENCY: Dept of Human Services

CSI	Description	Quantity	Unit	Material Unit $	Material Cost	Labor Unit $	Labor Cost	Total Material + Labor
	Type F3 Linear LED Pend		LF					
	Type F3EM		LF					
	Type F5 UC		LF					
	subtotal							
28	**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**							
283000	**ELECTRONIC DETECTION AND ALARM**							
283100	**Fire Detection and Alarm**							
	3" Rigid, Riser Cables		LF					
	Riser Cables in ex Empty Cdt		LF					
	3/4" Emt, 4#12		LF					
	3/4" EMT Cdt		LF					
	Teflon Cable		LF					
	Pull Station		EA					
	Audible/Visual		EA					
	Smoke Detector		EA					
	Strobe		EA					
	Duct Detector		EA					
	Warden Station		EA					
	Central Equipment (tie into exist)		LS					
	FSD Connections, 120v		EA					
	subtotal							
	CONTRACT 1 - GENERAL CONSTRUCTION WORK							

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PLA

ATTACHMENT 1 - BID INFORMATION
PROJECT ID: PW357MOCS

DESCRIPTION AND LOCATION OF WORK:

Mayor's Office of Contract Services Renovation
253 Broadway, 9th Floor
New York, New York 10007
E-PIN: 85014B0025 / DDC PIN: 8502014HR0001C

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: **FRIDAY, AUGUST 16, 2013**
BIDS MUST BE CLOCKED IN PRIOR TO BID OPENING

PLACE TO SUBMIT:

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

BID OPENING:

PLACE OF BID OPENING:	**Department of Design and Construction** **Contract Section** **30-30 Thomson Avenue – First Floor** **Long Island City, NY 11101**
DATE AND HOUR:	**FRIDAY, AUGUST 16, 2013 @ 2:00 PM**
	LATE BIDS WILL NOT BE ACCEPTED

PRE-BID CONFERENCE:

PLACE	**Mayor's Office of Contract Services** **253 Broadway, 9th Floor** **New York, NY 10007**
DATE AND HOUR	**THURSDAY, AUGUST 08, 2013 AT 10:00AM**
MANDATORY OR OPTIONAL	**OPTIONAL**

BID SECURITY:

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

(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

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BID BOOKLET
PART B

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SAFETY QUESTIONNAIRE

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

1. Bidder Information:

Company Name: _____

DDC Project Number: _____

Company Size: _____ Ten (10) employees or less

_____ Greater than ten (10) employees

_____ Company has previously worked for DDC

2. Type(s) of Construction Work

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

3. Experience Modification Rate:

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

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

YEAR	INTRASTATE RATE	INTERSTATE RATE
_____	_____	_____
_____	_____	_____
_____	_____	_____

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

4. OSHA Information:

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

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

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

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

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

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

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

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

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

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

5. Safety Performance on Previous DDC Project(s)

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

DDC Project Number(s): _____
_____

_____ Accident on previous DDC Project(s).

_____ Fatality or Life-altering Injury on DDC Project(s) within the last three years.
[Examples of a life-altering injury include loss of limb, loss of a sense (e.g., sight, hearing), or loss of neurological function].

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

Title:_____

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Pre-Award Process

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

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

****

(A) **Project Reference Form**: If required, the bidder must complete and submit the Project Reference Form set forth on pages 28 through 30 of this Bid Booklet. The Project Reference Form consists of 3 parts: (1) Similar Contracts Completed by the Bidder, (2) Contracts Currently Under Construction by the Bidder, and (3) Pending Contracts Not Yet Started by the Bidder.

(B) **Copy of License**: If required, the bidder must submit a copy of the license under which the bidder will be performing the work. Such license must clearly show the following: (1) Name of the Licensee, (2) License Number, and (3) Expiration date of the License. A copy of the license will be required from bidders for the following contracts: Plumbing Work, Electrical Work and Asbestos Abatement.

(C) **Financial Information**: If required, the bidder must submit the financial information described below:

(1) Audited Financial Statements: Financial statements (Balance Sheet and Income Statement) of the entity submitting the bid, as audited by an independent auditor licensed to practice as a certified public accountant (CPA). Audited financial statements for the three most recent fiscal years must be submitted. Each such financial statement must include the auditor's standard report.

If the bidder does not have audited financial statements, it must submit an affidavit attesting to the fact that the bidder does not have such statements. In addition, the bidder must submit the following documentation covering the three most recent fiscal years: signed federal tax returns, unaudited financial statements, and a "certified review letter" from a certified public accountant (CPA) verifying the unaudited financial statements.

Unless the most recent audited or unaudited financial statement was issued within ninety (90) days, the bidder must submit interim financial information that includes data on financial position and results of operation (income data) for the current fiscal year. Such information may be summarized on a monthly or quarterly basis or at other intervals.

(2) Schedule of Aged Accounts Receivable, including portion due within ninety (90) days.

(D) **Project Specific Information**: If required, the bidder must submit the project specific information described below:

(1) Statement indicating the number of years of experience the bidder has had and in what type of construction.
(2) Resumes of all key personnel to be involved in the project, including the proposed project superintendent.
(3) List of significant pieces of equipment expected to be used for the contract, and whether such equipment is owned or leased.

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

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

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

A. PROJECT REFERENCES – SIMILAR CONTRACTS COMPLETED BY THE BIDDER

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

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

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

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

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

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

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

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

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OFFICE OF THE MAYOR
BUREAU OF LABOR SERVICES
CONTRACT CERTIFICATE

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

Contractor: _____

Address: _____

_____

Telephone Number: _____

Name and Title of Signatory: _____

_____

Contracting Agency or Owner: _____

Project Number:_____

Proposed Contract Amount: _____

Description and Address of Proposed Contract:_____

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

_____

_____

_____

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

_____ _____

Date Signature

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

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VENDEX COMPLIANCE

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

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

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

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

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

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

Date of Submission: _____

By: _____
(Signature of Partner or corporate officer)

Print Name: _____

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

By: _____
(Signature of Partner or corporate officer)

Print Name: _____

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Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.

NYC
Mayor's Office of Contract Services

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

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

Certification *This section is required.*

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

Certified By:

_____
Name (Print)

_____
Title

_____
Name of Submitting Entity

_____ _____
Signature *Date*

Notarized By:

_____ _____ _____
Notary Public *County License Issued* *License Number*

Sworn to before me on: _____
Date

Certificate of No Change Form

Mayor's Office of Contract Services

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

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

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

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

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

Vendor Questionnaire *This section is required.*

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

Name of Submitting Entity: _____

Vendor's Address: _____

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

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

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

Signature date on change submission for the submitting vendor: _____

Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.

Mayor's Office of Contract Services

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

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

Certification *This section is required.*

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

Certified By:

_____

Name (Print)

_____

Title

_____

Name of Submitting Entity

_____ _____

Signature *Date*

Notarized By:

_____ _____ _____

Notary Public *County License Issued* *License Number*

Sworn to before me on: _____

Date

Certificate of No Change Form

Mayor's Office of Contract Services

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

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

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

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

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

Vendor Questionnaire *This section is required.*

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

Name of Submitting Entity: _____

Vendor's Address: _____

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

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

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

Signature date on change submission for the submitting vendor: _____

IRAN DIVESTMENT ACT COMPLIANCE RIDER

FOR NEW YORK CITY CONTRACTORS

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

(a) The person provides goods or services of twenty million dollars or more in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran; or

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

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

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

(1) The investment activities in Iran were made before the effective date of this section (i.e., April 12, 2012), the investment activities in Iran have not been expanded or renewed after the effective date of this section and the person has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran: or

(2) The City makes a determination that the goods or services are necessary for the City to perform its functions and that, absent such an exemption, the City would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

BIDDER'S CERTIFICATION OF COMPLIANCE WITH IRAN DIVESTMENT ACT

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

[*Please Check One*]

BIDDER'S CERTIFICATION

☐ By submission of this bid or proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief, that each bidder/proposer is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law.

☐ I am unable to certify that my name and the name of the bidder/proposer does not appear on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law. I have attached a signed statement setting forth in detail why I cannot so certify.

Dated: _____, New York
_____, 20__

_____
SIGNATURE

_____
PRINTED NAME

_____
TITLE

Sworn to before me this
_____ day of_____, 20____

_____
Notary Public

Dated:

CITY OF NEW YORK

DIVISION OF LABOR SERVICES

CONSTRUCTION EMPLOYMENT REPORT

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

CONSTRUCTION EMPLOYMENT REPORT

GENERAL INFORMATION

1. Your contractual relationship in this contract is: Prime contractor____ Subcontractor____

1a. Are M/WBE goals attached to this project? Yes ____ No ____

2. Please check one of the following if your firm would like information on how to certify with the City of New York as a:
___Minority Owned Business Enterprise ___Locally based Business Enterprise
___Women Owned Business Enterprise ___Emerging Business Enterprise

2a. If you are certified as an **MBE, WBE,** or **LBE**, what city/state agency are you certified with? _____ Are you DBE certified? Yes ____ No ____

3. Please indicate if you would like assistance from SBS in identifying certified M/WBEs for contracting opportunities: Yes___ No___

4. Is this project subject to a project labor agreement? Yes ____ No ____

PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION

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

6. _____
Company Name

7. _____
Company Address and Zip Code

8. _____
Chief Operating Officer Telephone Number

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

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

11. Number of employees in your company: _____

FOR OFFICIAL USE ONLY: File No._____

12. Contract information:

(a) _____ Contracting Agency (City Agency)

(b) _____ Contract Amount

(d) _____ Procurement Identification Number (PIN)

(e) _____ Contract Registration Number (CT#)

(f) _____ Projected Commencement Date

(g) _____ Projected Completion Date

(h) Description and location of proposed contract:

_____

_____

13. Has your firm been reviewed by the Division of Labor Services (DLS) within the past 36 months and issued a Certificate of Approval? Yes___ No___

If yes, attach a copy of certificate.

14. Has DLS within the past month reviewed an Employment Report submission for your company and issued a Conditional Certificate of Approval? Yes___ No___

If yes, attach a copy of certificate.

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

15. Has an Employment Report already been submitted for a different contract (not covered by this Employment Report) for which you have not yet received compliance certificate? Yes___ No___ If yes,

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

16. Has your company in the past 36 months been audited by the United States Department of Labor, Office of Federal Contract Compliance Programs (OFCCP)? Yes___ No___

If yes,

(a) Name and address of OFCCP office.

_____

_____

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

If yes, attach a copy of such certificate.

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

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

(d) Were any deficiencies found? Yes___ No___

If yes, attach a copy of such findings.

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

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

PART II: DOCUMENTS REQUIRED

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

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

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

___ (c) Employee Policy/Handbook

___ (d) Personnel Policy/Manual

___ (e) Supervisor's Policy/Manual

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

___ (g) Collective bargaining agreement(s).

___ (h) Employment Application(s)

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

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

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

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

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

_____

_____

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

If yes, is the medical examination given:

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

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

_____

_____

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

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

_____

_____

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

_____Minorities and Women

_____Individuals with handicaps

_____Other. Please specify _____

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

If yes, please attach a copy of this policy.

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

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

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

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

If yes, attach a log. See instructions.

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

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

_____

_____

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

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

_____

_____

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SIGNATURE PAGE

I, (print name of authorized official signing)_____ hereby certify that the information submitted herewith is true and complete to the best of my knowledge and belief and submitted with the understanding that compliance with New York City's equal employment requirements, as contained in Chapter 56 of the City Charter, Executive Order No. 50 (1980), as amended, and the implementing Rules and Regulations, is a contractual obligation.

I also agree on behalf of the company to submit a certified copy of payroll records to the Division of Labor Services on a monthly basis.

_____

Contractor's Name

_____

Name of person who prepared this Employment Report Title

_____

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

_____

Telephone Number

_____

Signature of authorized official Date

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

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

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

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

Only original signatures accepted.

Sworn to before me this _____ day of _____ 20 _____

_____

Notary Public Authorized Signature Date

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FMS ID: **PW357MOCS**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS
30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

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

CONTRACT NO. 1 **GENERAL CONSTRUCTION WORK**

Mayor's Office of Contract Services Renovation

LOCATION: **253 Broadway, 9th Floor**
BOROUGH: **Manhattan 10007**
CITY OF NEW YORK

Contractor

Dated _____, 20____

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____, 20____

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

PROJECT ID: PW357MOCS

LAW

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

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

VOLUME 2 OF 3

PROJECT LABOR AGREEMENT
INFORMATION FOR BIDDERS
CONTRACT
PERFORMANCE AND PAYMENT BONDS
SCHEDULE OF PREVAILING WAGES
GENERAL CONDITIONS

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

Mayor's Office of Contract Services Renovation

LOCATION: 253 Broadway, 9th Floor
BOROUGH: Manhattan 10007
CITY OF NEW YORK

CONTRACT NO. 1 GENERAL CONSTRUCTION WORK

Department of Human Services

Joseph R. Loring & Associates, Inc.

Date: August 1, 2013

14-019

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

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

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

VOLUME 2 OF 3

PROJECT LABOR AGREEMENT
INFORMATION FOR BIDDERS
CONTRACT
PERFORMANCE AND PAYMENT BONDS
SCHEDULE OF PREVAILING WAGES
GENERAL CONDITIONS

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

NOTICE:

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

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

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

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

(B) Revise all such references to indicate that:

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

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

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

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

NOTICE:

THIS CONTRACT IS SUBJECT TO A PROJECT LABOR AGREEMENT

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

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

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

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

If this Contract is subject to the Minority-Owned and Women-Owned Business Enterprise ("M/WBE") program created by Local Law 129, the specific requirements of M/WBE participation for this Contract are set forth in Schedule B entitled the "Subcontractor Utilization Plan", and are detailed in a separate Notice to Prospective Contractors included with this bid package. If such requirements are included with this Contract, the City strongly advises Contractors to read those provisions, as well as PLA Article 4, Section 2(C), carefully. A list of M/WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q16. Are overtime payments affected by the PLA?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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 23rd 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

CEMENT MASONS NO. 780
150-42 12th Avenue
Whitestone, NY 11357
Phone: (718) 357-3750
Fax: (718) 357-2057
Angelo Scagnelli, Bus. Mgr.
Paul M. Mantia, President
Angelolocal780@yahoo.com

CONCRETE WORKERS DISTRICT COUNCIL NO. 16
29-18 35th Avenue
Long Island City, NY 11106
Phone: (718) 392-5077
Fax: (718) 392-5087
Alex Castaldi, Pres. Bus. Mgr.
Ccwdc16@yahoo.com

DERRICKMEN AND RIGGERS CONCRETE WORKERS
25-19 43rd Avenue
Long Island City, NY 11101
Phone: (718) 361-6534

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

DRYWALL TAPERS 1974
265 West 14th 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

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 Sciara, Bus. Rep.
Lance Van Arsdale, Asst. Bus. Maintenance Division
Ray West, Bus. Rep.
mail@local3ibew.org

ELEVATOR CONSTRUCTORS NO. 1
47-24 27th 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
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

ENGINEERS NO. 15, 15A, 15B, 15C, 15D
265 West 14th 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 44th Street
New York, NY 10036
Phone: (212) 245-7040Fax: (212) 245-7886
Kuba Brown, Bus. Mgr. & President
kubabrown@local94.com

GLAZERS NO. 1281
45 West 14th 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 43rd 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
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

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 97TH 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

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

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PROJECT LABOR AGREEMENT

COVERING SPECIFIED

RENOVATION & REHABILITATION OF CITY OWNED BUILDINGS AND STRUCTURES

TABLE OF CONTENTS

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

ARTICLE 1 - PREAMBLE

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

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

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

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

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

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

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

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

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

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

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

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

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

NOW, THEREFORE, the Parties enter into this Agreement:

SECTION 1. PARTIES TO THE AGREEMENT

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

ARTICLE 2 - GENERAL CONDITIONS

SECTION 1. DEFINITIONS

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

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

SECTION 2. CONDITIONS FOR AGREEMENT TO BECOME EFFECTIVE

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

SECTION 3. ENTITIES BOUND & ADMINISTRATION OF AGREEMENT

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

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

SECTION 4. SUPREMACY CLAUSE

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

SECTION 5. LIABILITY

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

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

SECTION 6. THE AGENCY

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

SECTION 7. AVAILABILITY AND APPLICABILITY TO ALL SUCCESSFUL BIDDERS

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

SECTION 8. SUBCONTRACTING

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

ARTICLE 3-SCOPE OF THE AGREEMENT

SECTION 1. WORK COVERED

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

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

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

2. Contracts procured on an emergency basis;

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

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

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

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

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

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

SECTION 2. TIME LIMITATIONS

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

SECTION 3. EXCLUDED EMPLOYEES

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

A. Superintendents, supervisors (excluding general and forepersons

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

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

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

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

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

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

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

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

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

SECTION 4. NON-APPLICATION TO CERTAIN ENTITIES

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

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

ARTICLE 4- UNION RECOGNITION AND EMPLOYMENT

SECTION 1. PRE-HIRE RECOGNITION

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

SECTION 2. UNION REFERRAL

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

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

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

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

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

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

basis.

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

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

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

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

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

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

SECTION 3. NON-DISCRIMINATION IN REFERRALS

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

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

SECTION 4: MINORITY AND FEMALE REFERRALS

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

SECTION 5. CROSS AND QUALIFIED REFERRALS

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

SECTION 6. UNION DUES

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

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

SECTION 7. CRAFT FOREPERSONS AND GENERAL FOREPERSONS

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

ARTICLE 5- UNION REPRESENTATION

SECTION 1. LOCAL UNION REPRESENTATIVE

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

SECTION 2. STEWARDS

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

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

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

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

SECTION 3. LAYOFF OF A STEWARD

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

ARTICLE 6- MANAGEMENT'S RIGHTS

SECTION 1. RESERVATION OF RIGHTS

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

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

SECTION 2. MATERIALS, METHODS & EQUIPMENT

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

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

ARTICLE 7- WORK STOPPAGES AND LOCKOUTS

SECTION 1. NO STRIKES-NO LOCK OUT

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

SECTION 2. DISCHARGE FOR VIOLATION

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

SECTION 3. NOTIFICATION

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

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

SECTION 4. EXPEDITED ARBITRATION

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

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

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

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

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

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

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

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

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

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

SECTION 5. ARBITRATION OF DISCHARGES FOR VIOLATION

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

ARTICLE 8 - LABOR MANAGEMENT COMMITTEE

SECTION 1. SUBJECTS

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

SECTION 2. COMPOSITION

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

ARTICLE 9- GRIEVANCE & ARBITRATION PROCEDURE

SECTION 1. PROCEDURE FOR RESOLUTION OF GRIEVANCES

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

Step 1:

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

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

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

Step 2:

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

Step 3:

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

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

SECTION 2. LIMITATION AS TO RETROACTIVITY

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

SECTION 3. PARTICIPATION BY AGENCY AND/OR CONSTRUCTION MANAGER

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

ARTICLE 10 - JURISDICTIONAL DISPUTES

SECTION 1. NO DISRUPTIONS

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

SECTION 2. ASSIGNMENT

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

SECTION 3. NO INTERFERENCE WITH WORK

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

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

ARTICLE 11 - WAGES AND BENEFITS

SECTION 1. CLASSIFICATION AND BASE HOURLY RATE

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

SECTION 2. EMPLOYEE BENEFITS

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

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

requires such benefit payments.

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

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

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

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

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

SECTION 1. WORK WEEK AND WORK DAY

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

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

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

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

SECTION 2. OVERTIME

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

SECTION 3. SHIFTS

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

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

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

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

SECTION 4. HOLIDAYS

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

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

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

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

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

SECTION 5. SATURDAY MAKE-UP DAYS

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

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

SECTION 6. REPORTING PAY

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

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

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

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

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

SECTION 7. PAYMENT OF WAGES

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

SECTION 8. EMERGENCY WORK SUSPENSION

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

SECTION 9. INJURY/DISABILITY

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

SECTION 10. TIME KEEPING

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

SECTION 11. MEAL PERIOD

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

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

SECTION 12. BREAK PERIODS

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

ARTICLE 13 - APPRENTICES

SECTION 1. RATIOS

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

ARTICLE 14-SAFETY PROTECTION OF PERSON AND PROPERTY

SECTION 1. SAFETY REQUIREMENTS

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

SECTION 2. CONTRACTOR RULES

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

SECTION 3. INSPECTIONS

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

ARTICLE 15 - TEMPORARY SERVICES

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

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

ARTICLE 16 - NO DISCRIMINATION

SECTION 1. COOPERATIVE EFFORTS

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

SECTION 2. LANGUAGE OF AGREEMENT

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

ARTICLE 17- GENERAL TERMS

SECTION 1. PROJECT RULES

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

for cause.

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

SECTION 2. TOOLS OF THE TRADE

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

SECTION 3. SUPERVISION

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

SECTION 4. TRAVEL ALLOWANCES

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

SECTION 5. FULL WORK DAY

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

SECTION 6. COOPERATION AND WAIVER

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

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

ARTICLE 18. SAVINGS AND SEPARABILITY

SECTION 1. THIS AGREEMENT

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

SECTION 2. THE BID SPECIFICATIONS

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

SECTION 3. NON-LIABILITY

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

SECTION 4. NON-WAIVER

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

ARTICLE 19 - FUTURE CHANGES IN SCHEDULE A AREA CONTRACTS

SECTION 1. CHANGES TO AREA CONTRACTS

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

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

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

SECTION 2. LABOR DISPUTES DURING AREA CONTRACT NEGOTIATIONS

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

ARTICLE 20 - WORKERS' COMPENSATION ADR

SECTION 1.

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

ARTICLE 21 - HELMETS TO HARDHATS

Section 1.

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

Section 2.

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

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

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

BY: _____
Gary LaBarbera
President

FOR NEW YORK CITY

BY: _____
Michael R. Bloomberg
Mayor

APPROVED AS TO FORM:

_____
ACTING CORPORATION COUNSEL
NEW YORK CITY

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

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

BY: _____
Gary LaBarbera
President

FOR NEW YORK CITY

BY: _____
Michael R. Bloomberg
Mayor

APPROVED AS TO FORM:

_____
ACTING CORPORATION COUNSEL
NEW YORK CITY

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List of Signatory Unions

Blasterers and Drillers Local #29

Bricklayers Local No. 1

Boiler Makers Local No. 5

Carpenters District Council

Cement Masons No. 780

Derrickmen and Riggers Union No. 197

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

Electrical Local No. 3

Drywall Tapers 1974

Elevator Constructors No. 1

Heat & Frost Insulators Local Union No. 12A

Heat & Frost Insulators Local Union No. 12

Iron Workers No. 40

Iron Workers District Council

Laborers Local No. 78 Asbestos & Lead Abatement

Iron Workers No. 361

Laborers Construction and General Building No. 79

Laborers Local 731

Lathers Metallic Local No. 46

Local Union 8A Glaziers No. 1281

Mason Tenders District Council

Metal Polishers DC 9

Painters District Council No. 9

Painters Structural Steel No. 806

Ornamental Iron Workers No. 580

Plasters Local Union No. 262

Pavers & Road Builders District Council No. 1

Plumbers No. 1

Sheet Metal Workers Local No. 28

Roofers & Waterproofers No. 8

Sheet Metal Workers Local No. 137

Steamfitters Local Union No. 638; including Metal Trades Division

Teamsters Local Union 813

Teamsters Local Union 814

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

PLA Schedule A

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Project Labor Agreement - - Letter of Assent

Dear:

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

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

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

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

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

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

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

Dated: _____

_____
(Name of Contractor or subcontractor)

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

_____
(Authorized Officer & Title)

_____
(Address)

_____
(Phone) (Fax)

Contractor's State License #_____

Sworn to before me this
____ day of _____, 2009

_____
Notary Public

STANDARDS OF EXCELLENCE

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

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

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

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

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

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

NOTICE TO BIDDERS

DAMAGES FOR DELAY PILOT PROGRAM

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

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

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

Extended delays attributable to the City in the review or issuance of change orders, in shop drawing reviews and approvals or as a result of the cumulative impact of multiple change orders, which constitute a material change to the Work and which have a verifiable impact on project costs.

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

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

Differing site conditions that were not known or reasonably ascertainable on a pre-bid inspection of the site or review of the bid documents or other publicly available sources and that are not ordinarily encountered in the Project's geographical area or neighborhood or in the type of work to be performed.

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

Delays not contemplated by the parties;

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

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

Please see Article 11.4 for provisions regarding compensable delays.

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

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

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

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

NOTICE TO BIDDERS, PROPOSERS, CONTRACTORS, AND RENEWAL CONTRACTORS

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

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

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

WHISTLEBLOWER PROTECTION EXPANSION ACT RIDER

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

   (a) Contractor shall not take an adverse personnel action with respect to an officer or employee in retaliation for such officer or employee making a report of information concerning conduct which such officer or employee knows or reasonably believes to involve corruption, criminal activity, conflict of interest, gross mismanagement or abuse of authority by any officer or employee relating to this Contract to (i) the Commissioner of the Department of Investigation, (ii) a member of the New York City Council, the Public Advocate, or the Comptroller, or (iii) the City Chief Procurement Officer, ACCO, Agency head, or Commissioner.

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

   (c) Contractor shall post a notice provided by the City in a prominent and accessible place on any site where work pursuant to the Contract is performed that contains information about:

      (i) how its employees can report to the New York City Department of Investigation allegations of fraud, false claims, criminality or corruption arising out of or in connection with the Contract; and
      (ii) the rights and remedies afforded to its employees under New York City Administrative Code sections 7-805 (the New York City False Claims Act) and 12-113 (the Whistleblower Protection Expansion Act) for lawful acts taken in connection with the reporting of allegations of fraud, false claims, criminality or corruption in connection with the Contract.

   (d) For the purposes of this rider, "adverse personnel action" includes dismissal, demotion, suspension, disciplinary action, negative performance evaluation, any action resulting in loss of staff, office space, equipment or other benefit, failure to appoint, failure to promote, or any transfer or assignment or failure to transfer or assign against the wishes of the affected officer or employee.

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

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

NOTICE TO BIDDERS

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

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

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

Notice to Bidders:

In 2013 the City will be implementing a new web based subcontractor reporting system. Once this subcontractor reporting system is implemented, and Contractor receives notice of its implementation, Contractor will be required to list in the system all of the subcontractors that it knows it will use or is already using in the performance of this contract. For each subcontractor listed, Contractor will be required to provide the following information: maximum contract value, description of subcontractor work, start and end date of the subcontract and identification of the subcontractor's industry. Identification of subcontractors in the system along with the required information will be required in order to obtain subcontractor approval under [section 3.02 of Appendix A][Article 17 of the Standard Construction Contract] and PPB Rule § 4-13 for all subcontractors that have not been approved as of the implementation date. Thereafter, Contractor will be required to report in the system the payments made to each subcontractor within 30 days of making the payment. If any of the required information changes throughout the term of the contract, Contractor will be required to revise the information in the system...

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

Failure of the Contractor to list a subcontractor and/or to report subcontractor payments in a timely fashion may result in the Agency declaring the Contractor in default of the Contract and may subject Contractor to liquidated damages in the amount of $100 per day for each day that the Contractor fails to identify a subcontractor along with the required information about the subcontractor and/or fails to report payments to a subcontractor, beyond the time frames set forth herein or in the notice from the City. For construction contracts, the provisions of Article 15 of the Standard Construction Contract shall govern the issue of liquidated damages.

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

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CITY OF NEW YORK

DEPARTMENT OF
DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

INFORMATION FOR BIDDERS

DELAY DAMAGES PILOT

September 2008

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INFORMATION FOR BIDDERS

1. Description and Location of Work

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

2. Time and Place for Receipt of Bids

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

3. Definitions

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

4. Invitation For Bids and Contract Documents

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

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

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

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

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

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

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

5. Pre-Bid Conference

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

6. Agency Contact

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

7. Bidder's Oath

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

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

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

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

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

9. Examination of Proposed Contract

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

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

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

10. Form of Bid

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

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

11. Irrevocability of Bid

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

12. Acknowledgment of Amendments

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

13. Bid Samples and Descriptive Literature

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

14. Proprietary Information/Trade Secrets

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

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

15. Pre-Opening Modification or Withdrawal of Bids

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

16. Bid Evaluation and Award

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

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

17. Late Bids, Late Withdrawals and Late Modifications

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

18. Withdrawal of Bids.

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

19. Mistake in Bids

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

(B) Mistakes Discovered Before Award

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

(a) The mistake is known or made known to the agency prior to the awarding of the Contract or within 3 days after the opening of the bid, whichever period is shorter; and

(b) The price bid was based upon an error of such magnitude that enforcement would be unconscionable; and

(c) The bid was submitted in good faith and the bidder submits credible evidence that the mistake was a clerical error as opposed to a judgment error; and

(d) The error in the bid is actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of work, labor, material or services made directly in the compilation of the bid, which unintentional arithmetic error pr unintentional omission can be clearly shown by objective evidence drawn from inspection of the original work paper, documents, or materials used in the preparation of the bid sought to be withdrawn; and

(e) It is possible to place the agency in the same position as existed prior to the bid.

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

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

20. Low Tie Bids

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

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

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

21. Rejection of Bids

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

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

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

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

(1) All otherwise acceptable bids received are at unreasonable prices, or only one bid is received and the Agency Chief Contracting Officer cannot determine the reasonableness of the bid price, or no responsive bid has been received from a responsible bidder; or

(2) In the judgment of the Agency Chief Contracting Officer, the bids were not independently arrived at in open competition, were collusive, or were submitted in bad faith.

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

(1) prior notice of the intention to negotiate and a reasonable opportunity to negotiate have been given by the contracting officer to each responsible bidder that submitted a bid in response to the Invitation for Bids;

(2) the negotiated price is the lowest negotiated price offered by a responsible bidder; and

(3) the negotiated price is lower than the lowest rejected bid price of a responsible bidder that submitted a bid in response to the Invitation for Bids.

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

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

23. Affirmative Action and Equal Employment Opportunity

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

24. VENDEX Questionnaires

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

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

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

25. Complaints About the Bid Process

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

26. Bid, Performance and Payment Security

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

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

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

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

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

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

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

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

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

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

27. Failure to Execute Contract

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

28. Bidder Responsibilities and Qualifications

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

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

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

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

29. Employment Report

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

30. Labor Law Requirements

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

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

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

31. Insurance

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

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

32. Lump Sum Contracts

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

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

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

33. Unit Price Contracts

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

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

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

34. Excise Tax

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

35. Licenses and Permits

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

36. Multiple Prime Contractors

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

37. Locally Based Enterprise Requirements (LBE)

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

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

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

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

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

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

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

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

(2) The following documents shall be attached to the "LBE Participation Schedule":

(a) verification letters from each subcontractor listed in the "LBE Participation Schedule" stating that the LBE will enter into a formal agreement for work,
(b) certification documents of any proposed LBE subcontractor which is not on the LBE certified list, and
(c) copies of the certification letter of any proposed subcontractor which is an LBE.

(3) Documentation of good faith efforts to achieve the required LBE percentage shall include as appropriate but not limited to the following:

(a) attendance at prebid meetings, when scheduled by the agency, to advise bidders of contract requirements;
(b) advertisement where appropriate in general circulation media, trade association publications and small business media of the specific subcontracts that would be at least equal to the percentage goal for LBE utilization specified by the contractor;
(c) written notification to association of small, minority and women contractors soliciting specific subcontractors;
(d) written notification by certified mail to LBE firms that their interest in the contract is solicited for specific work items and their estimated values;
(e) demonstration of efforts made to select portions of the work for performance by LBE firms in order to increase the likelihood of achieving the stated goal;
(f) documented efforts to negotiate with LBE firms for specific subcontracts, including at a minimum:
(i) The names, address and telephone numbers of LBE firms that are contacted;
(ii) A description of the information provided to LBE firms regarding the plans and specifications for portions of the work to be performed;
(iii) Documentation showing that no reasonable price can be obtained from LBE firms;
(iv) A statement of why agreements with LBE firms were not reached;
(g) a statement of the reason for rejecting any LBE firm which the contractor deemed to be unqualified; and
(h) documentation of efforts made to assist the LBE firms contacted that needed assistance in obtaining required insurance.

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

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

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

38. Bid Submission Requirements

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

39. Comptroller's Certificate

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

40. Procurement Policy Board Rules

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

41. DDC Safety Requirements

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

CITY OF NEW YORK

DEPARTMENT OF DESIGN AND CONSTRUCTION

SAFETY REQUIREMENTS

THE DDC SAFETY REQUIREMENTS INCLUDE THE FOLLOWING SECTIONS:

I. POLICY ON SITE SAFETY

II. PURPOSE

III. DEFINITIONS

IV. RESPONSIBILITIES

V. SAFETY QUESTIONNAIRE

VI. SAFETY PROGRAM AND SITE SAFETY PLAN

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

VIII. EVALUATION DURING WORK IN PROGRESS

IX. SAFETY PERFORMANCE EVALUATION

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I. POLICY ON SITE SAFETY

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

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

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

I. PURPOSE

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

III. DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

IV. RESPONSIBILITIES

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

A. Resident Engineer / Construction Project Manager / Construction Manager

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

A. Contractors

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

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

V. SAFETY QUESTIONNAIRE

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

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

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

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

VI. SAFETY PROGRAM AND SITE SAFETY PLAN

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

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

1. Responsibility and Organization: Identify the person or persons with authority and responsibility for implementing the Site Safety Plan. Provide an organization chart and define levels of authority and responsibility. Identify the Competent Person, the Construction Superintendent (if required), the Job Safety Coordinator and the Qualified Person required for this project.

2. Communication: Establish a system for communicating with employees and subcontractors on matters relating to worker and public safety and health and environmental protection, including provisions designed to encourage employees to inform the employer of hazards at the worksite without fear of reprisal. An emergency response notification protocol is to be established that also includes after hours contact numbers. The plan must also include provisions for weekly safety meetings held by the Job Site Safety Coordinator.

3. Job Hazard Assessment: A written document submitted by the contractor, used to identify expected job hazards and public safety risks and state the specific means and methods to reduce, control or eliminate those hazards. This part of the Site Safety Plan must also include how on-going evaluations of those risks and hazards will be carried out, including plans for periodic inspections to identify unsafe conditions, work practices and public safety hazards.

4. Accident/Exposure Investigation: Establish a procedure to investigate and report occupational and public injury or illness, property damage, vehicle accidents or other mishaps.

5. Hazard Correction: Establish means, methods and/or procedures for correcting unsafe or unhealthy conditions that might be exposing both the public and workers to hazards. Corrective actions must be taken immediately when observed or discovered. Should an imminent hazard exist which cannot be immediately abated without endangering employees, the public and/or property, remove or restrict all exposed persons from the area except those necessary to correct the existing condition. Employees necessary to correct the hazardous condition shall be provided the necessary safeguards. When corrective actions cannot be taken immediately, temporary measures should be taken until such time permanent measures are taken to eliminate the potential risks or hazards

6. Training: Describe site-specific hazard training programs. In addition to the required safety orientation, additional site specific training, in the form of required weekly safety meetings, will be required. Contractors must also initiate training when: a) new employees are hired; b) employees are given new job assignments for which training has not been previously received; c) new substances, processes, procedures or equipment are introduced that might represent a new public or worker hazard; d) the employee is made aware of a new or previously unrecognized hazard; e) new supervisors are assigned to familiarize themselves with the safety and health hazards to which employees under their immediate direction and control may be exposed; and f) after a jobsite incident or accident has occurred.

7. Recordkeeping: Establish procedures to maintain records of scheduled and periodic inspections, weekly safety meetings, and training records. Updated records shall be maintained at the jobsite, accessible to the Construction Safety Auditors and/or Quality Assurance Auditors/RE/CPM, and retained in accordance with DDC policy.

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

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

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

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

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

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

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

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

VIII. EVALUATION DURING WORK IN PROGRESS

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

A. Use of a safety checklist by a representative of the Construction Safety Unit or other designated DDC representative or Consultant during regular, unannounced inspections of the job site. Field Exit Conferences will be held with the RE/CPM, Contractor Superintendents or Safety Representatives.

B. The RE/CPM will continually monitor the safety and environmental performance of the contractor's employees and work methods. Deficiencies shall be brought to the attention of the contractor's representative on site for immediate correction. The DDC representative will maintain a written record of these deficiencies and forward them to the Construction Safety Unit on a weekly basis. Any critical deficiencies shall be immediately reported to QACS phone# (718) 391-1624 or (718) 391-1911.

C. If the Contractor's safety performance during the project is not up to DDC standards (safety performance measure, accident/incident rate, etc.) the Director- QACS, or designee will meet with the Contractor's safety representative, the DDC project manager, the RE/CPM, or the DDC Environmental Specialist (if environmental issues are involved). The purpose of this meeting is to 1) determine the level of non-compliance; 2) explain and clarify the safety/environmental provisions; 3) agree on a future course of action to correct the deficiencies.

D. If the deficiencies continue to occur with inadequate attention by the contractor, this shall, among other remedies available, be grounds for default.

E. The contractor shall inform the Construction Safety Unit and ACCO Insurance and Risk Management Unit of all medical injuries or illnesses that require doctors' treatment resulting from an on-the-job incident within 24 hours of the occurrence. The Construction Safety Unit shall also be immediately informed of all fatalities, catastrophic accidents with more than one employee hospitalized, any injuries to members of the general public and major equipment damage (e.g., property damage, equipment rollovers, loads dropped from crane). QACS shall maintain a record of all contractor injuries and illnesses during the project and provide regular reports to the Agency.

F. The Construction Safety Unit shall be immediately notified at the start of any NYS-DOL/ NYC-COSH/ OSHA/ EPA inspections. The Director of Quality Assurance & Construction Safety shall maintain a log of all contractor OSHA/EPA inspections and citations during the project.

IX. SAFETY PERFORMANCE EVALUATION

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

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CITY OF NEW YORK

STANDARD CONSTRUCTION CONTRACT

DELAY DAMAGES PILOT

September 2008

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CITY OF NEW YORK
STANDARD CONSTRUCTION CONTRACT

TABLE OF CONTENTS

TABLE OF CONTENTS

CITY OF NEW YORK
STANDARD CONSTRUCTION CONTRACT

TABLE OF CONTENTS

TABLE OF CONTENTS

CHAPTER XI (CONT'D)
MISCELLANEOUS PROVISIONS

CITY OF NEW YORK

STANDARD CONSTRUCTION CONTRACT (September 2008)

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

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

  5. Where a Subcontractor Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multi-year contracts, such list shall also be submitted every year thereafter. **PLEASE NOTE: If this Contract is a public works project subject to GML §101(5), [i.e., a contract valued at or below $3M (for projects in New York City) or a contract that is subject to a Project Labor Agreement] where the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades [i.e., plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring], the Contractor must identify all those to which it intends to award construction subcontracts for any of the Wicks trades, regardless of what point in the life of the contract such subcontracts will occur, at the time of bid submission.** In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

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

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

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

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WITNESSETH:

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

CHAPTER I
THE CONTRACT AND DEFINITIONS

ARTICLE 1. THE CONTRACT

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

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

1.1.2 The Contract Drawings and Specifications;

1.1.3 The General Conditions and Special Conditions, if any;

1.1.4 The Contract;

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

1.1.6 The Budget Director's Certificate; all Addenda issued prior to the receipt of the bids; the Notice of Award; Performance and Payment Bonds, if required; and the Notice to Proceed with the Work.

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

ARTICLE 2. DEFINITIONS

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

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

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

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

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

2.1.5 **"City Chief Procurement Officer" (CCPO)** shall mean a person delegated authority by the Mayor to coordinate and oversee the procurement activity of Mayoral agency staff, including the ACCO and any offices which have oversight responsibility for the procurement of construction.

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

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

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

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

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

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

2.1.12 **"Days"** shall mean calendar days, except where otherwise specified.

2.1.13 **"Engineer"** or **"Architect"** or **"Project Manager"** shall mean the person so designated in writing by the Commissioner to act as such in relation to this Contract, including a private Architect or Engineer or Project Manager, as the case may be.

2.1.14 **"Engineering Audit Officer" (EAO)** shall mean the person so designated by the Commissioner to perform responsible auditing functions hereunder.

2.1.15 **"Extra Work"** shall mean Work other than that required by the Contract at the time of award which is authorized by the Commissioner pursuant to Chapter VI of this Contract.

2.1.16 **"Federal-Aid Contract"** shall mean a contract in which the United States (federal) Government provides financial funding as so designated in the Information for Bidders.

2.1.17 **"Final Acceptance"** shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to the Contractor.

2.1.18 **"Final Approved Punch List"** shall mean a list, approved in writing by the Engineer, specifying those items of Work to be completed by the Contractor after Substantial Completion and dates for the completion of each item of Work.

2.1.19 **"Law"** or **"Laws"** shall mean the Constitution of the State of New York, the New York City Charter, the New York City Administrative Code, a Statute of the United States or

of the State of New York, a local law of the City of New York, any ordinance, rule or regulation having the force of law, or common law.

2.1.20 **"Materialman"** shall mean any corporation, firm, partnership, joint venture, or individual, other than employees of the Contractor, who or which contracts with the Contractor or any Subcontractor, to fabricate or deliver, or who actually fabricates or delivers, plant, materials or equipment to be incorporated in the Work.

2.1.21 **"Means and Methods of Construction"** shall mean the labor, materials, temporary structures, tools, plant, and construction equipment, and the manner and time of their use, necessary to accomplish the result intended by this Contract.

2.1.22 **"Other Contractor(s)"** shall mean any Contractor (other than the entity which executed this Contract or its Subcontractors) who has a contract with the City for work on or adjacent to the building or site of the Work.

2.1.23 **"Payroll Taxes"** shall mean State Unemployment Insurance ("SUI"), Federal Unemployment Insurance (FUI") and payments pursuant to the Federal Insurance Contributions Act ("FICA").

2.1.24 **"Project"** shall mean the public improvement to which this Contract relates.

2.1.25 **"Procurement Policy Board" (PPB)** shall mean the Agency of the City of New York whose function is to establish comprehensive and consistent procurement policies and rules which shall have broad application throughout the City.

2.1.26 **"Required Quantity"** in a unit price Contract shall mean the actual quantity of any item of Work or materials which is required to be performed or furnished in order to comply with the Contract.

2.1.27 **"Resident Engineer"** shall mean the representative of the Commissioner duly designated by the Commissioner to be his/her representative at the site of the Work.

2.1.28 **"Site"** shall mean the area upon or in which the Contractor's operations are carried on, and such other areas adjacent thereto as may be designated as such by the Engineer.

2.1.29 **"Specifications"** shall mean all of the directions, requirements and standards of performance applying to the Work as hereinafter detailed and designated under the Specifications.

2.1.30 **"Subcontractor"** shall mean any person, firm or corporation, other than employees of the Contractor, who or which contracts with the Contractor or with its Subcontractors to furnish, or actually furnishes labor, or labor and materials, or labor and equipment, at the site. Wherever the word Subcontractor appears, it shall also mean Sub-Subcontractor.

2.1.31 **"Substantial Completion"** shall mean the written determination by the Commissioner that the Work required under this Contract is substantially, but not entirely, complete.

2.1.32 **"Treasurer"** shall mean the Commissioner of the Department of Finance of the City of New York.

2.1.33 **"Work"** shall mean all services required to complete the Project in accordance with the Contract Documents, including without limitation, labor, material, superintendence, management, administration, equipment, and incidentals, and shall include both Contract Work and Extra Work.

CHAPTER II
THE WORK AND ITS PERFORMANCE

ARTICLE 3. CHARACTER OF THE WORK

3.1 Unless otherwise expressly provided in the **Contract Drawings, Specifications** and **Addenda**, the **Work** shall be performed in accordance with the best modern practice, utilizing, unless otherwise specified in writing, new and unused materials of standard first grade quality and workmanship and design of the highest quality, to the satisfaction of the **Commissioner**.

ARTICLE 4. MEANS AND METHODS OF CONSTRUCTION

4.1 Unless otherwise expressly provided in the **Contract Drawings, Specifications** and **Addenda**, the **Means and Methods of Construction** shall be such as the **Contractor** may choose; subject, however, to the **Engineer's** right to reject the **Means and Methods of Construction** proposed by the **Contractor** which in the opinion of the **Engineer**:

4.1.1 Will constitute or create a hazard to the **Work**, or to persons or property; or

4.1.2 Will not produce finished **Work** in accordance with the terms of the **Contract**; or

4.1.3 Will be detrimental to the overall progress of the **Project**.

4.2 The **Engineer's** approval of the **Contractor's Means and Methods of Construction**, or his/her failure to exercise his/her right to reject such means or methods, shall not relieve the **Contractor** of its obligation to complete the **Work** as provided in this **Contract**; nor shall the exercise of such right to reject create a cause of action for damages.

ARTICLE 5. COMPLIANCE WITH LAWS

5.1 The **Contractor** shall comply with all **Laws** applicable to this **Contract** and to the **Work** to be done hereunder.

5.2 Procurement Policy Board Rules: This **Contract** is subject to the Rules of the **PPB** ("**PPB** Rules") in effect at the time of the bid opening for this **Contract**. In the event of a conflict between the **PPB** Rules and a provision of this **Contract**, the **PPB** Rules shall take precedence.

5.3 Noise control code provisions.

5.3.1 In accordance with the provisions of Section 24-216(b) of the Administrative Code of the **City** ("Administrative Code"), Noise Abatement Contract Compliance, devices and activities which will be operated, conducted, constructed or manufactured pursuant to this **Contract** and which are subject to the provisions of the **City** Noise Control Code shall be operated, conducted, constructed, or manufactured without causing a violation of the Administrative Code. Such devices and activities shall incorporate advances in the art of noise control development for the kind and level of noise

emitted or produced by such devices and activities, in accordance with regulations issued by the **Commissioner** of the Department of Environmental Protection.

5.3.2 The Contractor agrees to comply with Section 24-219 of the Administrative Code of the **City** ("Administrative Code") and implementing rules codified at 15 Rules of the City of New York ("RCNY") Section 28-100 et. seq. In accordance with such provisions, the **Contractor**, if the Contractor is the responsible party under such regulations, shall prepare and post a Construction Noise Mitigation Plan at each work site, in which the **Contractor** shall certify that all construction tools and equipment have been maintained so that they operate at normal manufacturers operating specifications. If the **Contractor** cannot make this certification, it must have in place an Alternative Noise Mitigation Plan approved by the New York City Department of Environmental Protection. In addition, the Contractor's certified Construction Noise Mitigation Plan is subject inspection by the Department of Environmental Protection in accordance with 15 RCNY §28-101. No Contract work may take place at a worksite unless there is a Construction Noise Mitigation Plan or approved Alternative Noise Mitigation Plan in place. In addition, the **Contractor** shall create and implement a noise mitigation training program. Failure to comply with these requirements may result in fines and other penalties pursuant to the applicable provisions of the Administrative Code and RCNY.

5.4 Ultra Low Sulfur Diesel Fuel: In accordance with the provisions of Section 24-163.3 of the Administrative Code, the Contractor specifically agrees as follows:

5.4.1 Definitions. For purposes of this Article 5.4, the following definitions apply:

5.4.1(a) "Contractor" means any person or entity that enters into a Public Works Contract with a City agency, or any person or entity that enters into an agreement with such person or entity, to perform work or provide labor or services related to such Public Works Contract

5.4.1(b) "Motor Vehicle" means any self-propelled vehicle designed for transporting persons or property on a street or highway.

5.4.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under section 7411 or section 7521 of title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

5.4.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty horsepower and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers and similar equipment, except that this term shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five horsepower or less and that are not used in any construction program or project.

5.4.1(e) "Public Works Contract" means a contract with a City agency for a construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; a contract with a City agency for the preparation for any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; or a contract with a City agency for any final work involved in the completion of any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge.

5.4.1(f) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million.

5.4.2 Ultra Low Sulfur Diesel Fuel

5.4.2(a) All Contractors shall use Ultra Low Sulfur Diesel Fuel in diesel-powered Nonroad Vehicles in the performance of this **Contract**.

5.4.2(b) Notwithstanding the requirements of Article 5.4.2(a), Contractors may use diesel fuel that has a sulfur content of no more than thirty parts per million to fulfill the requirements of this Article 5.4.2, where the Commissioner of the New York City Department of Environmental Protection ("DEP Commissioner") has issued a determination that a sufficient quantity of Ultra Low Sulfur Diesel Fuel is not available to meet the needs of City agencies and Contractors. Any such determination shall expire after six months unless renewed.

5.4.2(c) Contractors shall not be required to comply with this Article 5.4.2 where the agency letting this contract makes a written finding, which is approved, in writing, by the DEP Commissioner, that a sufficient quantity of Ultra Low Sulfur Diesel Fuel, or diesel fuel that has a sulfur content of no more than thirty parts per million is not available to meet the requirements of Section 24-163.3 of the Administrative Code, provided that such Contractor in its fulfillment of the requirements of this **Contract**, to the extent practicable, shall use whatever quantity of Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million is available. Any finding made pursuant to this subdivision shall expire after sixty days, at which time the requirements of this Article 5.4.2 shall be in full force and effect unless the Agency renews the finding in writing and such renewal is approved by the DEP Commissioner.

5.4.2(d) Contractors may check on determinations and approvals issued by the DEP Commissioner pursuant to Section 24-163.3 of the Administrative Code, if any, at www.dep.nyc.gov or by contacting the Agency issuing this solicitation.

5.4.2(e) The requirements of this Article 5.4.2 do not apply where they are precluded by federal or State funding requirements or where the **Contract** is an emergency procurement.

5.4.3 Best Available Technology

5.4.3(a) All Contractors shall utilize the best available technology for reducing the emission of pollutants for diesel-powered Nonroad Vehicles in the performance of this **Contract**. For determinations of best available technology for each type of diesel-powered Nonroad Vehicle, Contractors shall comply with the regulations of the City Department of Environmental Protection, as and when adopted, Chapter 14 of Title 15 of the Rules of the City of New York (RCNY). The Contractor shall fully document all steps in the best available technology selection process and shall furnish such documentation to the Agency or the DEP Commissioner upon request. The Contractor shall retain all documentation generated in the best available technology selection process for as long as the selected best available technology is in use.

5.4.3(b) No Contractor shall be required to replace best available technology for reducing the emission of pollutants or other authorized technology utilized for a diesel-powered Nonroad Vehicle in accordance with the provisions of this Article 5.4.3 within three years of having first utilized such technology for such vehicle.

5.4.3(c) This Article 5.4.3 shall not apply to any vehicle used to satisfy the requirements of a specific Public Works Contract for fewer than twenty calendar days.

5.4.3(d) The Contractor shall not be required to comply with this Article 5.4.3 with respect to a diesel-powered Nonroad Vehicle under the following circumstances:

5.4.3(d)(1) Where the agency makes a written finding, which is approved, in writing, by the DEP Commissioner, that the best available technology for reducing the emission of pollutants as required by those paragraphs is unavailable for such vehicle, Contractor shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle.

5.4.3(d)(2) Where the DEP Commissioner has issued a written waiver based upon the Contractor having demonstrated to the DEP Commissioner that the use of the best available technology for reducing the emission of pollutants might endanger the operator of such vehicle or those working near such vehicle, due to engine malfunction, Contractor shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle, which would not endanger the operator of such vehicle or those working near such vehicle.

5.4.3(d)(3) In determining which technology to use for the purposes of Articles 5.4.3(d)(1) and 5.4.3(d)(2) above, Contractor shall primarily consider the reduction in emissions of particulate matter and secondarily consider the reduction in emissions of nitrogen oxides associated with the use of such technology, which shall in no event result in an increase in the emissions of either such pollutant.

5.4.3(d)(4) Contractors shall submit requests for a finding or a waiver pursuant to this Article 5.4.3(d) in writing to the DEP Commissioner, with a copy to the ACCO of the Agency issuing the solicitation. Any finding or waiver made or issued pursuant to Articles 5.4.3(d)(1) and 5.4.3(d)(2) above shall expire after one hundred eighty days, at which time the requirements of Article 5.4.3(a) shall be in full force and effect unless the Agency renews the finding, in writing, and the DEP Commissioner approves such finding, in writing, or the DEP Commissioner renews the waiver, in writing.

5.4.3(e) The requirements of this Article 5.4.3 do not apply where they are precluded by federal or State funding requirements or where the contract is an emergency procurement.

5.4.4 Section 24-163 of the Administrative Code. Contractors shall comply with Section 24-163 of the Administrative Code related to the idling of the engines of motor vehicles while parking.

5.4.5 Compliance

5.4.5(a) Contractor's compliance with Article 5.4 may be independently monitored. If it is determined that the Contractor has failed to comply with any provision of Article 5.4, any costs associated with any independent monitoring incurred by the City shall be reimbursed by the Contractor.

5.4.5(b) Any Contractor who violates any provision of Article 5.4, except as provided in Article 5.4.5(c) below, shall be liable for a civil penalty between the amounts of one thousand and ten thousand dollars, in addition to twice the amount of money saved by such Contractor for failure to comply with Article 5.4.

5.4.5(c) No Contractor shall make a false claim with respect to the provisions of Article 5.4 to a City agency. Where a Contractor has been found to have done so, such Contractor shall be liable for a civil penalty of twenty thousand dollars, in addition to twice the amount of money saved by such Contractor in association with having made such false claim.

5.4.6 Reporting

5.4.6(a) For all Public Works Contracts covered by this Article 5.4, the Contractor shall report to the Department the following information:

5.4.6(1) The total number of diesel-powered Nonroad Vehicles used to fulfill the requirements of this Public Works Contract;

5.4.6(2) The number of such Nonroad Vehicles that were powered by Ultra Low Sulfur Diesel Fuel;

5.4.6(3) The number of such Nonroad Vehicles that utilized the best available technology for reducing the emission of pollutants, including a breakdown by vehicle model and the type of technology;

5.4.6(4) The number of such Nonroad Vehicles that utilized such other authorized technology in accordance with Article 5.4.3, including a breakdown by vehicle model and the type of technology used for each such vehicle;

5.4.6(5) The locations where such Nonroad Vehicles were used; and

5.4.6(6) Where a determination is in effect pursuant to Article 5.4.2(b) or 5.4.2(c), detailed information concerning the Contractor's efforts to obtain Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million.

5.4.6(b) The Contractor shall submit the information required by Article 5.4.6(a) at the completion of work under the Public Works Contract and on a yearly basis no later than August 1 throughout the term of the Public Works Contract. The yearly report shall cover work performed the preceding fiscal year (July 1 - June 30).

5.5 Ultra Low Sulfur Diesel Fuel. In accordance with the Coordinated Construction Act for Lower Manhattan, as amended:

5.5.1 Definitions. For purposes of this Article 5.5, the following definitions apply:

5.5.1(a) "Lower Manhattan" means the area to the south of and within the following lines: a line beginning at a point where the United States pierhead line in the Hudson river as it exists now or may be extended would intersect with the southerly line of West Houston street in the borough of Manhattan extended, thence easterly along the southerly side of West Houston street to the southerly side of Houston street, thence easterly along the southerly side of Houston street to the southerly side of East Houston street, thence northeasterly along the southerly side of East Houston street to the point where it would intersect with the United States pierhead line in the East river as it exists now or may be extended, including tax lots within or immediately adjacent thereto.

5.5.1(b) "Lower Manhattan Redevelopment Project" means any project in Lower Manhattan that is funded in whole or in part with federal or State funding, or any project intended to improve transportation between Lower Manhattan and the two air terminals in the City of New York known as LaGuardia Airport and John F. Kennedy International Airport, or between Lower Manhattan and the air terminal in Newark known as Newark Liberty International Airport, and that is funded in whole or in part with federal funding.

5.5.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under section 7411 or section 7521 of title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

5.5.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty horsepower and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers and similar equipment, except that this terms shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five horsepower or less and that are not used in any construction program or project.

5.5.1(e) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million.

5.5.2 Requirements. **Contractors** and **Subcontractors** are required to use only Ultra Low Sulfur Diesel Fuel to power the diesel-powered Nonroad Vehicles with engine horsepower (HP) rating of 50 HP and above used on a Lower Manhattan Redevelopment Project and, where practicable, to reduce the emission of pollutants by retrofitting such Nonroad Vehicles with oxidation catalysts, particulate filters, or technology that achieves lowest particulate matter emissions.

5.6 Pesticides. In accordance with Section 17-1209 of the Administrative Code, to the extent that the **Contractor** or any **Subcontractor** applies pesticides to any property owned or leased by the **City**, the **Contractor** and any **Subcontractor** shall comply with chapter 12 of the Administrative Code.

ARTICLE 6. INSPECTION

6.1 During the progress of the **Work** and up to the date of **Final Acceptance**, the **Contractor** shall at all times afford the representatives of the **City** every reasonable, safe and proper facility for inspecting all **Work** done or being done at the **Site** and also for inspecting the manufacture or preparation of materials and equipment at the place of such manufacture or preparation.

6.2 The **Contractor's** obligation hereunder shall include the uncovering or taking down of finished **Work** and its restoration thereafter; provided, however, that the order to uncover, take down and restore shall be in writing, and further provided that if **Work** thus exposed proves satisfactory, and if the **Contractor** has complied with Article 6.1, such uncovering or taking down and restoration shall be considered an item of **Extra Work** to be paid for in accordance with the provisions of Article 26. If the **Work** thus exposed proves unsatisfactory, the **City** has no obligation to compensate the **Contractor** for the uncovering, taking down or restoration.

6.3 Inspection and approval by the **Commissioner**, the **Engineer**, **Project Manager**, or **Resident Engineer**, of finished **Work** or of **Work** being performed, or of materials and equipment at the place of manufacture or preparation, shall not relieve the **Contractor** of its obligation to perform the **Work** in strict accordance with the **Contract**. Finished or unfinished **Work** not found to be in strict accordance with the **Contract** shall be replaced as directed by the **Engineer**, even though such **Work** may have been previously approved and paid for. Such corrective work is **Contract Work** and shall not be deemed **Extra Work**.

6.4 Rejected **Work** and materials shall be promptly taken down and removed from the **Site**, which must at all times be kept in a reasonably clean and neat condition.

ARTICLE 7. PROTECTION OF WORK AND OF PERSONS AND PROPERTY; NOTICES AND INDEMNIFICATION

7.1 During the performance of the **Work** and up to the date of **Final Acceptance**, the **Contractor** shall be under an absolute obligation to protect the finished and unfinished **Work** against any damage, loss, injury, theft and/or vandalism and in the event of such damage, loss, injury, theft and/or vandalism, it shall promptly replace and/or repair such **Work** at the **Contractor's** sole cost and expense, as directed by the **Resident Engineer**. The obligation to deliver finished **Work** in strict accordance with the **Contract** prior to **Final Acceptance** shall be absolute and shall not be affected by the **Resident Engineer's** approval of, or failure to prohibit, the **Means and Methods of Construction** used by the **Contractor**.

7.2 During the performance of the **Work** and up to the date of **Final Acceptance**, the **Contractor** shall take all reasonable precautions to protect the persons and property of the **City** and of others from damage, loss or injury resulting from the **Contractor's**, and/or its **Subcontractors'** operations under this **Contract.** The **Contractor's** obligation to protect shall include the duty to provide, place or replace and adequately maintain at or about the **Site** suitable and sufficient protection such as lights, barricades, and enclosures.

7.3 The **Contractor** shall comply with the notification requirements set forth below in the event of any loss, damage or injury to **Work**, persons or property, or any accidents arising out of the operations of the **Contractor** and/or its **Subcontractors** under this **Contract**.

7.3.1 The **Contractor** shall make a full and complete report in writing to the **Resident Engineer** within three (3) **Days** after the occurrence.

7.3.2 The **Contractor** shall notify in writing the commercial general liability insurance carrier, and, where applicable, the worker's compensation and/or other insurance carrier, of any such loss, damage, injury, or accident, and any claim or suit arising therefrom, immediately, but not later than 20 days after such event. The **Contractor's** notice to the commercial general liability insurance carrier must expressly specify that "this notice is being given on behalf of the City of New York as Additional Insured as well as [the Contractor] as Named Insured." The Contractor's notice to the insurance carrier shall contain the following information: the name of the **Contractor**, the number of the **Contract**, the date of the occurrence, the location (street address and borough) of the occurrence, and the identity of the persons or things injured, damaged or lost.

7.3.2(a) At the time notice is provided to the insurance carrier(s), the **Contractor** shall provide copies of such notice to the **Comptroller** and the **Commissioner**. Notice to the **Comptroller** shall be sent to the Insurance Unit, NYC Comptroller's Office, 1 Centre Street – Room 1222, New York, New York, 10007. Notice to the **Commissioner** shall be sent to the address set forth in Schedule A of the General Conditions.

7.3.2(b) If the **Contractor** fails to provide any of the foregoing notices to any appropriate insurance carrier(s) in a timely and complete manner, the **Contractor** shall indemnify the City for all losses, judgments, settlements and expenses, including reasonable attorneys' fees, arising from an insurer's disclaimer of coverage citing late notice by or on behalf of the City.

7.4 To the fullest extent permitted by law, the **Contractor** shall indemnify, defend and hold the **City**, its employees and agents (the "Indemnitees") harmless against any and all claims (including but not limited to claims asserted by any employee of the **Contractor** and/or its **Subcontractors)** and costs and expenses of whatever kind (including but not limited to payment or reimbursement of attorneys' fees and disbursements) allegedly arising out of or in any way related to the operations of the **Contractor** and/or its **Subcontractors** in the performance of this **Contract** or from the **Contractor's** and/or its **Subcontractors'** failure to comply with any of the provisions of this **Contract** or of the **Law**. Such costs and expenses shall include all those incurred in defending the underlying claim and those incurred in connection with the enforcement of this Article 7.4 by way of cross-claim, third-party

claim, declaratory action or otherwise. The parties expressly agree that the indemnification obligation hereunder contemplates (1) full indemnity in the event of liability imposed against the Indemnitees without negligence and solely by reason of statute, operation of law or otherwise; and (2) partial indemnity in the event of any actual negligence on the part of the Indemnitees either causing or contributing to the underlying claim (in which case, indemnification will be limited to any liability imposed over and above that percentage attributable to actual fault whether by statute, by operation of law, or otherwise). Where partial indemnity is provided hereunder, all costs and expenses shall be indemnified on a pro rata basis.

7.4.1 Indemnification under Article 7.4 or any other provision of the **Contract** shall operate whether or not **Contractor** or its **Subcontractors** have placed and maintained the insurance specified under Article 22.

7.5 The **Contractor** waives all rights against the **City** for any damages or losses for which either is covered under any insurance required under Article 22 (whether or not such insurance is actually procured) or any other insurance applicable to the operations of the **Contractor** and/or its **Subcontractors** in the performance of this **Contract.**

7.6 The provisions of this Article shall not be deemed to create any new right of action in favor of third parties against the **Contractor** or the **City.**

CHAPTER III
TIME PROVISIONS

ARTICLE 8. COMMENCEMENT AND PROSECUTION OF THE WORK

8.1 The **Contractor** shall commence **Work** on the date specified in a written notice signed by the **Commissioner.** The time for performance of the **Work** under the **Contract** shall be computed from the date specified in such written notice. **TIME BEING OF THE ESSENCE** to the **City,** the **Contractor** shall thereafter prosecute the **Work** diligently, using such **Means and Methods of Construction** as are in accord with Article 4 herein and as will assure its completion not later than the date specified herein, or on the date to which the time for completion may be extended.

ARTICLE 9. PROGRESS SCHEDULES

9.1 To enable the **Work** to be performed in an orderly and expeditious manner, the **Contractor,** within fifteen (15) **Days** after the Notice to Proceed with this **Contract,** unless otherwise directed by the **Engineer,** shall submit to the **Engineer** a proposed progress schedule in the form of a bar graph or in such other form as specified by the **Engineer,** and monthly cash flow requirements, showing:

9.1.1 The anticipated time of commencement and completion of each of the various operations to be performed under this **Contract;** and

9.1.2 The sequence and interrelation of each of these operations with the others and with those of other related **Contracts;** and

9.1.3 The estimated time required for fabrication or delivery, or both, of all materials and equipment required for the **Work;** and

9.1.4 The estimated amount in dollars the **Contractor** will claim on a monthly basis.

9.2 The proposed schedule shall be revised as directed by the **Engineer**, until finally approved by the Engineer, and after such approval, subject to the provisions of Article 11, shall be strictly adhered to by the **Contractor**.

9.3 If the **Contractor** shall fail to adhere to the approved progress schedule, or to the schedule as revised pursuant to Article 11, it shall promptly adopt such other or additional **Means and Methods of Construction** as will make up for the time lost and will assure completion in accordance with the approved progress schedule. The approval by the City of a progress schedule which is shorter than the time allotted under the **Contract** shall not create any liability for the **City** if the approved progress schedule is not met.

9.4 The **Contractor** will not receive any payments until the proposed progress schedule is submitted.

ARTICLE 10. REQUESTS FOR INFORMATION OR APPROVAL

10.1 From time to time as the **Work** progresses and in the sequence indicated by the approved progress schedule, the **Contractor** shall submit to the **Engineer** a specific request in writing for each item of information or approval required by the **Contractor**. These requests shall state the latest date upon which the information or approval is actually required by the **Contractor**, and shall be submitted in a reasonable time in advance thereof to enable the **Engineer** a sufficient time to act upon such submissions, or any necessary re-submissions thereof.

10.2 The **Contractor** shall not have any right to an extension of time on account of delays due to the **Contractor's** failure to submit requests for the required information or the required approval in accordance with the above requirements.

ARTICLE 11. NOTICE OF CONDITIONS CAUSING DELAY AND DOCUMENTATION OF DAMAGES CAUSED BY DELAY

11.1 After the commencement of any condition which is causing or may cause a delay in completion of the **Work**, including conditions for which the **Contractor** may be entitled to an extension of time, the following notifications and submittals are required:

11.1.1 Within seven (7) **Days** after the commencement of such condition, the **Contractor** must notify the **Engineer** in writing of the existence, nature and effect of such condition upon the approved progress schedule and the **Work**, and must state why and in what respects, if any, the condition is causing or may cause a delay.

11.1.2 If the **Contractor** shall claim to be sustaining damages for delay as provided for in this Article, within forty-five (45) **Days** from the time such damages are first incurred, and every thirty (30) **Days** thereafter for as long as such damages are being incurred, the **Contractor** shall submit to the **Commissioner** verified written statements of the details and the amounts of such damages, together with documentary evidence of such damages, ("statement of delay damages") as further detailed in Section 11.6. The **Contractor** may submit any of the above statements within such additional time as may be granted by the **Commissioner** in writing upon written request therefor. On failure of the **Contractor** to fully comply with all of the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the **Contractor** may claim in any action arising under or by reason of this **Contract** shall not be different from or in excess of the statements made and documentation provided pursuant to this article.

11.1.3 Within 60 days of submission of the final verified statement of claims pursuant to Article 44, the **Commissioner** shall make a determination as to whether a compensable

delay has occurred and, if so, the amount of compensation due the **Contractor.** Notwithstanding the above, the **Commissioner** may make a determination as to whether a compensable delay has occurred at any time after the **Contractor's** first submission of a statement of delay damages.

11.2 Failure of the **Contractor** to strictly comply with the requirements of Article 11.1.1 may, in the discretion of the **Commissioner**, be deemed sufficient cause to deny any extension of time on account of delay arising out of such condition. Failure of the **Contractor** to strictly comply with the requirements of Articles 11.1.1 and 11.1.2 shall be deemed a conclusive waiver by the **Contractor** of any and all claims for damages for delay arising from such condition and no right to recover on such claims shall exist.

11.3 When appropriate and directed by the **Engineer**, the progress schedule shall be revised by the **Contractor** until finally approved by the **Engineer**. The revised progress schedule must be strictly adhered to by the **Contractor**.

11.4 Compensable Delays

11.4.1 The **Contractor** agrees to make claim only for additional costs attributable to delay in the performance of this **Contract** necessarily extending the time for completion of the **Work** or resulting from acceleration directed by the City and required to maintain the project schedule, occasioned solely by any act or omission to act of the **City** listed below. The **Contractor** also agrees that delay from any other cause shall be compensated, if at all, solely by an extension of time to complete the performance of the **Work.**

11.4.1.1 The failure of the **City** to take reasonable measures to coordinate and progress the **Work**, except that the City shall not be responsible for the **Contractor's** obligation to coordinate and progress the **Work** of its subcontractors.

11.4.1.2 Extended delays attributable to the **City** in the review or issuance of change orders, in shop drawing reviews and approvals or as a result of the cumulative impact of multiple change orders, which have a verifiable impact on project costs.

11.4.1.3 The unavailability of the site for an extended period of time that significantly affects the scheduled completion of the **contract.**

11.4.1.4 The issuance by the Engineer of a stop work order relative to a substantial portion of work for a period exceeding thirty days, that was not brought about through any action or omission of the **Contractor.**

11.4.1.5 Differing site conditions that were not known or reasonably ascertainable on a pre-bid inspection of the site or review of the bid documents or other publicly available sources and that are not ordinarily encountered in the **Project's** geographical area or neighborhood or in the type of work to be performed.

11.4.1.6 Delays caused by the **City's** bad faith or its willful, malicious, or grossly negligent conduct;

11.4.1.7 Delays not contemplated by the parties;

11.4.1.8 Delays so unreasonable that they constitute an intentional abandonment of the **Contract** by the **City**; and

11.4.1.9 Delays resulting from the **City's** breach of a fundamental obligation of the **Contract.**

11.4.2 The provisions of this Article apply only to claims for additional costs attributable to delay and do not preclude determinations by the **Commissioner** allowing reimbursements for additional costs for **Extra Work** pursuant to Articles 25 and 26 of this **Contract.** To the extent that any cost attributable to delay is reimbursed as part of a change order, no additional claim for compensation under this section shall be allowed.

11.5 Non-Compensable Delays. The **Contractor** agrees to make no monetary request for, and has included in its bid prices for the various items of the **Contract,** the extra/additional costs attributable to any delays

caused by or attributable to the items set forth below. For such items, the **Contractor** shall be compensated, if at all, solely by an extension of time to complete the performance of the **Work**, in accordance with the provisions of Article 13. Such extensions of time will be granted, if at all, pursuant to the grounds set forth in Article 13.3.

11.5.1 The acts or omissions of any third parties, including but not limited to other contractors, public/ governmental bodies (other than **City** agencies), utilities or private enterprises, who are disclosed in the contract documents or are ordinarily encountered or generally recognized as related to the **Work**;

11.5.2 Any situation which was within the contemplation of the parties at the time of entering into the **Contract**, including any delay indicated or disclosed in the contract documents or generally recognized as related to the nature of the **Work**, and/or the existence of any facility or appurtenance owned, operated or maintained by any third party, as indicated or disclosed in the contract documents or ordinarily encountered or generally recognized as related to the nature of the **Work**;

11.5.3 Restraining orders, injunctions or judgments issued by a court which were caused by a Contractor's submission, action or inaction or by a Contractor's means and methods of construction, or by third-parties, unless such order, injunction or judgment was the result of an action or omission by the **City**;

11.5.4 Any labor boycott, strike, picketing or similar situation;

11.5.5 Any shortages of supplies of materials required by the contract work;

11.5.6 Climatic conditions, storms, floods, droughts, tidal waves, fires, hurricanes, earthquakes, landslides or other catastrophes, or acts of war or of the public enemy or terrorist acts;

11.5.7 Extra work which does not significantly affect the overall completion of the contract, reasonable delays in the review or issuance of change orders or field orders and/or in shop drawing reviews or approvals.

11.6 Required Content of Submission of Statement of Delay Damages

11.6.1 In the verified written statement of delay damages required by Article 11.1.2, the following information shall be provided by the **Contractor**:

11.6.1.1 For each delay, the dates of the claimed periods of delay and, in addition, a description of the operations that were delayed, the reasons for the delay and an explanation of how they were delayed.

11.6.1.2 A detailed factual statement of the claim providing all necessary dates, locations and items of work affected by the claim.

11.6.1.3 The amount of additional compensation sought and a breakdown of that amount into categories as described in Article 26.2, subject to the limitations set forth in section 11.7.

11.6.1.4 Any additional information requested by the **Commissioner**.

11.7 Recoverable Costs

11.7.1 Delay damages may be recoverable for the following costs actually and necessarily incurred in the performance of the **Work:**

11.7.1.1 Labor;

11.7.1.2 Materials;

11.7.1.3 Equipment;

11.7.1.4 Extended Field Office Costs;
11.7.1.5 Extended Contract Site Overhead;
11.7.1.6 Extended Home office overhead; and
11.7.1.7 Insurance and Bond Costs.

11.7.2 Recoverable Subcontractor Costs. When the work is performed by a **Subcontractor**, the **Contractor** may be paid the actual and necessary costs of such subcontracted work as outlined above in 11.7.1.1 through 11.7.1.6, and an additional overhead of 5% of the costs outlined in 11.7.1.1 through 11.7.1.3.

11.7.3 Non-Recoverable Costs. The parties agree that the **City** will have no liability for the following items and the **Contractor** agrees it shall make no claim for the following items:

11.7.3.1 Profit, or loss of anticipated or unanticipated profit;
11.7.3.2 Consequential damages, including but not limited to interest on monies in dispute, including interest which is paid on such monies, loss of bonding capacity, bidding opportunities, or interest in investment, or any resulting insolvency;
11.7.3.3 Indirect costs or expenses of any nature;
11.7.3.4 Direct or indirect costs attributable to performance of work where the **Contractor**, because of situations or conditions within its control, has not progressed the work in a satisfactory manner; and
11.7.3.5 Attorneys' fees and dispute and claims preparation expenses.

11.8 Determinations under this Article 11 are not subject to the jurisdiction of the Contract Dispute Resolution Board pursuant to the dispute resolution process set forth in Article 27.

11.9 If the parties agree that a compensable delay has occurred and agree on the amount of compensation, payment may be made pursuant to a written change order, subject to pre-audit by the **Engineering Audit Officer,** and may be post-audited by the **Comptroller** and/or the **Department.**

ARTICLE 12. COORDINATION WITH OTHER CONTRACTORS

12.1 During the progress of the **Work, Other Contractors** may be engaged in performing other work or may be awarded other contracts for additional work on this **Project.** In that event, the **Contractor** shall coordinate the **Work** to be done hereunder with the work of such **Other Contractors** and the **Contractor** shall fully cooperate with such **Other Contractors** and carefully fit its own **Work** to that provided under other contracts as may be directed by the **Engineer.** The **Contractor** shall not commit or permit any act which will interfere with the performance of work by any **Other Contractors.**

12.2 If the **Engineer** shall determine that the **Contractor** is failing to coordinate its **Work** with the work of **Other Contractors** as the **Engineer** has directed, then the **Commissioner** shall have the right to withhold any payments otherwise due hereunder until the **Contractor** completely complies with the **Engineer's** directions.

12.3 The **Contractor** shall notify the **Engineer** in writing if any **Other Contractor** on this **Project** is failing to coordinate its work with the **Work** of this **Contract.** If the **Engineer** finds such charges to be true, the **Engineer** shall promptly issue such directions to the **Other Contractor** with respect thereto as the situation may require. The **City** shall not, however, be liable for any damages suffered by any **Other Contractor's** failure to coordinate its work with the **Work** of this **Contract** or by reason of the **Other Contractor's** failure to promptly comply with the directions so issued by the **Engineer,** or by reason of any **Other Contractor's** default in performance, it being understood that the **City** does not guarantee the responsibility or continued efficiency of any contractor. Except as provided for in Article 11.4.1.1, the **Contractor** agrees to make no claim against the **City** for

any damages relating to or arising out of any timely directions issued by the **Engineer** pursuant to this article (including but not limited to the failure of any **Other Contractor** to comply or promptly comply with such directions), or the failure of any **Other Contractor** to coordinate its work, or the default in performance of any **Other Contractor**.

12.4 The **Contractor** shall indemnify and hold the **City** harmless from any and all claims or judgments for damages and from costs and expenses to which the **City** may be subjected or which it may suffer or incur by reason of the **Contractor's** failure to comply with the **Engineer's** directions promptly; and the **Comptroller** shall have the right to exercise the powers reserved in Article 23 with respect to any claims which may be made for damages due to this **Contractor's** failure to comply with the **Engineer's** direction promptly. Insofar as the facts and **Law** relating to any claim would preclude the **City** from being completely indemnified by the **Contractor**, the **City** shall be partially indemnified by the **Contractor** to the fullest extent provided by **Law**.

12.5 Should the **Contractor** sustain any damage through any act or omission of any **Other Contractor** having a contract with the **City** for the performance of work upon the **Site** or of work which may be necessary to be performed for the proper prosecution of the **Work** to be performed hereunder, or through any act or omission of a **Subcontractor** of such **Contractor**, the **Contractor** shall have no claim against the **City** for such damage, but shall have a right to recover such damage from the **Other Contractor** under the provision similar to the following provisions which apply to this **Contract** and have been or will be inserted in the contracts with such **Other Contractors**:

12.5.1 Should any **Other Contractor** having or who shall hereafter have a contract with the **City** for the performance of work upon the **Site** sustain any damage through any act or omission of the **Contractor** hereunder or through any act or omission of any **Subcontractor** of the **Contractor**, the **Contractor** agrees to reimburse such **Other Contractor** for all such damages and to defend at its own expense any suit based upon such claim and if any judgment or claims (even if the allegations of the suit are without merit) against the **City** shall be allowed the **Contractor** shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and agrees to indemnify and hold the **City** harmless from all such claims. Insofar as the facts and **Law** relating to any claim would preclude the **City** from being completely indemnified by the **Contractor**, the **City** shall be partially indemnified by the **Contractor** to the fullest extent provided by **Law**.

12.6 The **City's** right to indemnification hereunder shall in no way be diminished, waived or discharged, by its recourse to assessment of liquidated damages as provided in Article 15, or by the exercise of any other remedy provided for by **Contract** or by **Law**.

ARTICLE 13. EXTENSION OF TIME FOR PERFORMANCE

13.1 If performance by the **Contractor** is delayed for a reason set forth in Article 13.3, the **Contractor** may be allowed a reasonable extension of time in conformance with this article and the **PPB** Rules.

13.2 Any extension of time may be granted only by the **Commissioner** or by the Board for the Extension of Time (hereafter "Board") (as set forth below) upon written application by the **Contractor**.

13.3 Grounds for Extension: If such application is made, the **Contractor** shall be entitled to an extension of time for delay in completion of the **Work** caused solely:

13.3.1 By the acts or omissions of the **City**, its officers, agents or employees; or

13.3.2 By the act or omissions of **Other Contractors** on this **Project**; or

13.3.3 By supervening conditions entirely beyond the control of either party hereto (such as, but not limited to, acts of God or the public enemy, excessive inclement weather, war or other national emergency making performance temporarily impossible or illegal, or strikes or labor disputes not brought about by any act or omission of the **Contractor**).

13.3.4 The **Contractor** shall, however, be entitled to an extension of time for such causes only for the number of **Days** of delay which the **Commissioner** or the Board may determine to be due solely to such causes, and then only if the **Contractor** shall have strictly complied with all of the requirements of Articles 9 and 10.

13.4 The **Contractor** shall not be entitled to receive a separate extension of time for each of several causes of delay operating concurrently, but, if at all, only for the actual period of delay in completion of the **Work** as determined by the **Commissioner** or the Board, irrespective of the number of causes contributing to produce such delay. If one of several causes of delay operating concurrently results from any act, fault or omission of the **Contractor** or of its **Subcontractors** or **Materialmen**, and would of itself (irrespective of the concurrent causes) have delayed the **Work**, no extension of time will be allowed for the period of delay resulting from such act, fault or omission.

13.5 The determination made by the **Commissioner** or the Board on an application for an extension of time shall be binding and conclusive on the **Contractor**.

13.6 The granting of an application for an extension of time for causes of delay other than those herein referred to shall be entirely within the discretion of the **Commissioner** or the Board.

13.7 Permitting the **Contractor** to continue with the **Work** after the time fixed for its completion has expired, or after the time to which such completion may have been extended has expired, or the making of any payment to the **Contractor** after such time, shall in no way operate as a waiver on the part of the **City** of any of its rights under this **Contract**.

13.8 Application for Extension of Time:

13.8.1 Before the **Contractor's** time extension request will be considered, the **Contractor** shall notify the **Commissioner** of the condition which allegedly has caused or is causing the delay, and shall submit a written application to the **Commissioner** identifying:

13.8.1(a) The **Contractor**; the registration number; and **Project** description;

13.8.1(b) Liquidated damage assessment rate, as specified in the **Contract**;

13.8.1(c) Original bid amount;

13.8.1(d) The original **Contract** start date and completion date;

13.8.1(e) Any previous time extensions granted (number and duration); and

13.8.1(f) The extension of time requested.

13.8.2 In addition, the application for extension of time shall set forth in detail:

13.8.2(a) The nature of each alleged cause of delay in completing the **Work**;

13.8.2(b) The date upon which each such cause of delay began and ended and the number of **Days** attributable to each such cause;

13.8.2(c) A statement that the **Contractor** waives all claims except for those delineated in the application, and the particulars of any claims which the **Contractor** does not agree to waive. For time extensions for **Substantial Completion** and final completion payments, the application shall include a detailed statement of the dollar amounts of each element of claim item reserved; and

13.8.2(d) A statement indicating the **Contractor's** understanding that the time extension is granted only for purposes of permitting continuation of **Contract** performance and payment for **Work** performed and that the **City** retains its right to conduct an investigation and assess liquidated damages as appropriate in the future.

13.9 Analysis and Approval of Time Extensions:

13.9.1 For time extensions for partial payments, a written determination shall be made by the **Commissioner** who may, for good and sufficient cause, extend the time for the performance of the **Contract** as follows:

13.9.1(a) If the **Work** is to be completed within six (6) months, the time for performance may be extended for sixty (60) **Days**;

13.9.1(b) If the **Work** is to be completed within less than one (1) year but more than six (6) months, an extension of ninety (90) **Days** may be granted;

13.9.1(c) If the **Contract** period exceeds one (1) year, besides the extension granted in Article 13.9.1(b), an additional thirty (30) **Days** may be granted for each multiple of six (6) months involved beyond the one (1) year period; or

13.9.1(d) If exceptional circumstances exist, the **Commissioner** may extend the time for performance beyond the extensions in Articles 13.9.1(a), 13.9.1(b), and 13.9.1(c). In that event, the **Commissioner** shall file with the Mayor's Office of Contract Services a written explanation of the exceptional circumstances.

13.9.2 For extensions of time for **Substantial Completion** and final completion payments, the **Engineer**, in consultation with the **Commissioner**, shall prepare a written analysis of the delay (including a preliminary determination of the causes of delay, the beginning and end dates for each such cause of delay, and whether the delays are excusable under the terms of this **Contract**). The report shall be subject to review by and approval of the Board, which shall have authority to question its analysis and determinations and request additional facts or documentation. The report as reviewed and made final by the Board shall be made a part of the **Agency Contract** file. Neither the report itself nor anything contained therein shall operate as a waiver or release of any claim the **City** may have against the **Contractor** for either actual or liquidated damages.

13.9.3 Approval Mechanism for Time Extensions for **Substantial Completion** or Final Completion Payments: An extension shall be granted only with the approval of the Board which is comprised of the **ACCO** of the **Agency**, the Corporation Counsel and the **Comptroller**, or their authorized representatives.

13.9.4 Neither the granting of any application for an extension of time to the **Contractor** or any other **Contractor** on this **Project** nor the papers, records or reports related to any application for or grant of an extension of time or determination related thereto shall be

referred to or offered in evidence by the **Contractor** or its attorneys in any action or proceeding.

13.10 No Damage for Delay: The **Contractor** agrees to make no claim for damages for delay in the performance of this **Contract** except as set forth in Article 11, and agrees that all it may be entitled to on account of any such delay for which compensation is not specifically provided for in Article 11 is an extension of time to complete performance of the **Work** as provided herein.

ARTICLE 14. COMPLETION AND FINAL ACCEPTANCE OF THE WORK

14.1 Date for **Substantial Completion**: The **Contractor** shall substantially complete the **Work** within the time fixed in Schedule A of the General Conditions, or within the time to which such **Substantial Completion** may be extended.

14.2 Determining the Date of **Substantial Completion**: The **Work** will be deemed to be substantially complete when the two conditions set forth in Articles 14.2.1 and 14.2.2 have been met. The **Commissioner** will then issue a Certificate of **Substantial Completion**.

14.2.1 Inspection: The **Engineer** has inspected the **Work** and has made a written determination that it is substantially complete.

14.2.2 Approval of Final Punch List and Date for **Final Acceptance**: Following inspection of the **Work**, the **Engineer** shall furnish the **Contractor** a final punch list, specifying all items of **Work** to be completed. The **Contractor** shall then submit to the **Engineer** dates for the completion of each specified item of **Work**. Within a reasonable time after receipt, the **Engineer**, in a written notification to the **Contractor**, shall approve the **Contractor's** completion dates or, if they are unable to agree, shall establish dates for the completion of each item of **Work**. The latest completion date specified shall be the date for **Final Acceptance** of the **Work**.

14.3 Determining the Date of **Final Acceptance**: The **Work** will be accepted as final and complete as of the date of the **Engineer's** inspection if, upon such inspection, the **Engineer** finds that all items on the **Final Approved Punch List** are complete and no further **Work** remains to be done. The **Commissioner** will then issue a written determination of **Final Acceptance**.

14.4 Request for Inspection: Inspection of the **Work** by the **Engineer** for the purpose of **Substantial Completion** or **Final Acceptance** shall be made within ten (10) **Days** after receipt of the **Contractor's** written request therefor.

14.5 Request for Re-inspection: If upon inspection for the purpose of **Substantial Completion** or **Final Acceptance**, the **Engineer** determines that there are items of **Work** still to be performed, the **Contractor** shall promptly perform them and then request a re-inspection. If upon re-inspection, the **Engineer** determines that the **Work** is substantially complete or finally accepted, the date of such re-inspection shall be the date of **Substantial Completion** or **Final Acceptance**. Re-inspection by the **Engineer** shall be made within ten (10) **Days** after receipt of the **Contractor's** written request therefor.

14.6 Initiation of Inspection by the **Engineer**: If the **Contractor** does not request inspection or re-inspection of the **Work** for the purpose of **Substantial Completion** or **Final Acceptance**, the **Engineer** may initiate such inspection or re-inspection.

ARTICLE 15. LIQUIDATED DAMAGES

15.1 In the event the **Contractor** fails to complete the **Work** within the time fixed for such completion in Schedule A of the General Conditions, plus authorized time extensions, or if the **Contractor**, in the sole determination of the **Commissioner**, has abandoned the **Work**, the **Contractor** shall pay to the **City** the sum fixed in Schedule A of the General Conditions, for each and every **Day** that the time consumed in completing the **Work** exceeds the time allowed therefor; which said sum, in view of the difficulty of accurately ascertaining the loss which the **City** will suffer by reason of delay in the completion of the **Work** hereunder, is hereby fixed and agreed as the liquidated damages that the **City** will suffer by reason of such delay, and not as a penalty. This article shall apply to the **Contractor** if it is defaulted pursuant to Chapter X of this **Contract**. Neither the failure to assess liquidated damages nor the granting of any time extension shall operate as a waiver or release of any claim the **City** may have against the **Contractor** for either actual or liquidated damages.

15.2 Liquidated damages received hereunder are not intended to be nor shall they be treated as either a partial or full waiver or discharge of the **City's** right to indemnification, or the **Contractor's** obligation to indemnify the **City**, or to any other remedy provided for in this **Contract** or by **Law**.

15.3 The **Commissioner** may deduct and retain out of the monies which may become due hereunder, the amount of any such liquidated damages; and in case the amount which may become due hereunder shall be less than the amount of liquidated damages suffered by the **City**, the **Contractor** shall be liable to pay the difference.

ARTICLE 16. OCCUPATION OR USE PRIOR TO COMPLETION

16.1 Unless otherwise provided for in the specifications, the **Commissioner** may take over, use, occupy or operate any part of the **Work** at any time prior to **Final Acceptance**, upon written notification to the **Contractor**. The **Engineer** shall inspect the part of the **Work** to be taken over, used, occupied, or operated, and will furnish the **Contractor** with a written statement of the **Work**, if any, which remains to be performed on such part. The **Contractor** shall not object to, nor interfere with, the **Commissioner's** decision to exercise the rights granted by this article. In the event the **Commissioner** takes over, uses, occupies, or operates any part of the **Work**:

16.1.1 the **Commissioner** shall issue a written determination of **Substantial Completion** with respect to such part of the **Work**;

16.1.2 the **Contractor** shall be relieved of its absolute obligation to protect such part of the unfinished **Work** in accordance with Article 7;

16.1.3 the **Contractor's** guarantee on such part of the **Work** shall begin on the date of such use by the **City**; and;

16.1.4 the **Contractor** shall be entitled to a return of so much of the amount retained in accordance with Article 21 as it relates to such part of the **Work**, except so much thereof as may be retained under Articles 24 and 44.

CHAPTER IV
SUBCONTRACTS AND ASSIGNMENTS

ARTICLE 17. SUBCONTRACTS

17.1 The **Contractor** shall not make subcontracts totaling an amount more than the percentage of the total **Contract** price fixed in Schedule A of the General Conditions, without prior written permission from the **Commissioner**. All subcontracts made by the **Contractor** shall be in writing. No work may be performed by a

Subcontractor prior to the **Contractor** entering into a written subcontract with the **Subcontractor** and complying with the provisions of this Article 17.

17.2 Before making any subcontracts, the **Contractor** shall submit a written statement to the **Commissioner** giving the name and address of the proposed **Subcontractor**, the portion of the **Work** and materials which it is to perform and furnish, the cost of the subcontract, the VENDEX questionnaire if required, and any other information tending to prove that the proposed **Subcontractor** has the necessary facilities, skill, integrity, past experience and financial resources to perform the **Work** in accordance with the terms and conditions of this **Contract**.

17.3 If an approved **Subcontractor** elects to subcontract any portion of its subcontract, the proposed sub-subcontract shall be submitted in the same manner as directed above.

17.4 The **Commissioner** will notify the **Contractor** in writing whether the proposed **Subcontractor** is qualified or not qualified. If the proposed **Subcontractor** is not qualified, the **Contractor** may submit another proposed **Subcontractor** unless the **Contractor** decides to do the **Work**. No **Subcontractor** shall be permitted on the **Site** unless approved.

17.5 Before entering into any subcontract hereunder, the **Contractor** shall inform the **Subcontractor** fully and completely of all provisions and requirements of this **Contract** relating either directly or indirectly to the **Work** to be performed and the materials to be furnished under such subcontract, and every such **Subcontractor** shall expressly stipulate that all labor performed and materials furnished by the **Subcontractor** shall strictly comply with the requirements of this **Contract**.

17.6 Documents given to a **Subcontractor** for the purpose of soliciting the **Subcontractor's** bid shall include either a copy of the bid cover or a separate information sheet setting forth the **Project** name, the **Contract** number (if available), the **Agency** (as noted in Article 2.1.6), and the **Project's** location.

17.7 The **Commissioner's** approval of a **Subcontractor** shall not relieve the **Contractor** of any of its responsibilities, duties and liabilities hereunder. The **Contractor** shall be solely responsible to the **City** for the acts or defaults of its **Subcontractor** and of such **Subcontractor's** officers, agents and employees, each of whom shall, for this purpose, be deemed to be the agent or employee of the **Contractor** to the extent of its subcontract.

17.8 The **Contractor** shall be responsible for ensuring that all **Subcontractors** performing **Work** at the **Site** have either their own insurance coverage or are covered by the **Contractor's** insurance as required by Article 22.

17.9 The **Contractor** shall promptly, upon request, file with the **Engineer** a conformed copy of the subcontract and its cost. The subcontract shall provide the following:

17.9.1 Payment to **Subcontractors**: The agreement between the **Contractor** and its **Subcontractors** shall contain the same terms and conditions as to method of payment for **Work**, labor and materials, and as to retained percentages, as are contained in this **Contract**.

17.9.2 Prevailing Rate of Wages: The agreement between the **Contractor** and its **Subcontractors** shall include the prevailing wage rates and supplemental benefits to be paid in accordance with Labor Law Section 220.

17.9.3 Section 6-123 of the Administrative Code: Pursuant to the requirements of Section 6-123 of the Administrative Code, every agreement between the **Contractor** and its **Subcontractors** in excess of $50,000 shall include a provision that the **Subcontractor** shall not engage in any unlawful discriminatory practice as defined in Title VIII of the Administrative Code (Section 8-101 et. seq.).

17.10 The **Commissioner** may deduct from the amounts certified under this **Contract** to be due to the **Contractor**, the sum or sums due and owing from the **Contractor** to the **Subcontractors** according to the terms of the said subcontracts, and in case of dispute between the **Contractor** and its **Subcontractor,** or **Subcontractors**, as to the amount due and owing, the **Commissioner** may deduct and withhold from the amounts certified under this **Contract** to be due to the **Contractor** such sum or sums as may be claimed by such **Subcontractor**, or **Subcontractors,** in a sworn affidavit, to be due and owing until such time as such claim or claims shall have been finally adjusted.

17.11 On **Contracts** where 100% performance bonds and payment bonds are executed, the **Contractor** shall include on each requisition for payment the following data: **Subcontractor's** name, value of the subcontract, total amount previously paid to **Subcontractor** for **Work** previously requisitioned, and the amount, including retainage, to be paid to the **Subcontractor** for **Work** included in the requisition.

17.12 On **Contracts** where performance bonds and payment bonds are not executed, the **Contractor** shall include with each requisition for payment submitted hereunder, a signed statement from each and every **Subcontractor** and/or **Materialman** for whom payment is requested in such requisition. Such signed statement shall be on the letterhead of the **Subcontractor** and/or **Materialman** for whom payment is requested and shall (i) verify that such **Subcontractor** and/or **Materialman** has been paid in full for all work performed and/or material supplied to date, exclusive of any amount retained and any amount included on the current requisition, and (ii) state the total amount of retainage to date, exclusive of any amount retained on the current requisition.

ARTICLE 18. ASSIGNMENTS

18.1 The **Contractor** shall not assign, transfer, convey or otherwise dispose of this **Contract**, or the right to execute it, or the right, title or interest in or to it or any part thereof, or assign, by power of attorney or otherwise any of the monies due or to become due under this **Contract**, unless the previous written consent of the **Commissioner** shall first be obtained thereto, and the giving of any such consent to a particular assignment shall not dispense with the necessity of such consent to any further or other assignments.

18.2 Such assignment, transfer, or conveyance shall not be valid until filed in the office of the **Commissioner** and the **Treasurer**, with the written consent of the **Commissioner** endorsed thereon or attached thereto.

18.3 Failure to obtain the previous written consent of the **Commissioner** to such an assignment, transfer or conveyance, may result in the revocation and annulment of this **Contract**. The **City** shall thereupon be relieved and discharged from any further liability to the **Contractor**, its assignees, transferees or sublessees, who shall forfeit and lose all monies therefor earned under the **Contract**, except so much as may be required to pay the **Contractor's** employees.

18.4 The provisions of this clause shall not hinder, prevent, or affect an assignment by the **Contractor** for the benefit of its creditors made pursuant to the **Laws** of the State of New York.

18.5 This **Contract** may be assigned by the **City** to any corporation, agency or instrumentality having authority to accept such assignment.

CHAPTER V
CONTRACTOR'S SECURITY AND GUARANTY

ARTICLE 19. SECURITY DEPOSIT

19.1 The bid deposit, if required, shall be retained by the **Comptroller** as security for the **Contractor's** faithful performance of the **Contract** and will be returned to the **Contractor** only after the sum retained under Article 21 equals the amount of the bid deposit, subject to the other provisions of this **Contract**. If performance and payment bonds are required, any bid security posted shall be returned within a reasonable time after posting of such bonds and execution of this **Contract** by the **City**. When no partial payments are provided, the bid deposit will be released when final payment is certified to the **Comptroller** for payment.

19.2 If the **Contractor** is declared in default under Article 48 prior to the return of the deposit, or if any claim is made such as referred to in Article 23, the amount of such deposit, or so much thereof as the **Comptroller** may deem necessary, may be retained and then applied by the **Comptroller**:

19.2.1 To compensate the **City** for any expense, loss or damage suffered or incurred by reason of or resulting from such default, including the cost of re-letting and liquidated damages; or

19.2.2 To indemnify the **City** against any and all claims.

ARTICLE 20. PAYMENT GUARANTEE

20.1 On **Contracts** where 100% performance bonds and payment bonds are executed, this article does not apply.

20.2 In the event the terms of this **Contract** do not require the **Contractor** to provide a payment bond, the **City** shall, in accordance with the terms of this article, guarantee payment of all lawful demands for:

20.2.1 Wages and compensation for labor performed and/or services rendered; and

20.2.2 Materials, equipment, and supplies provided, whether incorporated into the **Work** or not, when demands have been filed with the **City** as provided hereinafter by any person, firm, or corporation which furnished labor, material, equipment, supplies, or any combination thereof, in connection with the **Work** performed hereunder (hereinafter referred to as the "beneficiary") at the direction of the **City** or the **Contractor**.

20.3 The provisions of Article 20.2 are subject to the following limitations and conditions:

20.3.1 The guarantee is made for the benefit of all beneficiaries as defined in Article 20.2 provided that those beneficiaries strictly adhere to the terms and conditions of this Article 20.3.

20.3.2 Nothing in this article shall prevent a beneficiary providing labor, services or material for the **Work** from suing the **Contractor** for any amounts due and owing the beneficiary by the **Contractor**.

20.3.3 All demands made against the **City** pursuant to this article shall be made within four (4) months from the date payment is due on the invoice or invoices submitted by the beneficiary to the **Contractor** for labor or **Work** done or for materials or supplies delivered, or, if the demand is for wages, four (4) months from the date the wages were due to be paid to the beneficiary.

20.3.4 All demands made against the **City** by such beneficiary shall be presented to the **Engineer** along with all written documentation concerning the demand which the **Engineer** deems appropriate or necessary, which may include, but shall not be limited to: the subcontract; any invoices presented to the **Contractor** for payment; the notarized statement of the beneficiary that the demand is due and payable, that a request for payment has been made of the **Contractor** and that the demand has not been paid by the **Contractor** within the time allowed for such payment by the subcontract; and copies of any correspondence between the beneficiary and the **Contractor** concerning such demand. The **City** shall notify the **Contractor** that a demand has been made. The **Contractor** shall inform the **City** of any defenses to the demand, and shall forward to the **City** any documents the **City** requests concerning the demand.

20.3.5 The **City** shall make payment only if, after considering all defenses presented by the **Contractor**, it determines that the payment is due and owing to the beneficiary making the demand.

20.3.6 The **City** will not initiate the payment process of this article or make payment on a demand where the beneficiary making the demand has filed a lien against the **Work** or otherwise sues the **City** prior to receiving a written notice from the **City** that it will not pay the demand.

20.3.7 No beneficiary shall be entitled to interest from the **City**, or to any other costs, including, but not limited to, attorney's fees.

20.4 Upon the receipt by the **City** of a demand pursuant to this article, the **City** may withhold from any payment otherwise due and owing to the **Contractor** under this **Contract** an amount sufficient to satisfy the demand.

20.4.1 In the event the **City** determines that the demand is valid, the **City** shall notify the **Contractor** of such determination and the amount thereof, and direct the **Contractor** to immediately pay such amount to the beneficiary. In the event the **Contractor**, within seven (7) days of receipt of such notification from the **City**, fails to pay the beneficiary, such failure shall constitute an automatic and irrevocable assignment of payment by the **Contractor** to the beneficiary for the amount of the demand determined by the **City** to be valid. The **Contractor**, without further notification or other process, hereby gives its unconditional consent to such assignment of payment to the beneficiary and authorizes the **City**, on its behalf, to take all necessary actions to implement such assignment of payment, including without limitation the execution of any instrument or documentation necessary to effectuate such assignment.

In the event that the amount otherwise due and owing to the **Contractor** by the **City** is insufficient to satisfy such demand, the **City** may, at its option, require payment from the **Contractor** of an amount sufficient to cover such demand and exercise any other right to require or recover payment which the **City** may have under **Law** or **Contract**.

20.4.2 In the event the **City** determines that the demand is invalid, any amount withheld pending the City's review of such demand shall be paid to the **Contractor**; provided, however, no lien has been filed. In the event a lien has been filed, the terms and conditions set forth in Article 23 shall apply.

20.5 The provisions of this article shall not prevent the **City** and the **Contractor** from resolving disputes in accordance with the **PPB** Rules, where applicable.

20.6 In the event the **City** determines that the beneficiary is entitled to payment pursuant to this article, such determination and any defenses and counterclaims raised by the **Contractor** shall be taken into account in evaluating the **Contractor's** performance.

20.7 Nothing in this article shall relieve the **Contractor** of the obligation to pay the claims of all persons with valid and lawful claims against the **Contractor** relating to the **Work**.

20.8 The **Contractor** shall not require any performance, payment or other bonds of any **Subcontractor** if this **Contract** does not require such bonds of the **Contractor**.

20.9 The payment guarantee made pursuant to this article shall be construed in a manner consistent with Section 137 of the State Finance Law and shall afford to persons furnishing labor or materials to the **Contractor** or his **Subcontractors** in the prosecution of the **Work** under this **Contract** all of the rights and remedies afforded to such persons by such section, including but not limited to, the right to commence an action against the **City** on the payment guarantee provided by this article within the one year limitations period set forth in Section 137(4)(b).

ARTICLE 21. RETAINED PERCENTAGE

21.1 If this **Contract** requires 100% performance and payment security, then as further security for the faithful performance of this **Contract**, the **Commissioner** shall deduct, and retain until the substantial completion of the **Work**, five (5%) percent of the value of **Work** certified for payment in each partial payment voucher.

21.2 If this **Contract** does not require 100% performance and payment security and if the price for which this **Contract** was awarded does not exceed $500,000, then as further security for the faithful performance of this **Contract**, the **Commissioner** shall deduct, and retain until the substantial completion of the **Work**, ten (10%) percent of the value of **Work** certified for payment in each partial payment voucher.

21.3 If this **Contract** does not require 100% performance and payment security and if the price for which this **Contract** was awarded exceeds $500,000, then as further security for the faithful performance of this **Contract,** the **Commissioner** shall deduct, and retain until the substantial completion of the **Work,** up to ten (10%) percent of the value of **Work** certified for payment in each partial payment voucher. The percentage to be retained is set forth in Schedule A of the General Conditions.

ARTICLE 22. INSURANCE

22.1 Types of Insurance: From the date the **Contractor** is required to provide Proof of Insurance pursuant to Article 22.3.1 through the date of completion of all required **Work** (including punch list work as certified in writing by the **Resident Engineer**), the **Contractor** shall effect and maintain the following types of insurance if and as indicated in Schedule A of the General Conditions (with the minimum limits and special conditions specified in Schedule A). Such insurance shall be issued by companies that meet the standards of Article 22.2.1 and shall be primary (and non-contributing) to any insurance or self-insurance maintained by the **City**.

22.1.1 Commercial General Liability Insurance: The **Contractor** shall provide a Commercial General Liability Insurance policy covering the **Contractor** as Named Insured and the **City** as an Additional Insured. This policy shall protect the **City** and the **Contractor** from claims for property damage and/or bodily injury, including death, which may arise from any of the operations under this **Contract**. Coverage under this policy shall be at least as broad as that provided by ISO Form CG 0001 (10/01 ed.), must be "occurrence" based rather than "claims-made", and shall include, without limitation, the following types of coverage: Premises Operations, Products and Completed Operations, Contractual Liability (including the tort liability of another assumed in a contract), Broad Form Property Damage, Medical Payments, Independent Contractors, Personal Injury (Contractual Exclusion deleted), Explosion, Collapse and Underground Property, and Incidental Malpractice. If such insurance contains an aggregate limit, it shall apply separately to this **Project**.

22.1.1(a) Such Commercial General Liability Insurance shall name the City, together with its officials and employees, as an Additional Insured under this policy. Coverage for the City as Additional Insured shall specifically include the City's officials and employees, and shall be at least as broad as either Insurance Services Office ("ISO") Form CG 20 10 (07/04 ed.) or Form CG 20 33 (07/04 ed.) and shall provide completed operations coverage at least as broad as CG 20 37 (07/04 ed.).

22.1.1(b) If this **Contract** is equal to or greater than Ten Million Dollars ($10,000,000.00), each Commercial General Liability Insurance policy provided shall contain each of the following endorsements:

22.1.1(b)(i) The Duties in the Event of Occurrence, Claim or Suit condition of the policy is amended per the following: If and insofar as knowledge of an "occurrence", "claim", or "suit" is relevant to the City of New York as Additional Insured under this policy, such knowledge by an agent, servant, official, or employee of the City of New York will not be considered knowledge on the part of the City of New York of the "occurrence", "claim", or "suit" unless the following position shall have received notice thereof from such agent, servant, official, or employee: Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department; and

22.1.1(b)(ii) Any notice, demand or other writing by or on behalf of the Named Insured to the Insurance Company shall also be deemed to be a notice, demand, or other writing on behalf of the City as Additional Insured. Any response by the Insurance Company to such notice, demand or other writing shall be addressed to Named Insured and to the City at the following addresses: Insurance Unit, NYC Comptroller's Office, 1 Centre Street – Room 1222, New York, N.Y. 10007; and Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, NY 10007.

22.1.2 Workers' Compensation Insurance and Disability Benefits Insurance: The **Contractor** shall provide, and ensure that each **Subcontractor** provides, Workers Compensation Insurance and Disability Benefits Insurance in accordance with the **Laws** of the State of New York on behalf of all employees providing services under this **Contract** (except for those qualifying for insurance pursuant to Article 22.1.4).

22.1.3 Employers' Liability Insurance: The **Contractor** shall provide, and ensure that each **Subcontractor** provides, Employers Liability Insurance affording compensation due to bodily injury by accident or disease sustained by any employee arising out of and in the course of his/her employment under this Contract (except for those qualifying for insurance pursuant to Article 22.1.4).

22.1.4 United States Longshoremen's and Harbor Workers Act and/or Jones Act Insurance: The **Contractor** shall provide, and ensure that each **Subcontractor** provides, insurance in accordance with the United States Longshoremen's and Harbor Workers Act and/or the Jones Act, on behalf of all qualifying employees providing services under this **Contract**.

22.1.5 Builders' Risk Insurance: The **Contractor** shall provide a Builders' Risk Insurance policy covering all risks in completed value form. Such policy shall cover the total value of the **Work** performed in accordance with Schedule A, as well as the value of any equipment, supplies and/or material for the **Project** that may be in storage (on or off the **Site**) or in transit. The policy shall cover the cost of removing debris, including demolition as may be legally necessary by the operation of any law, ordinance or regulation, and for loss or damage to any owned, borrowed, leased or rented capital equipment, tools, including tools of their agents and employees, staging towers and forms,

and property of the **City** held in their care, custody and/or control. Such policy shall name as insureds the **City**, the **Contractor,** and its **Subcontractors**. The Builders' Risk policy shall contain the following endorsements:

22.1.5(a) The **City** and the **Contractor** shall be named as loss payee for the **Work** in order of precedence, as their interest may appear; and

22.1.5(b) In the event the loss occurs at an occupied facility, the policy shall permit occupancy without the consent of the Insurance Company; and

22.1.5(c) In the event that the insurance policy has been issued by a mutual insurance company, the following language shall be included: "The City of New York is not liable for any premium or assessment under this policy of insurance. The First Named Insured is solely liable therefor."

22.1.6 Comprehensive Business Automobile Liability Insurance: The **Contractor** shall provide a Comprehensive Business Automobile Liability policy for liability arising out of any owned, non-owned, leased and hired vehicles to be used in connection with this **Contract**. Coverage should be at least as broad as ISO Form CA0001, ed. 10/01.

22.1.6(a) If autos are used for transporting hazardous materials, the Automobile Liability Insurance shall be endorsed to provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90.

22.1.7 Pollution/Environmental Liability Insurance: The **Contractor** shall provide Pollution/Environmental Liability Insurance covering bodily injury and property damage, including loss of use of damaged property or of property that has not been physically injured. Such insurance shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants (including asbestos), including any loss, cost or expense incurred as a result of any cleanup of pollutants (including asbestos) or in the investigation, settlement or defense of any claim, suit, or proceedings against the **City** arising from the operations under this **Contract**. Such insurance shall be in the **Contractor's** name and list the **City** as an Additional Insured. Coverage for the **City** as Additional Insured shall specifically include the **City's** officials and employees, and shall be at least as broad as provided to the **Contractor** for this **Project**.

22.1.7(a) If such coverage is written on a claims-made policy, such policy shall have a retroactive date on or before the effective date of this **Contract,** and continuous coverage shall be maintained, or an extended discovery period exercised, for a period of not less than three years from the time the **Work** under this **Contract** is completed.

22.1.8 Marine Insurance:

22.1.8(a) Marine Protection and Indemnity Insurance: The **Contractor** shall provide a Marine Protection and Indemnity policy with coverage at least as broad as policy form SP-23. The policy shall provide coverage for the **Contractor** and for the **City** (together with its officials and employees) as Additional Insured for bodily injury and property damage arising from marine operations under this **Contract** including injury or death of crew members (if not fully provided through other insurance), damage to piers, wharves and other fixed or movable structures and loss of or damage to any other vessel or craft, or to property on such other vessel or craft, not caused by collision.

22.1.8(b) Ship Repairers Legal Liability Insurance: The **Contractor** shall provide a Ship Repairers Legal Liability Insurance policy covering all repair operations under this **Contract** at

or in the vicinity of a designated approved port or yard under this **Contract**. The policy shall provide coverage from the point of acceptance of care custody and control of any **City** vessel. The policy shall provide Bailee Coverage for any **City** vessel in the **Contractor's** care, custody and control and coverage for damage to property of others caused by any **City** vessel in the **Contractor's** care custody and control.

22.1.8(c) Collision Liability/Towers Liability Insurance: The **Contractor** shall provide a Collision Liability/Towers Liability Insurance policy with coverage for the **Contractor** and for the **City** (together with its officials and employees) as Additional Insured at least as broad as the American Institute Tug Form (08/01/76) for all tugs used under this **Contract** and Collision Liability per American Institute Hull Clauses (6/2/77).

22.1.8(d) Marine Pollution Liability Insurance: The **Contractor** shall provide a Marine Pollution Liability Insurance policy covering itself as Named Insured and the **City** (together with its officials and employees) as Additional Insured for liability arising from the discharge or substantial threat of a discharge of oil, or from the release or threatened release of a hazardous substance including injury to, or economic losses resulting from, the destruction of or damage to real property, personal property or natural resources. Coverage under this policy shall be at least as broad as that provided by Water Quality Insurance Syndicate Form (09/98 ed.).

22.1.9 The **Contractor** shall provide such other types of insurance, at such minimum limits, as are specified in Schedule A of the General Conditions.

22.2 General Requirements for Insurance Policies:

22.2.1 All required insurance policies shall be maintained with companies that may lawfully issue the required policy and have an A.M. Best rating of at least A- VII or a Standard and Poor's rating of at least AA, unless prior written approval is obtained from the Mayor's Office of Operations.

22.2.2 The **Contractor** shall be solely responsible for the payment of all premiums for all required policies and all deductibles and self-insured retentions to which such policies are subject, whether or not the **City** is an insured under the policy.

22.2.3 In his/her sole discretion, the **Commissioner** may, subject to the approval of the **Comptroller** and the Corporation Counsel, accept Letters of Credit and/or custodial accounts in lieu of required insurance.

22.2.4 The **City's** limits of coverage for all types of insurance required pursuant to Schedule A of the General Conditions shall be the greater of (i) the minimum limits set forth in Schedule A or (ii) the limits provided to the **Contractor** as Named Insured under all primary, excess and umbrella policies of that type of coverage.

22.2.5 All required insurance policies, except for insurance required pursuant to Sections 22.1.2, 22.1.3, and 22.1.4, shall contain the following endorsement: "This policy may not be cancelled, terminated, modified or changed unless thirty (30) days prior written notice is sent by the Insurance Company to the Named Insured (or First Named Insured, as appropriate), the **Commissioner**, and to the **Comptroller**, attn: Office of Contract Administration, Municipal Building, Room 1005, New York, New York 10007."

22.3 Proof of Insurance:

22.3.1 Within ten (10) **Days** of award, the **Contractor** shall, for each policy required under this **Contract,** except for Workers Compensation Insurance and Disability Benefits Insurance and builders' risk insurance, file a Certificate of Insurance with the **Commissioner** pursuant to Article 22.6. For Workers' Compensation Insurance and Disability Benefits Insurance, the **Contractor** shall file proof of insurance in a form acceptable to the **Commissioner** within ten (10) **Days** of award. Accord forms are not acceptable proof of workers' compensation coverage. The Contractor must submit one of the following forms to the Department, or another form acceptable to the Department: C-105.2 -- Certificate of Workers' Compensation Insurance, or U-26.3 -- State Insurance Fund Certificate of Workers' Compensation Insurance. For builders' risk insurance, the **Contractor** shall file a Certificate of Insurance with the **Commissioner** at the direction of the **Commissioner** but in any event no later than ten (10) **Days** prior to commencement of the **Work**.

22.3.1(a) All Certificates of Insurance shall be in a form acceptable to the **City** and shall certify the issuance and effectiveness of the types of insurance specified in Schedule A, each with the specified minimum limits and evidence of the compliance with the Additional Insured or Named Insured provisions of Articles 22.1.1(a), 22.1.5, 22.1.7, and 22.1.8, as applicable. All Certificate(s) of Insurance shall be accompanied by either a duly executed "Certification by Broker" in the form contained in Part II of Schedule A or completed copies of all policies referenced in the Certificate of Insurance. In the absence of completed policies, binders are acceptable.

22.3.2 Certificates of Insurance confirming renewals of insurance shall be submitted to the **Commissioner** prior to the expiration date of coverage of policies required under this **Contract**. Such Certificates of Insurance shall comply with the requirements of Article 22.3.1(a) and, if applicable, Article 22.3.1(b).

22.3.3 The **Contractor** shall be obligated to provide the **City** with a copy of any policy required by this Article 22 upon the demand for such policy by the **Commissioner** or the New York City Law Department.

22.4 Operations of the Contractor:

22.4.1 The **Contractor** shall not commence the **Work** unless and until all required certificates have been submitted to and accepted by the **Commissioner**. Acceptance by the **Commissioner** of a certificate hereunder does not excuse the **Contractor** from securing a policy consistent with all provisions of this Article or of any liability arising from its failure to do so.

22.4.2 The **Contractor** shall be responsible for providing continuous insurance coverage in the manner, form, and limits required by this **Contract** and shall be authorized to perform **Work** only during the effective period of all required coverage.

22.4.3 In the event that any of the required insurance policies lapse, are revoked, suspended or otherwise terminated, for whatever cause, the **Contractor** shall immediately stop all **Work**, and shall not recommence **Work** until authorized in writing to do so by the **Commissioner**. Upon quitting the **Site**, except as otherwise directed by the Commissioner, the **Contractor** shall leave all plant, materials, equipment, tools and supplies on the **Site**. **Contract** time shall continue to run during such periods and no extensions of time will be granted. The **Commissioner** may also declare the **Contractor** in default for failure to maintain required insurance.

22.5 The **City** as Additional Insured or Loss Payee under **Subcontractors'** Insurance. The Contractor shall ensure that each **Subcontractor** name the **City** as Additional Insured or loss payee, as appropriate, under all

policies covering **Work** performed by such **Subcontractor** under this **Contract**. The **City**'s coverage as Additional Insured shall include the **City's** officials and employees and be at least as broad as that provided to the **Contractor**. The foregoing requirements shall not apply to insurance provided pursuant to Articles 22.1.2, 22.1.3, and 22.1.4.

22.6 Wherever reference is made in Article 7 or this Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth in Schedule A of the General Conditions. In the event no address is set forth in Schedule A, such documents are to be sent to the **Commissioner's** address as provided elsewhere in this **Contract**.

22.7 If the **Contract** involves disposal of hazardous materials, the **Contractor** shall dispose such materials only at sites where the disposal site operator maintains Pollution Legal Liability Insurance in the amount of at least $2,000,000 for losses arising from such disposal site.

22.8 Materiality/Non-Waiver: The **Contractor's** failure to secure policy(ies) in complete conformity with this Article, or to give the Insurance Company timely notice of any sort required in this **Contract** on behalf of the **City**, or to do anything else required by this Article shall constitute a material breach of this **Contract**. Such breach shall not be waived or otherwise excused by any action or inaction by the **City** at any time.

22.9 Other Remedies: Insurance coverage in the minimum amounts provided for herein shall not relieve the **Contractor** or **Subcontractors** of any liability under this **Contract**, nor shall it preclude the **City** from exercising any rights or taking such other actions as are available to it under any other provisions of this **Contract** or **Law**.

ARTICLE 23. MONEY RETAINED AGAINST CLAIMS

23.1 If any claim shall be made by any person or entity (including **Other Contractors** with the **City** on this **Project**) against the **City** or against the **Contractor** and the **City** for any of the following:

(a) An alleged loss, damage, injury, theft or vandalism of any of the kinds referred to in Articles 7 and 12, plus the reasonable costs of defending the City, which in the opinion of the **Comptroller** may not be paid by an insurance company (for any reason whatsoever); or

(b) An infringement of copyrights, patents or use of patented articles, tools, etc., as referred to in Article 57; or

(c) Damage claimed to have been caused directly or indirectly by the failure of the **Contractor** to perform the **Work** in strict accordance with this **Contract,**

the amount of such claim, or so much thereof as the **Comptroller** may deem necessary, may be withheld by the **Comptroller**, as security against such claim, from any money due hereunder. The **Comptroller**, in his/her discretion, may permit the **Contractor** to substitute other satisfactory security in lieu of the monies so withheld.

23.2 If an action on such claim is timely commenced and the liability of the **City**, or the **Contractor**, or both, shall have been established therein by a final judgment of a Court of competent jurisdiction, or if such claim shall have been admitted by the **Contractor** to be valid, the **Comptroller** shall pay such judgment or admitted claim out of the monies retained by the **Comptroller** under the provisions of this article, and return the balance, if any, without interest, to the **Contractor**.

23.3 Liens: If at any time before or within thirty (30) **Days** after the **Work** is completed and accepted by the **City**, any persons claiming to have performed any labor or furnished any material toward the performance or completion of this **Contract**, shall file with the **Agency** and with the **Treasurer** any notice as is described in the

New York State Lien **Law**, or any act of the Legislature of the State of New York, the **City** shall retain, from the monies due or to become due under this **Contract**, so much of such monies as shall be sufficient to pay the amount claimed in said notice, together with the reasonable costs of any action or actions brought or that may be brought to enforce such lien. The monies so retained shall be held by the **City** until the lien thereon created by the said act and the filing of the said notice shall be discharged pursuant to **Law**.

ARTICLE 24. MAINTENANCE AND GUARANTY

24.1 The **Contractor** shall promptly repair, replace, restore or rebuild, as the **Commissioner** may determine, any finished **Work** in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of **Substantial Completion** (or use and occupancy in accordance with Article 16), except where other periods of maintenance and guarantee are provided for.

24.2 As security for the faithful performance of its obligations hereunder, the **Contractor**, upon filing its requisition for payment on **Substantial Completion**, shall deposit with the **Commissioner** a sum equal to one (1%) percent of the price (or the amount fixed in Schedule A of the General Conditions) in cash or certified check upon a state or national bank and trust company or a check of such bank and trust company signed by a duly authorized officer thereof and drawn to the order of the **Comptroller**, or obligations of the **City**, which the **Comptroller** may approve as of equal value with the sum so required.

24.3 In lieu of the above, the **Contractor** may make such security payment to the **City** by authorizing the **Commissioner** in writing to deduct the amount from the **Substantial Completion** payment which shall be deemed the deposit required above.

24.4 If the **Contractor** has faithfully performed all of its obligations hereunder the **Commissioner** shall so certify to the **Comptroller** within five (5) **Days** after the expiration of one (1) year from the date of **Substantial Completion** and acceptance of the **Work** or within thirty (30) **Days** after the expiration of the guarantee period fixed in the **Specifications**. The security payment shall be repaid to the **Contractor** without interest within thirty (30) **Days** after certification by the **Commissioner** to the **Comptroller** that the **Contractor** has faithfully performed all of its obligations hereunder.

24.5 Notice by the **Commissioner** to the **Contractor** to repair, replace, rebuild or restore such defective or damaged **Work** shall be timely, pursuant to this article, if given not later than ten (10) **Days** subsequent to the expiration of the one (1) year period or other periods provided for herein.

24.6 If the **Contractor** shall fail to repair, replace, rebuild or restore such defective or damaged **Work** promptly after receiving such notice, the **Commissioner** shall have the right to have the **Work** done by others in the same manner as provided for in the completion of a defaulted **Contract**, under Article 51.

24.7 If the security payment so deposited is insufficient to cover the cost of such **Work**, the **Contractor** shall be liable to pay such deficiency on demand by the **Commissioner**.

24.8 The **Engineer's** certificate setting forth the fair and reasonable cost of repairing, replacing, rebuilding or restoring any damaged or defective **Work** when performed by one other than the **Contractor**, shall be binding and conclusive upon the **Contractor** as to the amount thereof.

24.9 The **Contractor** shall obtain all manufacturers' warranties and guaranties of all equipment and materials required by this **Contract** in the name of the **City** and shall deliver same to the **Commissioner**. All of the **City's** rights and title and interest in and to said manufacturers' warranties and guaranties may be assigned by the **City** to any subsequent purchasers or lessees of the premises.

CHAPTER VI
CHANGES, EXTRA WORK AND DOCUMENTATION OF CLAIM

ARTICLE 25. CHANGES

25.1 Changes may be made to this **Contract** only as duly authorized in writing by the **Commissioner** in accordance with the **Laws** and this **Contract.** All such changes, modifications and amendments will become a part of the **Contract. Work** so ordered shall be performed by the **Contractor.**

25.2 **Contract** changes will be made only for **Work** necessary to complete the **Work** included in the original scope of the **Contract** and/or for non-material changes to the scope of the **Contract.** Changes are not permitted for any material alteration in the scope of **Work** in the **Contract.**

25.3 The **Contractor** shall be entitled to a price adjustment for **Extra Work** performed pursuant to a written change order. Adjustments to price shall be computed in one or more of the following ways:

25.3.1 By applicable unit prices specified in the **Contract**; and/or

25.3.2 By agreement of a fixed price; and/or

25.3.3 By time and material records; and/or

25.3.4 In any other manner approved by the **CCPO.**

25.4 All payments for change orders are subject to pre-audit by the **Engineering Audit Officer** and may be post-audited by the **Comptroller** and/or the **Department.**

ARTICLE 26. METHODS OF PAYMENT FOR OVERRUNS AND EXTRA WORK

26.1 Overrun of Unit Price Item: An overrun is any quantity of a unit price item which the **Contractor** is directed to provide which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule.

26.1.1 For any unit price item, the **Contractor** will be paid at the unit price bid for any quantity up to one hundred twenty five (125%) percent of the estimated quantity for that item set forth in the bid schedule. If during the progress of the **Work,** the actual quantity of any unit price item required to complete the **Work** approaches the estimated quantity for that item, and for any reason it appears that the actual quantity of any unit price item necessary to complete the **Work** will exceed the estimated quantity for that item by twenty-five (25%) percent, the **Contractor** shall immediately notify the **Engineer** of such anticipated overrun. The **Contractor** shall not be compensated for any quantity of a unit price item provided which is in excess of one hundred twenty five (125%) percent of the estimated quantity for that item set forth in the bid schedule without written authorization from the Engineer.

26.1.2 If the actual quantity of any unit price item necessary to complete the Work will exceed one hundred twenty five (125%) percent of the estimated quantity for that item set forth in the bid schedule, the **City** reserves the right and the **Contractor** agrees to negotiate a new unit price for such item. In no event shall such negotiated new unit price exceed the unit bid price. If the **City** and **Contractor** cannot agree on a new unit price, then the **City** shall order the **Contractor** and the **Contractor** agrees to provide additional quantities of the item on a time and material basis for the actual and reasonable cost as determined under Article 26.2, but in no event at a unit price exceeding the unit price bid.

26.2 **Extra Work:** For **Extra Work** where payment is by agreement on a fixed price in accordance with Article 25.3.2, the price to be paid for such **Extra Work** shall be based on the fair and reasonable estimated cost of the items set forth below. For **Extra Work** where payment is on a time and material basis in accordance with Article 25.3.3, the price to be paid for such **Extra Work** shall be the actual and reasonable cost of the items set forth below.

26.2.1 Necessary materials (including transportation to the **Site**); plus

26.2.2 Necessary direct labor, including payroll taxes and supplemental benefits; plus

26.2.3 Sales and personal property taxes, if any, required to be paid on materials not incorporated into such **Extra Work**; plus

26.2.4 Reasonable rental value of **Contractor**-owned, necessary plant and equipment other than small tools, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per operating hour: (.035) x (HP rating) x (Fuel cost/gallon). Reasonable rental value is defined as the lower of either seventy-five percent of the monthly prorated rental rates established in "The AED Green Book, Rental Rates and Specifications for Construction Equipment" published by PRIMEDIA (the "Green Book"), or seventy-five percent of the monthly prorated rental rates established in the "Rental Rate Blue Book for Construction Equipment" published by PRIMEDIA (the "Blue Book"). The reasonable rental value is inclusive of all operating costs except for fuel/energy consumption and equipment operator's wages/costs. For multiple shift utilization, reimbursement shall be calculated as follows: first shift shall be seventy-five percent of such rental rates; second shift shall be sixty percent of the first shift rate; and third shift shall be forty percent of the first shift rate. Equipment on standby shall be reimbursed at one-third the prorated monthly rental rate. **Contractor**-owned equipment includes equipment from rental companies affiliated with or controlled by the **Contractor,** as determined by the **Commissioner**. In establishing cost reimbursement for non-operating contractor-owned equipment (scaffolding, sheeting systems, road plates, etc.), the City may restrict reimbursement to a purchase-salvage/life cycle basis if less than the computed rental costs; plus

26.2.5 Necessary installation and dismantling of such plant and equipment, including transportation to and from the **Site**, if any, provided that, in the case of non-**Contractor**-owned equipment rented from a third party, the cost of installation and dismantling are not allowable if such costs are included in the rental rate; plus

26.2.6 Reasonable rental costs of non-**Contractor**-owned necessary plant and equipment other than small tools, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per hour of operation: (.035) x (HP rating) x (Fuel cost/gallon). In lieu of renting, the City reserves the right to direct the purchase of non-operating equipment (scaffolding, sheeting systems, road plates, etc.), with payment on a purchase-salvage/life cycle basis, if less than the projected rental costs; plus

26.2.7 Workers' compensation insurance, and any insurance coverage expressly required by the **City** for the performance of the **Extra Work** which is different than the types of insurance required by Article 22 and Schedule A of the General Conditions. The cost of workers' compensation insurance shall be based upon the Manual Rate for such insurance for the applicable work classifications/codes, in accordance with the most recent schedule promulgated by the New York Compensation Insurance Rating Board; plus

26.2.8 Additional costs incurred as a result of the **Extra Work** for performance and payment bonds; plus

26.2.9 Ten (10%) percent of the total of items in Articles 26.2.1 through 26.2.5 as compensation for overhead, except that no percentage for overhead will be allowed on **Payroll Taxes** or on the premium portion of overtime pay or on sales and personal property taxes. Overhead shall include without limitation, all costs and expenses in connection with administration, management superintendence, small tools, and insurance required by Schedule A of the General Conditions other than workers' compensation insurance; plus

26.2.10 Ten (10%) percent of the total of items in Articles 26.2.1 through 26.2.5, plus item 26.2.9, as compensation for profit, except that no percentage for profit will be allowed on **Payroll Taxes** or on the premium portion of overtime pay or on sales and personal property taxes; plus

26.2.11 Five (5%) percent of the total of items in Article 26.2.6, 26.2.7, and 26.2.8 as compensation for overhead and profit.

26.3 Where the **Extra Work** is performed in whole or in part by other than the **Contractor's** own forces pursuant to Article 26.2, the **Contractor** shall be paid, subject to pre-audit by the **Engineering Audit Officer**, the cost of such **Work** computed in accordance with Article 26.2 above, plus an additional allowance of five (5%) percent to cover the **Contractor's** overhead and profit.

26.4 Where a change is ordered, involving both **Extra Work** and omitted or reduced **Contract Work,** the **Contract** price shall be adjusted, subject to pre-audit by the **EAO**, in an amount based on the difference between the cost of such **Extra Work** and of the omitted or reduced **Work**. The cost of such **Extra Work** and of such omitted or reduced **Work** shall be computed based upon applicable **Contract** unit prices. Where there are no applicable **Contract** unit prices, the cost of such **Extra Work** and of such omitted or reduced **Contract Work** shall be computed in accordance with items 26.2.1 through 26.2.8. If the cost of such **Extra Work** exceeds the costs of such omitted or reduced **Contract Work**, the **Contract** price shall be increased by the difference, plus percentages for overhead and profit as provided in Articles 26.2.9 through 26.2.11. If the cost of the omitted or reduced **Contract Work** exceeds the cost of the **Extra Work**, then the **Contract** price shall be reduced by the difference.

26.5 Where the **Contractor** and the **Commissioner** can agree upon a fixed price for **Extra Work** in accordance with Article 25.3.2 or another method of payment for **Extra Work** in accordance with Article 25.3.4, or for **Extra Work** ordered in connection with omitted work, such method, subject to pre-audit by the **EAO**, may, at the option of the **Commissioner**, be substituted for the cost plus a percentage method provided in Article 26.2; provided, however, that if the **Extra Work** is performed by a **Subcontractor**, the **Contractor** shall not be entitled to receive more than an additional allowance of five (5%) percent for overhead and profit over the cost of such **Subcontractor's Work** as computed in accordance with Article 26.2.

ARTICLE 27. RESOLUTION OF DISPUTES

27.1 All disputes between the **City** and the **Contractor** of the kind delineated in this article that arise under, or by virtue of, this **Contract** shall be finally resolved in accordance with the provisions of this article and the **PPB** Rules. This procedure for resolving all disputes of the kind delineated herein shall be the exclusive means of resolving any such disputes.

27.1.1 This article shall not apply to disputes concerning matters dealt with in other sections of the **PPB** Rules, or to disputes involving patents, copyrights, trademarks, or trade secrets (as interpreted by the courts of New York State) relating to proprietary rights in computer software.

27.1.2 This article shall apply only to disputes about the scope of work delineated by the **Contract**, the interpretation of **Contract** documents, the amount to be paid for **Extra Work** or disputed work performed in connection with the **Contract**, the conformity of the **Contractor's Work** to the

Contract, and the acceptability and quality of the **Contractor's Work**; such disputes arise when the **Engineer, Resident Engineer, Engineering Audit Officer**, or other designee of the **Commissioner** makes a determination with which the **Contractor** disagrees.

27.2 All determinations required by this article shall be made in writing clearly stated, with a reasoned explanation for the determination based on the information and evidence presented to the party making the determination. Failure to make such determination within the time required by this article shall be deemed a non-determination without prejudice that will allow application to the next level.

27.3 During such time as any dispute is being presented, heard, and considered pursuant to this article, the **Contract** terms shall remain in force and the **Contractor** shall continue to perform **Work** as directed by the **ACCO** or the **Engineer**. Failure of the **Contractor** to continue **Work** as directed shall constitute a waiver by the **Contractor** of its claim.

27.4 Presentation of Disputes to **Commissioner.**

Notice of Dispute and Agency Response. The **Contractor** shall present its dispute in writing ("Notice of Dispute") to the **Commissioner** within thirty (30) Days of receiving written notice of the determination or action that is the subject of the dispute. This notice requirement shall not be read to replace any other notice requirements contained in the **Contract**. The Notice of Dispute shall include all the facts, evidence, documents, or other basis upon which the **Contractor** relies in support of its position, as well as a detailed computation demonstrating how any amount of money claimed by the **Contractor** in the dispute was arrived at. Within thirty (30) Days after receipt of the detailed written submission comprising the complete Notice of Dispute, the **Engineer, Resident Engineer, Engineering Audit Officer**, or other designee of the **Commissioner** shall submit to the **Commissioner** all materials he or she deems pertinent to the dispute. Following initial submissions to the **Commissioner**, either party may demand of the other the production of any document or other material the demanding party believes may be relevant to the dispute. The requested party shall produce all relevant materials that are not otherwise protected by a legal privilege recognized by the courts of New York State. Any question of relevancy shall be determined by the **Commissioner** whose decision shall be final. Willful failure of the **Contractor** to produce any requested material whose relevancy the **Contractor** has not disputed, or whose relevancy has been affirmatively determined, shall constitute a waiver by the **Contractor** of its claim.

27.4.1 **Commissioner** Inquiry. The **Commissioner** shall examine the material and may, in his or her discretion, convene an informal conference with the **Contractor**, the **ACCO**, and the **Engineer, Resident Engineer, Engineering Audit Officer**, or other designee of the **Commissioner** to resolve the issue by mutual consent prior to reaching a determination. The **Commissioner** may seek such technical or other expertise as he or she shall deem appropriate, including the use of neutral mediators, and require any such additional material from either or both parties as he or she deems fit. The **Commissioner's** ability to render, and the effect of, a decision hereunder shall not be impaired by any negotiations in connection with the disputed presented, whether or not the **Commissioner** participated therein. The **Commissioner** may or, at the request of any party to the dispute, shall compel the participation of any other **Contractor** with a **Contract** related to the **Work** of this **Contract**, and that **Contractor** shall be bound by the decision of the **Commissioner**. Any **Contractor** thus brought into the dispute resolution proceeding shall have the same rights and obligations under this article as the **Contractor** initiating the dispute.

27.4.2 **Commissioner** Determination. Within thirty (30) days after the receipt of all materials and information, or such longer time as may be agreed to by the parties, the **Commissioner** shall make his or her determination and shall deliver or send a copy of such determination to the **Contractor**, the **ACCO**, and **Engineer, Resident Engineer, Engineering Audit Officer**, or other designee of the **Commissioner**, as applicable, together with a statement concerning how the decision may be appealed.

27.4.3 Finality of **Commissioner** Decision. The **Commissioner's** decision shall be final and binding on all parties, unless presented to the Contract Dispute Resolution Board pursuant to this article. The **City** may not take a petition to the Contract Dispute Resolution Board. However, should the **Contractor** take such a petition, the **City** may seek, and the Contract Dispute Resolution Board may render, a determination less favorable to the **Contractor** and more favorable to the **City** than the decision of the **Commissioner**.

27.5 Presentation of Dispute to the **Comptroller**. Before any dispute may be brought by the **Contractor** to the Contract Dispute Resolution Board, the **Contractor** must first present its claim to the **Comptroller** for his or her review, investigation, and possible adjustment.

27.5.1 Time, Form, and Content of Notice. Within thirty (30) days of its receipt of a decision by the **Commissioner,** the **Contractor** shall submit to the **Comptroller** and to the **Commissioner** a Notice of Claim regarding its dispute with the **Agency**. The Notice of Claim shall consist of (i) a brief Written statement of the substance of the dispute, the amount of money, if any, claimed and the reason(s) the **Contractor** contends the dispute was wrongly decided by the **Commissioner**; (ii) a copy of the written decision of the **Commissioner**; and (iii) a copy of all materials submitted by the **Contractor** to the **Agency**, including the Notice of Dispute. The **Contractor** may not present to the **Comptroller** any material not presented to the **Commissioner**, except at the request of the **Comptroller**.

27.5.2 **Agency** Response. Within thirty (30) days of receipt of the Notice of Claim, the **Agency** shall make available to the **Comptroller** a copy of all material submitted by the **Agency** to the **Commissioner** in connection with the dispute. The **Agency** may not present to the **Comptroller** any material not presented to the **Commissioner** except at the request of the **Comptroller**.

27.5.3 **Comptroller** Investigation. The **Comptroller** may investigate the claim in dispute and, in the course of such investigation, may exercise all powers provided in section 7-201 and 7-203 of the New York City Administrative Code. In addition, the **Comptroller** may demand of either party, and such party shall provide, whatever additional material the **Comptroller** deems pertinent to the claim, including original business records of the **Contractor**. Willful failure of the **Contractor** to produce within fifteen (15) days any material requested by the **Comptroller** shall constitute a waiver by the **Contractor** of its claim. The **Comptroller** may also schedule an informal conference to be attended by the **Contractor, Agency** representatives, and any other personnel desired by the **Comptroller**.

27.5.4 Opportunity of **Comptroller** to Compromise or Adjust Claim. The **Comptroller** shall have forty-five (45) days from his or her receipt of all materials referred to in Article 27.5.3 to investigate the disputed claim. The period for investigation and compromise may be further extended by agreement between the **Contractor** and the **Comptroller**, to a maximum of ninety (90) days from the **Comptroller's** receipt of all materials. The **Contractor** may not present its petition to the Contract Dispute Resolution Board until the period for investigation and compromise delineated in Article 27.5.4 has expired. In compromising or adjusting any claim hereunder, the **Comptroller** may not revise or disregard the terms of the **Contract** between the parties.

27.6 Contract Dispute Resolution Board. There shall be a Contract Dispute Resolution Board composed of:

27.6.1 The chief administrative law judge of the Office of Administrative Trials and Hearings (OATH) or his/her designated OATH administrative law judge, who shall act as chairperson, and may adopt operational procedures and issue such orders consistent with this article as may be necessary in the execution of the Contract Dispute Resolution Board's functions, including, but not limited to, granting extensions of time to present or respond to submissions;

27.6.1.1 The **CCPO** or his/her designee; any designee shall have the requisite background to consider and resolve the merits of the dispute and shall not have participated personally and substantially in the particular matter that is the subject of the dispute or report to anyone who so participated; and

27.6.2 A person with appropriate expertise who is not an employee of the City. This person shall be selected by the presiding administrative law judge from a prequalified panel of individuals, established and administered by OATH with appropriate background to act as decision-makers in a dispute. Such individual may not have a contract or dispute with the City or be an officer or employee of any company or organization that does, or regularly represents persons, companies, or organizations having disputes with the City.

27.7 Petition to the Contract Dispute Resolution Board. In the event the claim has not been settled or adjusted by the **Comptroller** within the period provided in this article, the **Contractor**, within thirty (30) days thereafter, may petition the Contract Dispute Resolution Board to review the **Commissioner's** determination.

27.7.1 Form and Content of Petition by **Contractor**. The **Contractor** shall present its dispute to the Contract Dispute Resolution Board in the form of a petition, which shall include (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed, and the reason(s) the Contractor contends the dispute was wrongly decided by the **Commissioner**; (ii) a copy of the written Decision of the **Commissioner,** (iii) copies of all materials submitted by the **Contractor** to the Agency; (iv) a copy of the written decision of the **Comptroller**, if any, and (v) copies of all correspondence with, or written material submitted by the **Contractor**, to the **Comptroller**. The **Contractor** shall concurrently submit four (4) complete sets of the Petition: one set to the Corporation Counsel (Attn: Commercial and Real Estate Litigation Division) and three (3) sets to the Contract Dispute Resolution Board at OATH's offices with proof of service on the Corporation Counsel. In addition, the **Contractor** shall submit a copy of the written statement of the substance of the dispute, cited in (i) above, to both the **Commissioner** and the **Comptroller**.

27.7.2 **Agency** Response. Within thirty (30) Days of its receipt of the petition by the Corporation Counsel, the **Agency** shall respond to the brief written statement of the **Contractor** and make available to the Contract Dispute Resolution Board all material it submitted to the **Commissioner** and **Comptroller**. Three (3) complete copies of the **Agency** response shall be provided to the Contract Dispute Resolution Board and one to the **Contractor**. Extensions of time for submittal of the **Agency** response shall be given as necessary upon a showing of good cause or, upon consent of the parties, for an initial period of up to thirty (30) Days.

27.7.3 Further Proceedings. The Contract Dispute Resolution Board shall permit the **Contractor** to present its case by submission of memoranda, briefs, and oral argument. The Contract Dispute Resolution Board shall also permit the **Agency** to present its case in response to the **Contractor** by submission of memoranda, briefs, and oral argument. If requested by the Corporation Counsel, the **Comptroller** shall provide reasonable assistance in the preparation of the **Agency's** case. Neither the **Contractor** nor the **Agency** may support its case with any documentation or other material that was not considered by the **Comptroller**, unless requested by the Contract Dispute Resolution Board. The Contract Dispute Resolution Board, in its discretion, may seek such technical or other expert advice as it shall deem appropriate and may seek, on its own or upon application of a party, any such additional material from any party as it deems fit. The Contract Dispute Resolution Board, in its discretion, may combine more than one dispute between the parties for concurrent resolution.

27.7.4 Contract Dispute Resolution Board Determination. Within forty-five (45) Days of the conclusion of all written submissions and oral arguments, the Contract Dispute Resolution Board shall render a written decision resolving the dispute. In an unusually complex case, the Contract Dispute Resolution Board may render its decision in a longer period, not to exceed ninety (90) Days, and shall

so advise the parties at the commencement of this period. The Contract Dispute Resolution Board's decision must be consistent with the terms of the **Contract**. Decisions of the Contract Dispute Resolution Board shall only resolve matters before the Contract Dispute Resolution Board and shall not have precedential effect with respect to matters not before the Contract Dispute Resolution Board.

27.7.5 Notification of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution Board shall send a copy of its decision to the **Contractor**, the **ACCO**, the Engineer, the **Comptroller**, the Corporation Counsel, the Director of the Office of Construction, and the **PPB**. A decision in favor of the **Contractor** shall be subject to the prompt payment provisions of the **PPB** Rules. The Required Payment Date shall be thirty (30) Days after the date the parties are formally notified of the Contract Dispute Resolution Board's decision.

27.7.6 Finality of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution Board's decision shall be final and binding on all parties. Any party may seek review of the Contract Dispute Resolution Board's decision solely in the form of a challenge, filed within four (4) months of the date of the Contract Dispute Resolution Board's decision, in a court of competent jurisdiction of the State of New York, County of New York pursuant to Article 78 of the Civil Practice Laws and Rules. Such review by the court shall be limited to the question of whether or not the Contract Dispute Resolution Board's decision was made in violation of lawful procedure, was affected by an error of **Law**, or was arbitrary and capricious or an abuse of discretion. No evidence or information shall be introduced or relied upon in such proceeding that was not presented to the Contract Dispute Resolution Board in accordance with this article.

27.8 Any termination, cancellation, or alleged breach of the **Contract** prior to or during the pendency of any proceedings pursuant to this article shall not affect or impair the ability of the **Commissioner** or Contract Dispute Resolution Board to make a binding and final decision pursuant to this article.

ARTICLE 28. RECORD KEEPING FOR EXTRA OR DISPUTED WORK

28.1 While the **Contractor** or any of its **Subcontractors** is performing **Extra Work** on a Time and Material Basis ordered by the **Commissioner** under Article 25, or is performing disputed **Work**, or complying with a determination or order under protest in accordance with Articles 27 and 30, in each such case the **Contractor** shall furnish the **Resident Engineer** daily with three (3) copies of written statements signed by the **Contractor's** representative at the **Site** showing:

28.1.1 The name and number of each Worker employed on such **Work** or engaged in complying with such determination or order, the number of hours employed, and the character of the **Work** each is doing; and

28.1.2 The nature and quantity of any materials, plant and equipment furnished or used in connection with the performance of such **Work** or compliance with such determination or order, and from whom purchased or rented.

28.2 A copy of such statement will be countersigned by the **Resident Engineer**, noting thereon any items not agreed to or questioned, and will be returned to the **Contractor** within two (2) **Days** after submission.

28.3 The **Contractor** and its **Subcontractors**, when required by the **Commissioner**, or the **Comptroller**, shall also produce for inspection, at the office of the **Contractor** or **Subcontractor**, any and all of its books, bid documents, financial statements, vouchers, records, daily job diaries and reports, and cancelled checks, and any other documents relating to showing the nature and quantity of the labor, materials, plant and equipment actually used in the performance of such **Work**, or in complying with such determination or order, and the amounts

expended therefor, and shall permit the **Commissioner** and the **Comptroller** to make such extracts therefrom, or copies thereof, as they or either of them may desire.

28.4 In connection with the examination provided for herein, the **Commissioner**, upon demand therefor, will produce for inspection by the **Contractor** such records as the **Agency** may have with respect to such **Extra** or disputed **Work** performed under protest pursuant to order of the **Commissioner**, except those records and reports which may have been prepared for the purpose of determining the accuracy and validity of the **Contractor's** claim.

28.5 Failure to comply strictly with these requirements shall constitute a waiver of any claim for extra compensation or damages on account of the performance of such **Work** or compliance with such determination or order.

ARTICLE 29. OMITTED WORK

29.1 If any **Contract Work** in a lump sum **Contract**, or if any part of a lump sum item in a unit price, lump sum, or percentage-bid **Contract** is omitted by the **Commissioner** pursuant to Article 33, the **Contract** price, subject to audit by the EAO, shall be reduced by a pro rata portion of the lump sum bid amount based upon the percent of **Work** omitted subject to Article 29.4. For the purpose of determining the pro rata portion of the lump sum bid amount, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be the determining factor.

29.2 If the whole of a lump sum item or units of any other item is so omitted by the **Commissioner** in a unit price, lump sum, or percentage-bid **Contract**, then no payment will be made therefor except as provided in Article 29.4.

29.3 For units that have been ordered but are only partially completed, the unit price shall be reduced by a pro rata portion of the unit price bid based upon the percentage of **Work** omitted subject to Article 29.4.

29.4 In the event the **Contractor**, with respect to any omitted **Work**, has purchased any non-cancelable material and/or equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract**, but not yet incorporated into the **Work**, the **Contractor** shall be paid for such material and/or equipment in accordance with Article 64.2.1(b); provided, however, such payment is contingent upon the **Contractor's** delivery of such material and/or equipment in acceptable condition to a location designated by the **City**.

29.5 The **Contractor** agrees to make no claim for damages or for loss of overhead and profit with regard to any omitted **Work**.

ARTICLE 30. NOTICE AND DOCUMENTATION OF COSTS AND DAMAGES; PRODUCTION OF FINANCIAL RECORDS

30.1 If the **Contractor** shall claim to be sustaining damages by reason of any act or omission of the **City** or its agents, it shall submit to the **Commissioner** within forty-five (45) **Days** from the time such damages are first incurred, and every thirty (30) **Days** thereafter for as long as such damages are incurred, verified statements of the details and the amounts of such damages, together with documentary evidence of such damages. The **Contractor** may submit any of the above statements within such additional time as may be granted by the **Commissioner** in writing upon written request therefor. Failure of the **Commissioner** to respond in writing to a written request for additional time within thirty (30) **Days** shall be deemed a denial of the request. On failure of the **Contractor** to fully comply with the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the **Contractor** may claim in any action or dispute resolution procedure arising under or by reason of this **Contract** shall not be different from or in excess of the statements and documentation made pursuant to this article.

30.2 In addition to the foregoing statements, the **Contractor** shall, upon notice from the **Commissioner**, produce for examination at the **Contractor's** office, by the **Engineer**, **Architect** or **Project Manager**, all of its books of account, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this **Contract**, and submit itself and persons in its employment, for examination under oath by any person designated by the **Commissioner** or **Comptroller** to investigate claims made or disputes against the **City** under this **Contract**. At such examination, a duly authorized representative of the **Contractor** may be present.

30.3 In addition to the statements required under Article 28 and this Article, the **Contractor** and/or its **Subcontractor** shall, within thirty (30) **Days** upon notice from the **Commissioner** or **Comptroller**, produce for examination at the **Contractor's** and/or **Subcontractor's** office, by a representative of either the **Commissioner** or **Comptroller**, all of its books of account, bid documents, financial statements, accountant workpapers, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this **Contract**. Further, the **Contractor** and/or its **Subcontractor** shall submit any person in its employment, for examination under oath by any person designated by the **Commissioner** or **Comptroller** to investigate claims made or disputes against the **City** under this **Contract**. At such examination, a duly authorized representative of the **Contractor** may be present.

30.4 Unless the information and examination required under Article 30.3 is provided by the **Contractor** and/or its **Subcontractor** upon thirty (30) **Days** notice from the **Commissioner** or **Comptroller**, or upon the **Commissioner's** or **Comptroller's** written authorization to extend the time to comply, the **City** shall be released from all claims arising under, relating to or by reason of this **Contract**, except for sums certified by the **Commissioner** or **Comptroller** to be due under the provisions of this **Contract**. It is further stipulated and agreed that no person has the power to waive any of the foregoing provisions and that in any action or dispute resolution procedure against the **City** to recover any sum in excess of the sums certified by the **Commissioner** or **Comptroller** to be due under or by reason of this **Contract**, the **Contractor** must allege in its complaint and prove, at trial or during such dispute resolution procedure, compliance with the provisions of this Article.

30.5 In addition, after the commencement of any action or dispute resolution procedure by the **Contractor** arising under or by reason of this **Contract**, the **City** shall have the right to require the **Contractor** to produce for examination under oath, up until the trial of the action or hearing before the Contract Dispute Resolution Board, the books and documents described in Article 30.3 and submit itself and all persons in its employ for examination under oath. If this Article is not complied with as required, then the **Contractor** hereby consents to the dismissal of the action or dispute resolution procedure.

CHAPTER VII
POWERS OF THE RESIDENT ENGINEER, THE ENGINEER OR ARCHITECT AND THE COMMISSIONER

ARTICLE 31. THE RESIDENT ENGINEER

31.1 The **Resident Engineer** shall have the power to inspect, supervise and control the performance of the **Work**, subject to review by the **Commissioner**. The **Resident Engineer** shall not, however, have the power to issue an **Extra Work** order, except as specifically designated in writing by the **Commissioner**.

ARTICLE 32. THE ENGINEER OR ARCHITECT OR PROJECT MANAGER

32.1 The **Engineer** or **Architect** or **Project Manager**, in addition to those matters elsewhere herein delegated to the **Engineer** and expressly made subject to his/her determination, direction or approval, shall have the power, subject to review by the **Commissioner**:

32.1.1 To determine the amount, quality, and location of the **Work** to be paid for hereunder; and

32.1.2 To determine all questions in relation to the **Work**, to interpret the **Contract Drawings**, **Specifications**, and **Addenda**, and to resolve all patent inconsistencies or ambiguities therein; and

32.1.3 To determine how the **Work** of this **Contract** shall be coordinated with **Work** of other **Contractors** engaged simultaneously on this **Project**, including the power to suspend any part of the **Work**, but not the whole thereof; and

32.1.4 To make minor changes in the **Work** as he/she deems necessary, provided such changes do not result in a net change in the cost to the **City** or to the **Contractor** of the **Work** to be done under the **Contract**; and

32.1.5 To amplify the **Contract Drawings**, add explanatory information and furnish additional **Specifications** and drawings, consistent with this **Contract**.

32.2 The foregoing enumeration shall not imply any limitation upon the power of the **Engineer** or **Architect** or **Project Manager**, for it is the intent of this **Contract** that all of the **Work** shall generally be subject to his/her determination, direction and approval, except where the determination, direction or approval of someone other than the **Engineer** or **Architect** or **Project Manager** is expressly called for herein.

32.3 The **Engineer** or **Architect** or **Project Manager** shall not, however, have the power to issue an **Extra Work** order, except as specifically designated in writing by the **Commissioner**.

ARTICLE 33. THE COMMISSIONER

33.1 The **Commissioner**, in addition to those matters elsewhere herein expressly made subject to his/her determination, direction or approval, shall have the power:

33.1.1 To review and make determinations on any and all questions in relation to this **Contract** and its performance; and

33.1.2 To modify or change this **Contract** so as to require the performance of **Extra Work** (subject, however, to the limitations specified in Article 25) or the omission of **Contract Work**; and

33.1.3 To suspend the whole or any part of the **Work** whenever in his/her judgment such suspension is required:

33.1.3(a) In the interest of the **City** generally; or

33.1.3(b) To coordinate the **Work** of the various **Contractors** engaged on this **Project** to the provisions of Article 12; or

33.1.3(c) To expedite the completion of the entire **Project** even though the completion of this particular **Contract** may thereby be delayed.

ARTICLE 34. NO ESTOPPEL

34.1 Neither the **City** nor any **Agency**, officer, agent or employee thereof, shall be bound, precluded or estopped by any determination, decision, approval, order, letter, payment or certificate made or given under or in connection with this **Contract** by the **City**, the **Commissioner**, the **Resident Engineer**, or any other officer, agent or employee of the **City**, either before or after the final completion and acceptance of the **Work** and payment therefor:

34.1.1 From showing the true and correct classification, amount, quality or character of the **Work** actually done; or that any such determination, decision, order, letter, payment or certificate was untrue, incorrect or improperly made in any particular, or that the **Work**, or any part thereof, does not in fact conform to the requirements of this **Contract**; and

34.1.2 From demanding and recovering from the **Contractor** any overpayment made to it, or such damages as the **City** may sustain by reason of the **Contractor's** failure to perform each and every part of its **Contract**.

CHAPTER VIII
LABOR PROVISIONS

ARTICLE 35. EMPLOYEES

35.1 The **Contractor** and its **Subcontractors** shall not employ on the **Work**:

35.1.1 Anyone who is not competent, faithful and skilled in the **Work** for which he/she shall be employed; and whenever the **Commissioner** shall inform the **Contractor**, in writing, that any employee is, in his/her opinion, incompetent, unfaithful or disobedient, that employee shall be discharged from the **Work** forthwith, and shall not again be employed upon it; or

35.1.2 Any labor, materials or means whose employment, or utilization during the course of this **Contract**, may tend to or in any way cause or result in strikes, work stoppages, delays, suspension of **Work** or similar troubles by workers employed by the **Contractor** or its **Subcontractors**, or by any of the trades working in or about the buildings and premises where **Work** is being performed under this **Contract**, or by **Other Contractors** or their **Subcontractors** pursuant to other Contracts, or on any other building or premises owned or operated by the **City**, its **Agencies**, departments, boards or authorities. Any violation by the **Contractor** of this requirement may, upon certification of the **Commissioner**, be considered as proper and sufficient cause for declaring the **Contractor** to be in default, and for the **City** to take action against it as set forth in Chapter X of this **Contract**, or such other article of this **Contract** as the **Commissioner** may deem proper; or

35.1.3 In accordance with Section 220.3-e of the Labor Law of the State of New York (hereinafter "Labor **Law**"), the **Contractor** and its **Subcontractors** shall not employ on the **Work** any apprentice, unless he/she is a registered individual, under a bona fide program registered with the New York State Department of Labor. The allowable ratio of apprentices to journey-level workers in any craft classification shall not be greater than the ratio permitted to the **Contractor** as to its **Work** force on any job under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the wage rate determined by the **Comptroller** of the **City** for the classification of **Work** actually performed. The **Contractor** or **Subcontractor** will be required to furnish written evidence of the registration of its program and apprentices as well as all the appropriate ratios and wage rates, for the area of the construction prior to using any apprentices on the **Contract Work**.

35.2 If the total cost of the **Work** under this **Contract** is at least two hundred fifty thousand dollars, all laborers, workers, and mechanics employed in the performance of the **Contract** on the public work site, either by the **Contractor**, **Subcontractor** or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be certified prior to performing any **Work** as having successfully completed a course in construction safety and health approved by the United States department of labor's occupational safety and health administration that is at least ten hours in duration.

ARTICLE 36. NO DISCRIMINATION

36.1 The **Contractor** specifically agrees, as required by Labor Law Section 220-e, as amended, that:

36.1.1 In the hiring of employees for the performance of **Work** under this **Contract** or any subcontract hereunder, neither the **Contractor**, **Subcontractor**, nor any person acting on behalf of such **Contractor** or **Subcontractor**, shall by reason of race, creed, color or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the **Work** to which the employment relates;

36.1.2 Neither the **Contractor**, **Subcontractor**, nor any person on its behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this **Contract** on account of race, creed, color or national origin;

36.1.3 There may be deducted from the amount payable to the **Contractor** by the **City** under this **Contract** a penalty of fifty ($50.00) dollars for each person for each **Day** during which such person was discriminated against or intimidated in violation of the provisions of this **Contract**; and

36.1.4 This **Contract** may be cancelled or terminated by the **City** and all moneys due or to become due hereunder may be forfeited, for a second or any subsequent violation of the terms or conditions of this article.

36.1.5 The aforesaid provisions of this article covering every **Contract** for or on behalf of the State or a municipality for the manufacture, sale or distribution of materials, equipment or supplies shall be limited to operations performed within the territorial limits of the State of New York.

36.2 The Contractor specifically agrees, as required by Section 6-108 of the Administrative Code, as amended, that:

36.2.1 It shall be unlawful for any person engaged in the construction, alteration or repair of buildings or engaged in the construction or repair of streets or highways pursuant to a **Contract** with the **City** or engaged in the manufacture, sale or distribution of materials, equipment or supplies pursuant to a **Contract** with the **City** to refuse to employ or to refuse to continue in any employment any person on account of the race, color or creed of such person.

36.2.2 It shall be unlawful for any person or any servant, agent or employee of any person, described in Article 36.1.2, to ask, indicate or transmit, orally or in writing, directly or indirectly, the race, color or creed or religious affiliation of any person employed or seeking employment from such person, firm or corporation.

36.2.3 Breach of the foregoing provisions shall be deemed a violation of a material provision of this **Contract**.

36.2.4 Any person, or the employee, manager or owner of or officer of such firm or corporation who shall violate any of the provisions of this section shall, upon conviction thereof, be punished by

a fine of not more than one hundred ($100.00) dollars or by imprisonment for not more than thirty (30) **Days**, or both.

36.3 This **Contract** is subject to the requirements of Executive Order No. 50 (1980) ("E.O. 50"), as revised, and the Rules and Regulations promulgated thereunder. No **Contract** will be awarded unless and until these requirements have been complied with in their entirety. By signing this **Contract**, the **Contractor** agrees that it:

36.3.1 Will not engage in any unlawful discrimination against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, marital status or sexual orientation with respect to all employment decisions including, but not limited to, recruitment, hiring, upgrading, demotion, downgrading, transfer, training, rates of pay or other forms of compensation, layoff, termination, and all other terms and conditions of employment; and

36.3.2 Will not engage in any unlawful discrimination in the selection of **Subcontractors** on the basis of the owner's race, color, creed, national origin, sex, age, disability, marital status or sexual orientation; and

36.3.3 Will state in all solicitations or advertisements for employees placed by or on behalf of the **Contractor** that all qualified applicants will receive consideration for employment without unlawful discrimination based on race, creed, color, national origin, sex, age, citizens status, disability, marital status, sexual orientation, or that it is an equal employment opportunity employer; and

36.3.4 Will send to each labor organization or representative of workers with which it has a Collective Bargaining Agreement or other Contract or memorandum of understanding, written notification of its equal employment opportunity commitments under E.O. 50 and the Rules and Regulations promulgated thereunder; and

36.3.5 Will furnish all information and reports including an Employment Report before the award of the **Contract** which are required by E.O. 50, the Rules and Regulations promulgated thereunder, and orders of the Department of Business Services, Division of Labor Services (**"DLS"**) and will permit access to its books, records and accounts by the **DLS** for the purposes of investigation to ascertain compliance with such rules, regulations, and orders.

36.4 The **Contractor** understands that in the event of its noncompliance with the nondiscrimination clauses of this **Contract** or with any of such rules, regulations, or orders, such noncompliance shall constitute a material breach of this **Contract** and noncompliance with E.O. 50 and the Rules and Regulations promulgated thereunder. After a hearing held pursuant to the rules of the **DLS**, the Director of the **DLS** may direct the **Commissioner** to impose any or all of the following sanctions:

36.4.1 Disapproval of the **Contractor**; and/or

36.4.2 Suspension or termination of the **Contract**; and/or

36.4.3 Declaring the **Contractor** in default; and/or

36.4.4 In lieu of any of the foregoing sanctions, the Director of the **DLS** may impose an employment program.

Failure to comply with E.O. 50 and the rules and regulations promulgated thereunder, in one or more instances, may result in the **Agency** declaring the **Contractor** to be non-responsible.

The **Contractor** further agrees that it will refrain from entering into any **Contract** or **Contract** modification subject to E.O. 50 and the rules and regulations promulgated thereunder with a **Subcontractor** who is not in compliance with the requirements of E.O. 50 and the rules and regulations promulgated thereunder.

36.5 The **Contractor** specifically agrees, as required by Section 6-123 of the Administrative Code, that:

36.5.1 The **Contractor** will not engage in any unlawful discriminatory practice in violation of Title VIII of the Administrative Code;

36.5.2 every agreement between the **Contractor** and its **Subcontractors** in excess of $50,000 shall include a provision that the **Subcontractor** shall not engage in any unlawful discriminatory practice as defined in title viii of the Administrative Code (Section 8-101 et. seq.); and

36.5.3 Any failure to comply with this Article 36.5 may subject the **Contractor** to the remedies set forth in Section 6-123 of the Administrative Code, including, where appropriate, sanctions such as withholding of payment, imposition of an employment program, finding the **Contractor** to be in default, cancellation of the **Contract**, or any other sanction or remedy provided by **Law** or **Contract**.

ARTICLE 37. LABOR LAW REQUIREMENTS

37.1 The **Contractor** shall strictly comply with all applicable provisions of the Labor Law, as amended. Such compliance is a material term of this **Contract**.

37.2 The **Contractor** specifically agrees, as required by Labor Law Section 220 and 220-d, as amended, that:

37.2.1 Hours of **Work**: No laborer, worker, or mechanic in the employ of the **Contractor**, **Subcontractor** or other person doing or contracting to do the whole or a part of the **Work** contemplated by this **Contract** shall be permitted or required to work more than eight (8) hours in any one (1) calendar **Day**, or more than five (5) **Days** in any one (1) week, except as provided in the Labor Law and in cases of extraordinary emergency including fire, flood, or danger to life or property, or in the case of national emergency when so proclaimed by the President of the United States of America.

37.2.2 In situations in which there are not sufficient laborers, workers and mechanics who may be employed to carry on expeditiously the **Work** contemplated by this **Contract** as a result of such restrictions upon the number of hours and days of labor, and the immediate commencement or prosecution or completion without undue delay of the **Work** is necessary for the preservation of the **Site** and/or for the protection of the life and limb of the persons using the same, such laborers, workers, and mechanics shall be permitted or required to work more than eight (8) hours in any one (1) **Day**; or five (5) **Days** in any one (1) week; provided, however, that upon application of any **Contractor**, the **Commissioner** shall have first certified to the Commissioner of Labor of the State of New York (hereinafter "Commissioner of Labor") that such public **Work** is of an important nature and that a delay in carrying it to completion would result in serious disadvantage to the public; and provided, further, that such Commissioner of Labor shall have determined that such an emergency does in fact exist as provided in Labor Law Section 220.2.

37.2.3 Failure of the **Commissioner** to make such a certification to the Commissioner of Labor shall not entitle the **Contractor** to damages for delay or for any cause whatsoever.

37.2.4 Prevailing Rate of Wages: The wages to be paid for a legal day's **Work** to laborers, workers, or mechanics employed upon the **Work** contemplated by this **Contract** or upon any materials to be used thereon shall not be less than the "prevailing rate of wage" as defined in Labor **Law** Section 220, and as fixed by the **Comptroller** in the attached Schedule of Wage Rates and in updated schedules thereof. The prevailing wage rates and supplemental benefits to be paid are those in effect at the time the **Work** is being performed.

37.2.5 Requests for interpretation or correction in the Information for Bidders includes all requests for clarification of the classification of trades to be employed in the performance of the **Work** under this **Contract**. In the event that a trade not listed in the **Contract** is in fact employed during the performance of this **Contract**, the **Contractor** shall be required to obtain from the **Agency** the prevailing wage rates and supplementary benefits for the trades used and to complete the performance of this **Contract** at the price at which the **Contract** was awarded.

37.2.6 Minimum Wages: Except for employees whose wage is required to be fixed pursuant to Labor Law Section 220, all persons employed by the **Contractor** and any **Subcontractor** in the manufacture or furnishing of the supplies, materials, or equipment, or the furnishing of work, labor, or services, used in the performance of this **Contract**, shall be paid, without subsequent deduction or rebate unless expressly authorized by **Law**, not less than the sum mandated by **Law**. Minimum wages shall be the rates fixed by Federal **Law** and regulations.

37.3 Working Conditions: No part of the **Work**, labor or services shall be performed or rendered by the **Contractor** in any plants, factories, buildings or surroundings or under working conditions which are unsanitary or hazardous or dangerous to the health and safety of employees engaged in the performance of this **Contract**. Compliance with the safety, sanitary and factory inspection **Laws** of the state in which the **Work** is to be performed shall be prima facie evidence of compliance with this article.

37.4 Prevailing Wage Enforcement: The **Contractor** agrees to pay for all costs incurred by the **City** in enforcing prevailing wage requirements, including the cost of any investigation conducted by or on behalf of the **Agency** or the **Comptroller,** where the **City** discovers a failure to comply with any of the requirements of this Article 37 by the **Contractor** or its **Subcontractor(s)**. The **Contractor** also agrees, that should it fail or refuse to pay for any such investigation, the **Agency** is hereby authorized to deduct from a **Contractor's** account an amount equal to the cost of such investigation.

37.4.1 The Labor Law Section 220 and Section 220-d, as amended, provide that this **Contract** shall be forfeited and no sum paid for any Work done hereunder on a second conviction for willfully paying less than:

37.4.1(a) The stipulated wage scale as provided in Labor Law Section 220, as amended, or

37.4.1(b) Less than the stipulated minimum hourly wage scale as provided in Labor Law Section 220-d, as amended.

37.4.2 For any breach or violation of either Working Conditions (Article 37.3) and Minimum Wages (Article 37.2.6), the party responsible therefore shall be liable to the **City** for liquidated damages, which may be withheld from any amounts due on any **Contracts** with the **City** of such party responsible, or may be recovered in suits brought by the Corporation Counsel in the name of the **City**, in addition to damage for any other breach of this **Contract**, a sum equal to the amount of any underpayment of wages due to any employee engaged in the performance of this **Contract**. In addition, the **Commissioner** shall have the right to cancel **Contracts** and enter into other **Contracts** for the completion of the original **Contract**, with or without public letting, and the original **Contractor** shall be liable for any additional cost. All sums withheld or recovered as deductions, rebates, refunds, or underpayment of wages hereunder, shall be held in a special deposit account and

shall be paid without interest, on order of the **Comptroller**, directly to the employees who have been paid less than minimum rates of pay as set forth herein and on whose account such sums were withheld or recovered, provided that no claims by employees for such payments shall be entertained unless made within two (2) years from the date of actual notice to the **Contractor** of the withholding or recovery of such sums by the **City**.

37.4.3 A determination by the **Comptroller** that a **Contractor** and/or its **Subcontractor** willfully violated Labor Law Section 220 will be forwarded to the **City's** five District Attorneys for review.

37.4.4 The **Contractor's** or **Subcontractor's** noncompliance with this article and Labor **Law** Section 220, may result in an unsatisfactory performance evaluation and the **Comptroller** may also find and determine that the **Contractor** or **Subcontractor** willfully violated the New York Labor **Law**.

37.4.4(a) An unsatisfactory performance evaluation for noncompliance with this article may result in a determination that the **Contractor** is a non-responsible bidder on subsequent procurements with the **City** and thus a rejection of a future award of a contract with the **City**, as well as any other sanctions provided for by **Law**.

37.4.4(b) Labor **Law** Section 220-b, as amended, provides that when two (2) final determinations have been rendered against a **Contractor** or **Subcontractor** within any consecutive six (6) year period determining that such **Contractor** or **Subcontractor** has willfully failed to pay the prevailing rate of wages or to provide supplements in accordance with the Labor **Law** and this article, whether such failures were concurrent or consecutive and whether or not such final determinations concerning separate public work projects are rendered simultaneously, such **Contractor** or **Subcontractor** shall be ineligible to submit a bid on or be awarded any public work contract with the **City** for a period of five (5) years from the second final determination. If the final determination involves the falsification of payroll records or the kickback of wages or supplements, the **Contractor** or **Subcontractor** shall be ineligible to submit a bid on or be awarded any public work contract with the **City** for a period of five (5) years from the first final determination.

37.4.4(c) Labor **Law** Section 220, as amended, provides that the **Contractor** or **Subcontractor** found to have violated this article may be directed to make payment of wages or supplements including interest found to be due, and the **Contractor** or **Subcontractor** may be directed to make payment of a further sum as a civil penalty in an amount not exceeding twenty-five (25%) percent of the total amount found to be due.

37.5 The **Contractor** and its **Subcontractors** shall within ten (10) **Days** after mailing of a Notice of Award or written order, post in prominent and conspicuous places in each and every plant, factory, building, and structure where employees of the **Contractor** and its **Subcontractors** engaged in the performance of this **Contract** are employed, notices furnished by the **City**, in relation to prevailing wages and supplements, minimum wages and other stipulations contained in Sections 220 and 220-h of the Labor **Law**, and the **Contractor** and its **Subcontractors** shall continue to keep such notices posted in such prominent and conspicuous places until **Final Acceptance** of the supplies, materials, equipment, or **Work**, labor, or services required to be furnished or rendered under this **Contract**.

37.6 The **Contractor** shall strictly comply with all of the provisions of Articles 37.6.1 through 37.6.5, and provide for all workers, laborers or mechanics in its employ, the following:

37.6.1 Notices Posted At **Site**: Post, in a location designated by the **City**, schedules of prevailing wages and supplements for this **Project**, a copy of all re-determinations of such schedules for the

Project, the Workers' Compensation **Law** Section 51 notice, all other notices required by law to be posted at the **Site**, the **City** notice that this **Project** is a public works **Project** on which each worker is entitled to receive the prevailing wages and supplements for the occupation at which he or she is working, and all other notices which the **City** directs the **Contractor** to post. The **Contractor** shall provide a surface for such notices which is satisfactory to the **City**. The **Contractor** shall maintain and keep current such notices in a legible manner and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason. The **Contractor** shall post such notices before commencing any **Work** on the **Site** and shall maintain such notices until all **Work** on the **Site** is complete; and

37.6.2 Daily **Site** Sign-in Sheets: Maintain daily **Site** sign-in sheets, and require that **Subcontractors** maintain daily **Site** sign-in sheets for its employees, which include blank spaces for an employee's name to be both printed and signed, job title, date started and Social Security number, the time the employee began **Work** and the time the employee left **Work**, until **Final Acceptance** of the supplies, materials, equipment, or **Work**, labor, or services to be furnished or rendered under this **Contract** unless exception is granted by the Comptroller upon application by the **Agency.** In the alternative, subject to the approval of the CCPO, the **Contractor** and **Subcontractor** may maintain an electronic or biometric sign-in system, which provides the information required by this Article 37.6.2; and

37.6.3 Individual Employee Information Notices: Distribute a notice, to each worker, laborer or mechanic employed under this **Contract**, in a form provided by the **Agency**, that this **Project** is a public work project on which each worker, laborer or mechanic is entitled to receive the prevailing rate of wages and supplements for the occupation at which he or she is working. If the total cost of the **Work** under this **Contract** is at least two hundred fifty thousand dollars, such notice shall also include a statement that, that each worker, laborer or mechanic be certified prior to performing any **Work** as having successfully completed a course in construction safety and health approved by the United States department of labor's occupational safety and health administration that is at least ten hours in duration. Such notice shall be distributed to each worker before he or she starts performing any **Work** of this **Contract** and with the first paycheck after July first of each year. Worker, laborer or mechanic includes employees of the **Contractor** and all **Subcontractors** and all employees of suppliers entering the **Site**. At the time of distribution, the **Contractor** shall have each worker, laborer or mechanic sign a statement, in a form provided by the **Agency**, certifying that the worker has received the notice required by this article, which signed statement shall be maintained with the payroll records required by this **Contract**; and

> 37.6.3.1 The Contractor and each Subcontractor shall notify each worker, laborer or mechanic employed under this **Contract** in writing of the prevailing rate of wages for their particular job classification. Such notification shall be given to every worker, laborer and mechanic on their first pay stub and with every pay stub thereafter; and

37.6.4 **Site** Laminated Identification Badges: Provide laminated identification badges which indicate the worker's, laborer's or mechanic's name, trade, employer's name and employment starting date (month/day/year). Further, require as a condition of employment on the **Site**, that each and every worker, laborer or mechanic wear the laminated identification badge at all times and that it may be seen by any representative of the **City**; and

37.6.5 Language Other Than English Used On **Site**: Provide the **ACCO** notice when three (3) or more employees (worker and/or laborer and/or mechanic) on the **Site**, at any time, speak a language other than English. The **ACCO** will then provide the **Contractor** the notices in Article 37.6.1 in that language or languages as may be required. The **Contractor** is responsible for all distributions under Article 37; and

37.6.6 Provision of Records: The **Contractor** and **Subcontractor(s)** shall produce within five (5) **Days** on the **Site** of the **Work** and upon a written order of the **Engineer**, the **Commissioner**, the **ACCO**, the **Agency EAO**, or the **Comptroller**, such records as are required to be kept by this Article 37.6; and

37.6.7 If this **Contract** is for an amount greater than $1,000,000, checks issued by the **Contractor** to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the **Agency**). For any subcontract for an amount greater than $750,000, checks issued by a **Subcontractor** to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the **Agency**); and

37.6.8 The failure of the **Contractor** or **Subcontractor(s)** to comply with the provisions of Articles 37.6.1 through 37.6.7 may result in the **Commissioner** declaring the **Contractor** or **Subcontractor(s)** in default and/or the withholding of payments otherwise due under the **Contract.**

37.7 The **Contractor** and its **Subcontractors** shall keep such employment and payroll records as are required by Section 220 of the Labor **Law**.

37.8 At the time the **Contractor** makes application for each partial payment and for final payment, the **Contractor** shall submit to the **Commissioner** a written payroll certification, in the form provided by this **Contract**, of compliance with the prevailing wage, minimum wage and other provisions and stipulations required by Labor **Law** Section 220 and of compliance with the training requirements of Labor law section 220-h set forth in Article 35.2. This certification of compliance with the provisions of this article shall be a condition precedent to payment and no payment shall be made to the **Contractor** unless and until each such certification shall have been submitted to and received by the **Commissioner**.

37.9 This **Contract** is executed by the **Contractor** with the express warranty and representation that the **Contractor** is not disqualified under the provisions of Section 220 of the Labor Law for the award of the **Contract**.

37.10 Any breach or violation of any of the foregoing shall be deemed a breach or violation of a material provision of this **Contract**, and grounds for cancellation thereof by the **City**.

ARTICLE 38. PAYROLL REPORTS

38.1 The **Contractor** shall maintain on the **Site** the original payrolls or transcripts thereof which the **Contractor** and its **Subcontractor(s)** are required to maintain pursuant to Labor **Law** Section 220. The **Contractor** and **Subcontractor(s)** shall submit original payrolls or transcripts, subscribed and affirmed by it as true, with each and every payment requisition. The **Contractor and Subcontractor(s)** shall produce within five (5) **Days** on the **Site** of the **Work** and upon a written order of the **Engineer**, the **Commissioner**, the **ACCO**, the **Agency EAO**, or the **Comptroller**, such original payrolls or transcripts thereof, subscribed and affirmed by it as true, and the statements signed by each worker pursuant to this Chapter VIII. In addition, the **Contractor** and **Subcontractor(s)** shall furnish to the **Engineer** upon written demand any other information to satisfy the **Engineer** that this Chapter VIII and the Labor **Law**, as to the hours of employment and rates of wages, are being observed. The **Contractor** shall maintain the payrolls or transcripts thereof for six (6) years from the date of completion of the **Work** on this **Contract**.

38.2 When directed by the **Engineer**, the **Contractor** or **Subcontractor** shall provide the **Engineer** with an attendance sheet for each **Day** on which **Work** is performed on the **Site**. Such attendance sheet shall be in a form acceptable to the **Agency** and shall provide information for employees of the **Contractor** and **Subcontractor(s)**.

ARTICLE 39. DUST HAZARDS

39.1 Should a harmful dust hazard be created in performing the **Work** of this **Contract**, for the elimination of which appliances or methods have been approved by the Board of Standards and Appeals of the City of New York, such appliances and methods shall be installed, maintained, and effectively operated during the continuance of such harmful dust hazard. Failure to comply with this provision after notice shall make this **Contract** void.

CHAPTER IX
PARTIAL AND FINAL PAYMENTS

ARTICLE 40. CONTRACT PRICE

40.1 The **City** shall pay, and the **Contractor** agrees to accept, in full consideration for the **Contractor's** performance of the **Work** subject to the terms and conditions hereof, the lump sum price or unit prices which this **Contract** was awarded, plus the amount required to be paid for any **Extra Work** ordered by the **Commissioner** under Article 25, less credit for any **Work** omitted pursuant to Article 29.

ARTICLE 41. BID BREAKDOWN ON LUMP SUM

41.1 Within fifteen (15) **Days** after the commencement date specified in the Notice to Proceed, unless otherwise directed by the **Resident Engineer**, the **Contractor** shall submit to the **Resident Engineer** a breakdown of its bid price, or of lump sums bid for items of the **Contract**, showing the various operations to be performed under the **Contract**, as directed in the progress schedule required under Article 9, and the value of each of such operations, the total of such items to equal the lump sum price bid. Said breakdown must be approved in writing by the **Resident Engineer**.

41.2 No partial payment will be approved until the **Contractor** submits a bid breakdown that is acceptable to the **Resident Engineer**.

41.3 The **Contractor** shall also submit such other information relating to the bid breakdown as directed by the **Resident Engineer**. Thereafter, the breakdown may be used only for checking the **Contractor's** applications for partial payments hereunder, but shall not be binding upon the **City**, the **Commissioner**, or the **Engineer** for any purpose whatsoever.

ARTICLE 42. PARTIAL PAYMENTS

42.1 From time to time as the **Work** progresses satisfactorily, but not more often than once a month, the **Contractor** may submit to the **Engineer** a requisition for a partial payment in the prescribed form, which shall contain an estimate of the quantity and the fair value of the **Work** done during the payment period.

42.2 Partial payments may be made for materials, fixtures and equipment in advance of their actual incorporation in the **Work**, as the **Commissioner** may approve, and upon the terms and conditions set forth in the General Conditions.

42.3 The **Contractor** shall also submit to the **Commissioner** in connection with every application for partial payment a verified statement in the form prescribed by the **Comptroller** setting forth the information required under Labor **Law** Section 220-a.

42.4 Within thirty (30) **Days** after receipt of such satisfactory payment application, the **Engineer** will prepare and certify, and the **Commissioner** will approve, a voucher for a partial payment in the amount of such approved estimate, less any and all deductions authorized to be made by the **Commissioner** under the terms of this **Contract** or by **Law**.

ARTICLE 43. PROMPT PAYMENT

43.1 The Prompt Payment provisions of the **PPB** Rules in effect at the time of the Bid will be applicable to payments made under this **Contract**. The provisions require the payment to **Contractor** of interest on payments made after the required payment date, except as set forth in the **PPB** Rules.

43.2 The **Contractor** shall submit a proper invoice to receive payment, except where the **Contract** provides that the **Contractor** will be paid at predetermined intervals without having to submit an invoice for each scheduled payment.

43.3 Determination of interest due will be made in accordance with the **PPB** Rules.

43.4 If the **Contractor** is paid interest, the proportionate share of that interest shall be forwarded by the **Contractor** to its **Subcontractor(s)**.

43.5 The **Contractor** shall pay each **Subcontractor** or **Materialman** not later than seven (7) **Days** after receipt of payment out of amounts paid to the **Contractor** by the **City** for **Work** performed by the **Subcontractor** or **Materialman** under this **Contract**.

43.5.1 If **Contractor** fails to make any payment to any **Subcontractor** or **Materialman** within seven (7) days after receipt of payment by the **City** pursuant to section 43.5 herein, then the **Contractor** shall pay interest on amounts due to such **Subcontractor** or **Materialman** at a rate of interest in effect on the date such payment is made by the **Contractor** computed in accordance with section 756-b (1)(b) of the NY General Business Law. Accrual of interest shall commence on the day immediately following the expiration of the seventh day following receipt of payment to the **Contractor** by the **City** and shall end on the date on which payment is made.

43.6 The **Contractor** shall include in each of its subcontracts a provision requiring each **Subcontractor** to make payment to each of its **Subcontractors** or suppliers for **Work** performed under this **Contract** in the same manner and within the same time period set forth above.

ARTICLE 44. SUBSTANTIAL COMPLETION PAYMENT

44.1 When the **Work** in the opinion of the **Commissioner**, has been substantially but not entirely completed, he/she shall issue a certificate of **Substantial Completion**.

44.2 The **Contractor** shall submit with the **Substantial Completion** requisition:

44.2.1 A Final Verified Statement of any and all alleged claims against the **City** and any pending dispute resolution procedures in accord with the **PPB** Rules and this **Contract**, in any way connected with or arising out of this **Contract** (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) setting forth with respect to each such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the **Contractor** claims the performance of the **Work** or a particular

part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay.

44.2.1(a) With respect to each such claim, the **Commissioner**, the **Comptroller** and, in the event of litigation, the Corporation Counsel of the **City** shall have the same right to inspect, and to make extracts or copies of, the **Contractor's** books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this article is intended to or shall relieve the **Contractor** from the obligation of complying strictly with Articles 11, 27, 28, and 30. The **Contractor** is warned that unless such claims are completely set forth as herein required, the **Contractor** upon acceptance of the **Substantial Completion** payment pursuant to this article, will have waived any such claims.

44.2.2 A **Final Approved Punch List.**

44.2.3 Where required, a request for a substantial or final extension of time.

44.3 The **Commissioner** shall issue a voucher calling for payment of any part or all of the balance due for **Work** performed under the **Contract**, including monies retained under Article 21, less any and all deductions authorized to be made by the **Commissioner**, under this **Contract** or by **Law**, and less twice the amount the **Commissioner** considers necessary to ensure the completion of the balance of the **Work** by the **Contractor**. Such a payment shall be considered a Partial and not a Final Payment. No **Substantial Completion** payment shall be made under this article where the **Contractor** shall fail to complete the **Work** within the time fixed for such completion in the Schedule A of the General Conditions, or within the time to which completion may have been extended, until an extension or extensions of time for the completion of **Work** have been acted upon pursuant to Article 13.

44.4 No further partial payments shall be made to the **Contractor** after the **Commissioner** issues a Certificate of **Substantial Completion**, except the **Substantial Completion** payment and **Contractor's** requisition that were properly filed with the **Commissioner** prior to the date of **Substantial Completion**; however, the **Commissioner** may grant a waiver for further partial payments after the date of **Substantial Completion** to permit payments for change order **Work** and/or release of retainage and deposits pursuant to Articles 21 and 24. Such waiver shall be in writing.

44.5 The **Contractor** acknowledges that nothing contained in this article is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 45. FINAL PAYMENT

45.1 After completion and **Final Acceptance** of the **Work**, the **Contractor** shall submit all required certificates and documents, together with a requisition for the balance claimed to be due under the **Contract**, less the amount authorized to be retained for maintenance under Article 24. A verified statement similar to that required in connection with applications for partial payments shall also be submitted to the **Commissioner.**

45.2 Amended Verified Statement of Claims: The **Contractor** shall also submit with the final requisition any amendments to the final verified statement of any and all alleged claims against the **City**, and any pending dispute resolution procedures in accord with the **PPB** Rules and this **Contract**, in any way connected with or arising out of this **Contract** (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30.) that have occurred subsequent to **Substantial Completion**, setting forth with respect to each such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each such item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the **Contractor** claims the performance of the **Work** or a particular part thereof was

delayed, and an itemized statement and breakdown of the amount claimed for each such delay. With reference to each such claim, the **Commissioner**, the **Comptroller** and, in the event of litigation, the Corporation Counsel of the **City** shall have the same right to inspect, and to make extracts or copies of, the **Contractor's** books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this article, is entitled to or shall relieve the **Contractor** from the obligation of complying strictly with Articles 11, 27, 28, and 30. The **Contractor** is warned that unless such claims are completely set forth as herein required, the **Contractor**, upon acceptance of the Final Payment pursuant to Article 46, will have waived any such claims.

45.3 Preparation of Final Voucher: Upon determining the balance due hereunder other than on account of claims, the **Engineer** will prepare and certify, for the Commissioner's approval, a voucher for final payment in that amount less any and all deductions authorized to be made by the **Commissioner** under this **Contract** or by **Law**. In the case of a lump sum **Contract**, the **Commissioner** shall certify the voucher for final payment within thirty (30) **Days** from the date of completion and acceptance of the **Work**, provided all requests for extensions of time have been acted upon.

45.3.1 All prior certificates and vouchers upon which partial payments were made, being merely estimates made to enable the **Contractor** to prosecute the **Work** more advantageously, shall be subject to correction in the final voucher, and the certification of the **Engineer** thereon and the approval of the **Commissioner** thereof, shall be conditions precedent to the right of the **Contractor** to receive any money hereunder. Such final voucher shall be binding and conclusive upon the **Contractor**.

45.3.2 Payment pursuant to such final voucher, less any deductions authorized to be made by the **Commissioner** under this **Contract** or by **Law**, shall constitute the final payment, and shall be made by the **Comptroller** within thirty (30) **Days** after the filing of such voucher in his/her office.

45.4 The **Contractor** acknowledges that nothing contained in this article is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 46. ACCEPTANCE OF FINAL PAYMENT

46.1 The acceptance by the **Contractor**, or by anyone claiming by or through it, of the final payment, whether such payment be made pursuant to any judgment of any Court, or otherwise, shall constitute and operate as a release to the **City** from any and all claims of and liability to the **Contractor** for anything heretofore done or furnished for the **Contractor** relating to or arising out of this **Contract** and the **Work** done hereunder, and for any prior act, neglect or default on the part of the **City** or any of its officers, agents or employees, excepting only a claim against the **City** for the amounts deducted or retained in accordance with the terms and provisions of this **Contract** or by **Law**, and excepting any claims, not otherwise waived, or any pending dispute resolution procedures which are contained in the verified statement filed with the **Contractor's** substantial and final requisitions pursuant to Articles 44 and 45.

46.2 The **Contractor** is warned that the execution by it of a release, in connection with the acceptance of the final payment, containing language purporting to reserve claims other than those herein specifically excepted from the operation of this article, or those for amounts deducted by the **Commissioner** from the final requisition or by the **Comptroller** from the final payment as certified by the **Engineer** and approved by the **Commissioner**, shall not be effective to reserve such claims, anything stated to the **Contractor** orally or in writing by any officer, agent or employee of the **City** to the contrary notwithstanding.

46.3 Should the **Contractor** refuse to accept the final payment as tendered by the **Comptroller**, it shall constitute a waiver of any right to interest thereon.

46.4 The **Contractor**, however, shall not be barred from commencing an action for breach of **Contract** under this provision to the extent permitted by **Law** and by the terms of the **Contract** provided that a detailed and verified statement of claim is served upon the contracting **Agency** and **Comptroller** not later than forty (40) **Days** after the mailing of such final payment. The statement shall specify the items upon which the claim will be based and any such claim shall be limited to such items.

ARTICLE 47. APPROVAL BY PUBLIC DESIGN COMMISSION

47.1 All works of art, including paintings, mural decorations, stained glass, statues, bas-reliefs and other sculptures, monuments, fountains, arches, and other structures of a permanent character intended for ornament or commemoration, and every design of the same to be used in the performance of this **Contract**, and the design of all bridges, approaches, buildings, gates, fences, lamps, or structures to be erected, pursuant to the terms of this **Contract**, shall be submitted to the Art Commission, d/b/a the Public Design Commission of the City of New York, and shall be approved by the Public Design Commission prior to the erection or placing in the position of the same. The final payment shall not become due or payable under this **Contract** unless and until the Public Design Commission shall certify that the design for the **Work** herein contracted for has been approved by the said Public Design Commission, and that the same has been executed in substantial accordance with the design so approved, pursuant to the provisions of Chapter 37, Section 854 of the **City** Charter, as amended.

CHAPTER X
CONTRACTOR'S DEFAULT

ARTICLE 48. COMMISSIONER'S RIGHT TO DECLARE CONTRACTOR IN DEFAULT

48.1 In addition to those instances specifically referred to in other Articles herein, the **Commissioner** shall have the right to declare the **Contractor** in default of this **Contract** if:

48.1.1 The **Contractor** fails to commence **Work** when notified to do so by the **Commissioner**; or if

48.1.2 The **Contractor** shall abandon the **Work**; or if

48.1.3 The **Contractor** shall refuse to proceed with the **Work** when and as directed by the **Commissioner**; or if

48.1.4 The **Contractor** shall, without just cause, reduce its working force to a number which, if maintained, would be insufficient, in the opinion of the **Commissioner**, to complete the **Work** in accordance with the Progress Schedule; or if

48.1.5 The **Contractor** shall fail or refuse to increase sufficiently such working force when ordered to do so by the **Commissioner**; or if

48.1.6 The **Contractor** shall sublet, assign, transfer, convert or otherwise dispose of this **Contract** other than as herein specified; or sell or assign a majority interest in the **Contractor**; or if

48.1.7 The **Contractor** fails to secure and maintain all required insurance; or if

48.1.8 A receiver or receivers are appointed to take charge of the **Contractor's** property or affairs; or if

48.1.9 The **Commissioner** shall be of the opinion that the **Contractor** is or has been unnecessarily or unreasonably or willfully delaying the performance and completion of the **Work**, or the award of necessary subcontracts, or the placing of necessary material and equipment orders; or if

48.1.10 The **Commissioner** shall be of the opinion that the **Contractor** is or has been willfully or in bad faith violating any of the provisions of this **Contract**; or if

48.1.11 The **Commissioner** shall be of the opinion that the **Work** cannot be completed within the time herein provided therefor or within the time to which such completion may have been extended; provided, however, that the impossibility of timely completion is, in the **Commissioner's** opinion, attributable to conditions within the **Contractor's** control; or if

48.1.12 The **Work** is not completed within the time herein provided therefor or within the time to which the **Contractor** may be entitled to have such completion extended; or if

48.1.13 Any statement or representation of the **Contractor** in the **Contract** or in any document submitted by the **Contractor** with respect to the **Work**, the **Project**, or the **Contract** (or for purposes of securing the **Contract**) was untrue or incorrect when made.

48.1.14 The **Contractor** or any of its officers, directors, partners, five (5%) percent shareholders, principals, or other persons substantially involved in its activities, commits any of the acts or omissions specified as the grounds for debarment in the **PPB** Rules.

48.2 Before the **Commissioner** shall exercise his/her right to declare the **Contractor** in default, the **Commissioner** shall give the **Contractor** an opportunity to be heard, upon not less than two (2) **Days** notice.

ARTICLE 49. EXERCISE OF THE RIGHT TO DECLARE DEFAULT

49.1 The right to declare in default for any of the grounds specified or referred to in Article 48 shall be exercised by sending the **Contractor** a notice, signed by the **Commissioner**, setting forth the ground or grounds upon which such default is declared (hereinafter referred to as a "Notice of Default").

49.2 The **Commissioner's** determination that the **Contractor** is in default shall be conclusive, final and binding on the parties and such a finding shall preclude the **Contractor** from commencing a plenary action for any damages relating to the **Contract.** If the **Contractor** protests the determination of the **Commissioner**, the **Contractor** may commence a lawsuit in a court of competent jurisdiction of the State of New York under Article 78 of the New York Civil Practice Law and Rules.

ARTICLE 50. QUITTING THE SITE

50.1 Upon receipt of such notice the **Contractor** shall immediately discontinue all further operations under this **Contract** and shall immediately quit the **Site**, leaving untouched all plant, materials, equipment, tools and supplies then on the **Site**.

ARTICLE 51. COMPLETION OF THE WORK

51.1 The **Commissioner**, after declaring the **Contractor** in default, may then have the **Work** completed by such means and in such manner, by **Contract** with or without public letting, or otherwise, as he/she may deem advisable, utilizing for such purpose such of the **Contractor's** plant, materials, equipment, tools and supplies remaining on the **Site**, and also such **Subcontractors**, as he/she may deem advisable.

51.2 After such completion, the **Commissioner** shall make a certificate stating the expense incurred in such completion, which shall include the cost of re-letting and also the total amount of liquidated damages (at the rate provided for in the **Contract**) from the date when the **Work** should have been completed by the **Contractor** in accordance with the terms hereof to the date of actual completion of the **Work**. Such certificate shall be binding and conclusive upon the **Contractor**, its Sureties, and any person claiming under the **Contractor**, as to the amount thereof.

51.3 The expense of such completion, including any and all related and incidental costs, as so certified by the **Commissioner**, and any liquidated damages assessed against the **Contractor**, shall be charged against and deducted out of monies which are earned by the **Contractor** prior to the date of default. Should the expense of such completion, as certified by the **Commissioner**, exceed the total sum which would have been payable under the **Contract** if it had been completed by the **Contractor**, any excess shall be paid by the **Contractor**.

ARTICLE 52. PARTIAL DEFAULT

52.1 In case the **Commissioner** shall declare the **Contractor** in default as to a part of the **Work** only, the **Contractor** shall discontinue such part, shall continue performing the remainder of the **Work** in strict conformity with the terms of this **Contract**, and shall in no way hinder or interfere with any **Other Contractor(s)** or persons whom the **Commissioner** may engage to complete the **Work** as to which the **Contractor** was declared in default.

52.2 The provisions of this Chapter relating to declaring the **Contractor** in default as to the entire **Work** shall be equally applicable to a declaration of partial default, except that the **Commissioner** shall be entitled to utilize for completion of the part of the **Work** as to which the **Contractor** was declared in default only such plant, materials, equipment, tools and supplies as had been previously used by the **Contractor** on such part.

ARTICLE 53. PERFORMANCE OF UNCOMPLETED WORK

53.1 In completing the whole or any part of the **Work** under the provision of this Chapter X, the **Commissioner** shall have the power to depart from or change or vary the terms and provisions of this **Contract**, provided, however, that such departure, change or variation is made for the purpose of reducing the time or expense of such completion. Such departure, change or variation, even to the extent of accepting a lesser or different performance, shall not affect the conclusiveness of the **Commissioner's** certificate of the cost of completion referred to in Article 51, nor shall it constitute a defense to an action to recover the amount by which such certificate exceeds the amount which would have been payable to the **Contractor** hereunder but for its default.

ARTICLE 54. OTHER REMEDIES

54.1 In addition to the right to declare the **Contractor** in default pursuant to this Chapter X, the **Commissioner** shall have the absolute right, in his/her sole discretion and without a hearing, to complete or cause to complete in the same manner as described in Articles 51 and 53, any or all unsatisfactory or uncompleted punch list **Work** that remains after the completion date specified in the Final Approved Punch List. A written notice of the exercise of this right shall be sent to the **Contractor** who shall immediately quit the **Site** in accordance with the provisions of Article 50.

54.2 The previous provisions of this Chapter X shall be in addition to any and all other legal or equitable remedies permissible in the premises.

54.3 The exercise by the **City** of any remedy set forth herein shall not be deemed a waiver by the **City** of any other legal or equitable remedy contained in this **Contract** or provided under **Law**.

54.4 The expense of such completion, including any and all related and incidental costs, as so certified by the **Commissioner**, shall be charged against and deducted out of monies which have been earned by the **Contractor** prior to the date of the exercise of the right set forth in Article 54.1; the balance of such monies, if any, subject to the other provisions of this **Contract**, to be paid to the **Contractor** without interest after such completion. Should the expense of such completion, as certified by the **Commissioner**, exceed the total sum which would have been payable under the **Contract** if it had been completed by the **Contractor**, any excess shall be paid by the **Contractor**.

CHAPTER XI
MISCELLANEOUS PROVISIONS

ARTICLE 55. CONTRACTOR'S WARRANTIES

55.1 In consideration of, and to induce, the award of this **Contract** to the **Contractor**, the **Contractor** represents and warrants:

55.1.1 That it is financially solvent, sufficiently experienced and competent to perform the **Work**; and

55.1.2 That the facts stated in its bid and the information given by it pursuant to the Information for Bidders is true and correct in all respects; and

55.1.3 That it has read and complied with all requirements set forth in the **Contract**.

ARTICLE 56. CLAIMS AND ACTIONS THEREON

56.1 Any claim, that is not subject to dispute resolution under the **PPB** Rules or this **Contract**, against the **City** for damages for breach of **Contract** shall not be made or asserted in any lawsuit, unless the **Contractor** shall have strictly complied with all requirements relating to the giving of notice and of information with respect to such claims, as herein before provided.

56.2 Nor shall any lawsuit be instituted or maintained on any such claims unless such lawsuit is commenced within six (6) months after the date the **Commissioner** issues a Certificate of **Substantial Completion** pursuant to Article 44; except that:

56.2.1 Any claims arising out of events occurring after the date the **Commissioner** issues a Certificate of **Substantial Completion** and before **Final Acceptance** of the **Work** shall be asserted within six (6) months of **Final Acceptance** of the **Work**;

56.2.2 Any claims for monies deducted, retained or withheld under the provisions of this **Contract** shall be asserted within six (6) months after the date when such monies becomes due and payable hereunder; and

56.2.3 If the **Commissioner** exercises his/her right to terminate the **Contract** pursuant to Article 64, any such lawsuit shall be commenced within six (6) months of the date the **Commissioner** exercises said right.

ARTICLE 57. INFRINGEMENT

57.1 The **Contractor** shall be solely responsible for and shall indemnify the **City** against any and all claims and judgments for damages for any infringement of copyright and patents or use of patented articles, tools, materials, equipment, appliances or processes in the performance or completion of the **Work**, including all costs and expenses which the **City** shall or may incur or be obligated to pay by reason thereof.

ARTICLE 58. NO CLAIM AGAINST OFFICERS, AGENTS OR EMPLOYEES

58.1 No claim whatsoever shall be made by the **Contractor** against any officer, agent or employee of the **City** for, or on account of, anything done or omitted to be done in connection with this **Contract**.

ARTICLE 59. SERVICES OF NOTICES

59.1 The **Contractor** hereby designates the business address specified in its bid, as the place where all notices, directions or other communications to the **Contractor** may be delivered, or to which they may be mailed. Actual delivery of any such notice, direction or communication to the aforesaid place, or depositing it in a postpaid wrapper addressed thereto in any post office box (P.O. Box) regularly maintained by the United States Postal Service, shall be conclusively deemed to be sufficient service thereof upon the **Contractor** as the date of such delivery or deposit.

59.2 Such address may be changed at any time by an instrument in writing, executed and acknowledged by the **Contractor**, and delivered to the **Commissioner**.

59.3 Nothing herein contained shall, however, be deemed to preclude or render inoperative the service of any notice, direction or other communication upon the **Contractor** personally, or, if the **Contractor** is a corporation, upon any officer thereof.

ARTICLE 60. UNLAWFUL PROVISIONS DEEMED STRICKEN FROM CONTRACT

60.1 If this **Contract** contains any unlawful provision not an essential part of the **Contract** and which shall not appear to have been a controlling or material inducement to the making thereof, the same shall be deemed of no effect and shall, upon notice by either party, be deemed stricken from the **Contract** without affecting the binding force of the remainder.

ARTICLE 61. ALL LEGAL PROVISIONS DEEMED INCLUDED

61.1 It is the intent and understanding of the parties to this **Contract** that each and every provision of **Law** required to be inserted in this **Contract** shall be and is inserted herein. Furthermore, it is hereby stipulated that every such provision is to be deemed to be inserted herein, and if, through mistake or otherwise, any such provision is not inserted, or is not inserted in correct form, then this **Contract** shall forthwith upon the application of either party be amended by such insertion so as to comply strictly with the **Law** and without prejudice to the rights of either party hereunder.

ARTICLE 62. TAX EXEMPTION

62.1 The **City** is exempt from payment of Federal, State, local taxes and Sales and Compensation Use Taxes of the State of New York and of cities and counties on all materials and supplies sold to the **City** pursuant to

the provisions of this **Contract**. These taxes are not to be included in bids. However, this exemption does not apply to tools, machinery, equipment or other property leased by or to the **Contractor** or a **Subcontractor**, or to supplies and materials which even though they are consumed, are not incorporated into the completed **Work** (consumable supplies), and the **Contractor** and its **Subcontractors** shall be responsible for and pay any and all applicable taxes, including Sales and Compensation Use Taxes, on such leased tools, machinery, equipment or other property and upon all such unincorporated supplies and materials.

62.2 The **Contractor** agrees to sell and the **City** agrees to purchase all supplies and materials, other than consumable supplies, required, necessary or proper for or incidental to the construction of the **Project** covered by this **Contract**. The sum paid under this **Contract** for such supplies and materials shall be in full payment and consideration for the sale of such supplies and materials herein.

62.2.1 The **Contractor** agrees to construct the **Project** and to perform all **Work**, labor and services rendered, necessary, proper or incidental thereto for the sum shown in the bid for the performance of such **Work**, labor and services, and the sum so paid pursuant to this **Contract** for such **Work**, labor, etc., shall be in full consideration for the performance by the **Contractor** of all its duties and obligations under this **Contract** in connection with said **Work** and labor.

62.3 The purchase by the **Contractor** of the supplies and materials sold hereunder shall be a purchase or procurement for resale and therefore not subject to the New York State or **City** Sales or Compensation Use Taxes or any such taxes of cities or counties. The sale of such supplies and materials by the **Contractor** to the **City** is exempt from the aforesaid sales or compensating use taxes. With respect to such supplies and materials, the **Contractor**, at the request of the **City**, shall furnish to the **City** such Bills of Sale and other instruments as may be required by the **City**, properly executed, acknowledged and delivered assuring to the **City** title to such supplies and materials, free of liens and/or encumbrances, and the **Contractor** shall mark or otherwise identify all such materials as the property of the **City**.

62.4 Title to all materials to be sold by the **Contractor** to the **City** pursuant to the provisions of the **Contract** shall immediately vest in and become the sole property of the **City** upon delivery of such supplies and materials to the **Site** and prior to its becoming a part of the permanent structure and/or construction. Notwithstanding such transfer of title, the **Contractor** shall have the full and continuing responsibility to install such materials and supplies in accordance with the provisions of this **Contract**, protect them, maintain them in a proper condition and forthwith repair, replace and make good any damage thereto, theft or disappearance thereof, and furnish additional materials in place of any that may be lost, stolen or rendered unusable, without cost to the **City**, until such time as the **Work** covered by the **Contract** is fully accepted by the **City**. Such transfer of title shall in no way affect any of the **Contractor's** obligations hereunder. In the event that, after title has passed to the **City**, any of such supplies and materials are rejected as being defective or otherwise unsatisfactory, title to all such supplies and materials shall be deemed to have been transferred back to the **Contractor**.

62.5 The purchase by **Subcontractors** of supplies and materials to be sold hereunder shall also be a purchase or procurement for resale to the **Contractor** (either directly or through other **Subcontractors**) and therefore not subject to the aforesaid Sales or Compensation Use Taxes, provided that the subcontract agreements provide for the resale of such supplies and materials prior to and separate and apart from the incorporation of such supplies and materials into the permanent structure and/or construction and that such subcontract agreements are in a form similar to this **Contract** with respect to the separation of the sale of materials from the **Work** and labor, services, consumable supplies and any other matters to be provided, and provided further that the subcontract agreements provide separate prices for materials and all other services and matters. Such separation shall actually be followed in practice, including the separation of payments for supplies and materials from the payments for other **Work** and labor and other things to be provided.

62.6 The **Contractor** and its **Subcontractors** and Materialmen shall obtain any and all necessary **Contractor** Exempt Purchase Certificates or Resale Certificates from the appropriate governmental **Agency** or

Agencies, and furnish a **Contractor** Exempt Purchase Certificate or Resale Certificate to all persons, firms or corporations from which they purchase supplies and materials for the performance of the **Work** covered by this **Contract**.

62.7 In the event any of the provisions of this article shall be deemed to be in conflict with any other provisions of this **Contract** or create any ambiguity, then the provisions of this article shall control.

ARTICLE 63. INVESTIGATION(S) CLAUSE

63.1 The parties to this **Contract** agree to cooperate fully and faithfully with any investigation, audit or inquiry conducted by a United States, a State of New York (State) or a **City** governmental **Agency** or authority that is empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath, or conducted by the Inspector General of a governmental **Agency** that is a party in interest to the transaction, submitted bid, submitted proposal, **Contract**, lease, permit or license that is the subject of the investigation, audit or inquiry.

63.2 If any person who has been advised that his/her statement, and any information from such statement, will not be used against him/her in any subsequent criminal proceeding refuses to testify before a grand jury or other governmental **Agency** or authority empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath concerning the award of or performance under any transaction, agreement, lease, permit, **Contract**, or license entered into with the **City**, the State, or any political subdivision or public authority thereof, or the Port Authority of New York and New Jersey, or any local development corporation within the **City**, or any public benefit corporation organized under the **Laws** of the State of New York, or;

63.3 If any person refuses to testify for a reason other than the assertion of his/her privilege against self incrimination in an investigation, audit or inquiry conducted by a **City** or State governmental **Agency** or authority empowered directly or by designation to compel the attendance of witnesses and to take testimony under oath, or by the Inspector General of the governmental **Agency** that is a party in interest in, and is seeking testimony concerning the award of, or performance under any transaction, agreement, lease, permit, **Contract**, or license entered into with the **City**, the State, or any political subdivision thereof or any local development corporation within the **City**, then;

63.4 The **Commissioner** whose **Agency** is a party in interest to the transaction, submitted bid, submitted proposal, **Contract**, lease, permit, or license shall convene a hearing, upon not less than five (5) days written notice to the parties involved to determine if any penalties should attach for the failure of a person to testify.

63.5 If any non-governmental party to the hearing requests an adjournment, the **Commissioner** who convened the hearing may, upon granting the adjournment, suspend any **Contract**, lease, permit, or license, pending the final determination pursuant to Article 63.7 without the **City** incurring any penalty or damages for delay or otherwise.

63.6 The penalties which may attach after a final determination by the **Commissioner** may include but shall not exceed:

63.6.1 The disqualification for a period not to exceed five (5) years from the date of an adverse determination for any person, or any entity of which such person was a member at the time the testimony was sought, from submitting bids for, or transacting business with, or entering into or obtaining any **Contract**, lease, permit or license with or from the **City**; and/or

63.6.2 The cancellation or termination of any and all such existing **City Contracts**, leases, permits or licenses that the refusal to testify concerns and that have not been assigned as permitted under this **Agreement**, nor the proceeds of which pledged, to an unaffiliated and unrelated institutional lender for fair value prior to the issuance of the notice scheduling the hearing, without the **City** incurring any penalty or damages on account of such cancellation or termination; monies lawfully due for goods delivered, **Work** done, rentals, or fees accrued prior to the cancellation or termination shall be paid by the **City**.

63.7 The **Commissioner** shall consider and address in reaching his/her determination and in assessing an appropriate penalty the factors in Articles 63.7.1 and 63.7.2. The **Commissioner** may also consider, if relevant and appropriate, the criteria established in Articles 63.7.3 and 63.7.4, in addition to any other information which may be relevant and appropriate:

63.7.1 The party's good faith endeavors or lack thereof to cooperate fully and faithfully with any governmental investigation or audit, including but not limited to the discipline, discharge, or disassociation of any person failing to testify, the production of accurate and complete books and records, and the forthcoming testimony of all other members, agents, assignees or fiduciaries whose testimony is sought.

63.7.2 The relationship of the person who refused to testify to any entity that is a party to the hearing, including but not limited to, whether the person whose testimony is sought has an ownership interest in the entity and/or the degree of authority and responsibility the person has within the entity.

63.7.3 The nexus of the testimony sought to the subject entity and its **Contracts**, leases, permits or licenses with the **City**.

63.7.4 The effect a penalty may have on an unaffiliated and unrelated party or entity that has a significant interest in an entity subject to penalties under Article 63.6, provided that the party or entity has given actual notice to the **Commissioner** upon the acquisition of the interest, or at the hearing called for in Article 63.4, gives notice and proves that such interest was previously acquired. Under either circumstance the party or entity shall present evidence at the hearing demonstrating the potential adverse impact a penalty will have on such person or entity.

63.8 Definitions:

63.8.1 The term "license" or "permit" as used herein shall be defined as a license, permit, franchise or concession not granted as a matter of right.

63.8.2 The term "person" as used herein shall be defined as any natural person doing business alone or associated with another person or entity as a partner, director, officer, principal or employee.

63.8.3 The term "entity" as used herein shall be defined as any firm, partnership, corporation, association, joint venture, or person that receives monies, benefits, licenses, leases, or permits from or through the **City** or otherwise transacts business with the **City**.

63.8.4 The term "member" as used herein shall be defined as any person associated with another person or entity as a partner, director, officer, principal or employee.

63.9 In addition to and notwithstanding any other provision of this **Contract**, the **Commissioner** may in his/her sole discretion terminate this **Contract** upon not less than three (3) **Days** written notice in the event the

Contractor fails to promptly report in writing to the **Commissioner** of the Department of Investigations ("DOI") of the **City** any solicitation of money, goods, requests for future employment or other benefit or thing of value, by or on behalf of any employee of the **City** or other person, firm, corporation or entity for any purpose which may be related to the procurement or obtaining of this **Contract** by the **Contractor**, or affecting the performance of this **Contract**.

ARTICLE 64. TERMINATION BY THE CITY

64.1 In addition to termination pursuant to any other article of this **Contract**, the **Commissioner** may, at any time, terminate this **Contract** by written notice to the **Contractor**. In the event of termination, the **Contractor** shall, upon receipt of such notice, unless otherwise directed by the **Commissioner**:

64.1.1 Stop **Work** on the date specified in the notice;

64.1.2 Take such action as may be necessary for the protection and preservation of the **City's** materials and property;

64.1.3 Cancel all cancelable orders for material and equipment;

64.1.4 Assign to the **City** and deliver to the **Site** or another location designated by the **Commissioner**, any non-cancelable orders for material and equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract** and not incorporated in the **Work**;

64.1.5 Take no action which will increase the amounts payable by the **City** under this **Contract**.

64.2 In the event of termination by the **City** pursuant to this article, payment to the **Contractor** shall be in accordance with Articles 64.2.1, 64.2.2 or 64.2.3, to the extent that each respective article applies.

64.2.1 Lump Sum Contracts or Items: On all lump sum **Contracts**, or on lump sum items in a **Contract**, the **City** will pay the **Contractor** the sum of Articles 64.2.1(a) and 64.2.1(b), less all payments previously made pursuant to this **Contract**. On lump sum **Contracts** only, the **City** will also pay the **Contractor** an additional sum as provided in 64.2.1(c).

64.2.1(a) For **Work** completed prior to the notice of termination, the **Contractor** shall be paid a pro rata portion of the lump sum bid amount, plus approved change orders, based upon the percent completion of the **Work**, as determined by the **Commissioner**. For the purpose of determining the pro rata portion of the lump sum bid amount to which the **Contractor** is entitled, the Bid Breakdown submitted in accordance with Article 41 shall be considered, but shall not be dispositive. The **Commissioner's** determination hereunder shall be final, binding and conclusive.

64.2.1(b) For non-cancelable material and equipment, less salvage value, that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract**, but not yet incorporated in the **Work**, the **Contractor** shall be paid the lesser of:

64.2.1(b)(i) The direct cost, as defined in Article 64.2.4; or

64.2.1(b)(ii) The fair and reasonable value, whichever is less, of such material and equipment, plus necessary and reasonable delivery costs.

64.2.1(b)(iii) In addition, the **Contractor** shall be paid five (5%) percent of Article 64.2.1(b)(i) or Article 64.2.1(b)(ii), whichever applies.

64.2.1(c) Except as otherwise provided in Article 64.2.1(d), on all lump sum **Contracts**, the **Contractor** shall be paid the percentage indicated below applied to the difference between the total lump sum bid amount and the total of all payments made prior to the notice of termination plus all payments allowed pursuant to Articles 64.2.1(a) and 64.2.1(b):

64.2.1(c)(i) Five (5%) percent of the first five million ($5,000,000.) dollars; and

64.2.1(c)(ii) Three (3%) percent of any amount between five million ($5,000,000.) dollars and fifteen million ($15,000,000.) dollars; plus

64.2.1(c)(iii) One (1%) percent of any amount over fifteen million ($15,000,000.) dollars.

64.2.1(d) In the event the City terminates a lump sum **Contract** pursuant to this article within ninety (90) days after registration of the **Contract** with the **Comptroller**, the **Contractor** shall be paid one (1%) percent of the difference between the lump sum bid amount and the total of all payments made pursuant to this article.

64.2.2 Unit Price Contracts or Items: On all unit price **Contracts**, or on unit price items in a **Contract**, the **City** will pay the **Contractor** the sum of Articles 64.2.2(a) and 64.2.2(b), less all payments previously made pursuant to this **Contract**:

64.2.2(a) For all completed units, the unit price stated in the **Contract**, and

64.2.2(b) For units that have been ordered but are only partially completed, the **Contractor** will be paid:

64.2.2(b)(i) A pro rata portion of the unit price stated in the **Contract** based upon the percent completion of the unit and

64.2.2(b)(ii) For non-cancelable material and equipment, payment will be made pursuant to Article 64.2.1(b).

64.2.3 Time and Material Contracts or Items: On all **Contracts** or items in a **Contract** where time and material records are specified as the basis for payment of the **Work**, the **Contractor** shall be paid in accordance with Article 26, less all payments previously made pursuant to this **Contract**.

64.2.4 Direct Costs: Direct Costs as used in this article shall mean:

64.2.4(a) The actual purchase price of material and equipment, plus necessary and reasonable delivery costs,

64.2.4(b) The actual cost of labor involved in construction and installation at the **Site**, and

64.2.4(c) The actual cost of necessary bonds and insurance purchased pursuant to requirements of this **Contract** less any amounts that have been or should be refunded by the **Contractor's** sureties or insurance carriers.

64.2.4(d) Direct Cost shall not include overhead.

64.3 In no event shall any payments under this article exceed the **Contract** price for such items.

64.4 All payments pursuant to this article shall be in the nature of liquidated damages and shall be accepted by the **Contractor** in full satisfaction of all claims against the **City**.

64.5 The **City** may deduct or set off against any sums due and payable pursuant to this article, any deductions authorized by this **Contract** or by **Law** (including but not limited to liquidated damages) and any claims it may have against the **Contractor**. The **City's** exercise of the right to terminate the **Contract** pursuant to this article shall not impair or otherwise effect the **City's** right to assert any claims it may have against the **Contractor** in a plenary action.

64.6 Where the **Work** covered by the **Contract** has been substantially completed, as determined in writing by the **Commissioner**, termination of the **Work** shall be handled as an omission of **Work** pursuant to Articles 29 and 33, in which case a Change Order will be issued to reflect an appropriate reduction in the **Contract** Sum, or if the amount is determined after final payment, such amount shall be paid by the **Contractor**.

ARTICLE 65. CHOICE OF LAW, CONSENT TO JURISDICTION AND VENUE

65.1 This **Contract** shall be deemed to be executed in the **City** of New York, State of New York, regardless of the domicile of the **Contractor**, and shall be governed by and construed in accordance with the **Laws** of the State of New York and the **Laws** of the United States, where applicable.

65.2 The parties agree that any and all claims asserted against the **City** arising under this **Contract** or related thereto shall be heard and determined in the courts of the State of New York ("New York State Courts") located in the **City** and County of New York. To effect this **Contract** and intent, the **Contractor** agrees:

65.2.1 If the **City** initiates any action against the **Contractor** in Federal Court or in New York State Court, service of process may be made on the **Contractor** either in person, wherever such **Contractor** may be found, or by registered mail addressed to the **Contractor** at its address as set forth in this **Contract**, or to such other address as the **Contractor** may provide to the **City** in writing; and

65.2.2 With respect to any action between the **City** and the **Contractor** in New York State Court, the **Contractor** hereby expressly waives and relinquishes any rights it might otherwise have:

65.2.2(a) To move to dismiss on grounds of forum non conveniens;

65.2.2(b) To remove to Federal Court; and

65.2.2(c) To move for a change of venue to a New York State Court outside New York County.

65.2.3 With respect to any action brought by the **City** against the **Contractor** in Federal Court located in the **City**, the **Contractor** expressly waives and relinquishes any right it might otherwise have to move to transfer the action to a United States Court outside the **City**.

65.2.4 If the **Contractor** commences any action against the **City** in a Court located other than in the **City** and State of New York, upon request of the **City**, the **Contractor** shall either consent to a transfer of the action to a State Court of competent jurisdiction located in the **City** and State of New York or, if the Court where the action is initially brought will not or cannot transfer the action, the

Contractor shall consent to dismiss such action without prejudice and may thereafter reinstate the action in a State Court of competent jurisdiction in the **City**.

65.3 If any provision(s) of this article is held unenforceable for any reason, each and all other provision(s) shall nevertheless remain in full force and effect.

ARTICLE 66. PARTICIPATION IN AN INTERNATIONAL BOYCOTT

66.1 The **Contractor** agrees that neither the **Contractor** nor any substantially owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the Export Administration Act of 1979, as amended, or the regulations of the United States Department of Commerce promulgated thereunder.

66.2 Upon the final determination by the Commerce Department or any other **Agency** of the United States as to, or conviction of the **Contractor** or a substantially-owned affiliated company thereof, participation in an international boycott in violation of the provisions of the Export Administration Act of 1979, as amended, or the regulations promulgated thereunder, the **Comptroller** may, at his/her option, render forfeit and void this **Contract**.

66.3 The **Contractor** shall comply in all respects, with the provisions of Section 6-114 of the Administrative Code and the rules and regulations issued by the **Comptroller** thereunder.

ARTICLE 67. LOCALLY BASED ENTERPRISE PROGRAM

67.1 This **Contract** is subject to the requirements of Section 6-108.1 of the Administrative Code and regulations promulgated thereunder. No construction **Contract** shall be awarded unless and until these requirements have been complied with in their entirety.

67.2 Unless specifically waived by the **Commissioner** with the approval of the Division of Economic and Financial Opportunity of the Department of Business Services, if any portion of the **Contract** is subcontracted, not less than ten (10%) percent of the total dollar amount of the **Contract** shall be awarded to locally based enterprise ("LBEs"); except that where less than ten (10%) percent of the total dollar amount of the **Contract** is subcontracted, such lesser percentage shall be so awarded.

67.3 The prime **Contractor** shall not require performance and payment bonds from LBE **Subcontractors**.

67.4 If the **Contractor** has indicated prior to award that no **Work** will be subcontracted, no **Work** shall be subcontracted without the prior approval of the **Commissioner**, which shall be granted only if the **Contractor** makes a good faith effort beginning at least six (6) weeks before the **Work** is to be performed to obtain LBE **Subcontractors** to perform the **Work**.

67.5 If the **Contractor** has not identified sufficient LBE **Subcontractors** prior to award, it shall sign a letter of compliance stating that it complies with Section 6-108.1 of the Administrative Code, recognizes that achieving the LBE requirement is a condition of its **Contract**, and shall submit documentation demonstrating its good faith efforts to obtain LBEs. After award, the **Contractor** shall begin to solicit LBE's to perform subcontracted **Work** at least six (6) weeks before the date such **Work** is to be performed and shall demonstrate that a good faith effort has been made to obtain LBE's on each subcontract until it meets the required percentage.

67.6 Failure of the **Contractor** to comply with the requirements of Section 6-108.1 of the Administrative Code and the regulations promulgated thereunder shall constitute a material breach of **Contract**. Remedy for such breach of **Contract** may include the imposition of any or all of the following sanctions:

67.6.1 Reducing a **Contractor's** compensation by an amount equal to the dollar value of the percentage of the LBE subcontracting requirement not complied with;

67.6.2 Declaring the **Contractor** in default;

67.6.3 Where non-compliance is by an LBE, de-certifying and declaring the LBE ineligible to participate in the LBE program for a period of up to three (3) years.

ARTICLE 68. ANTITRUST

68.1 The **Contractor** hereby assigns, sells and transfers to the **City** all right, title and interest in and to any claims and causes of action arising under the antitrust **Laws** of New York State or of the United States relating to the particular goods or services purchased or procured by the **City** under this **Contract**.

ARTICLE 69. MacBRIDE PRINCIPLES PROVISIONS

69.1 Notice To All Prospective **Contractors**:

69.1.1 Local Law No. 34 of 1991 became effective on September 10, 1991 and added Section 6-115.1 of the Administrative Code. The local **Law** provides for certain restrictions on **City Contracts** to express the opposition of the people of the **City** to employment discrimination practices in Northern Ireland to promote freedom of work-place opportunity.

69.1.2 Pursuant to Section 6-115.1, prospective **Contractors** for **Contracts** to provide goods or services involving an expenditure of an amount greater than ten thousand ($10,000.) dollars, or for construction involving an amount greater than fifteen thousand ($15,000.) dollars, are asked to sign a rider in which they covenant and represent, as a material condition of their **Contract**, that any business operations in Northern Ireland conducted by the **Contractor** and any individual or legal entity in which the **Contractor** holds a ten (10%) percent or greater ownership interest in the **Contractor** will be conducted in accordance with the MacBride Principles of nondiscrimination in employment.

69.1.3 Prospective **Contractors** are not required to agree to these conditions. However, in the case of **Contracts** let by competitive sealed bidding, whenever the lowest responsible bidder has not agreed to stipulate to the conditions set forth in this notice and another bidder who has agreed to stipulate to such conditions has submitted a bid within five (5%) percent of the lowest responsible bid for a **Contract** to supply goods, services or contraction of comparable quality, the **Agency** shall refer such bids to the Mayor, the Speaker or other officials, as appropriate, who may determine, in accordance with applicable **Law** and rules, that it is in the best interest of the **City** that the **Contract** be awarded to other than the lowest responsible pursuant to Section 313(b)(2) of the **City** Charter.

69.1.4 In the case of **Contracts** let by other than competitive sealed bidding, if a prospective **Contractor** does not agree to these conditions, no **Agency**, elected official or the **City** Council shall award the **Contract** to that bidder unless the **Agency** seeking to use the goods, services or construction certifies in writing that the **Contract** is necessary for the **Agency** to perform its functions and there is no other responsible **Contractor** who will supply goods, services or construction of comparable quality at a comparable price.

69.2 In accordance with Section 6-115.1 of the Administrative Code, the **Contractor** stipulates that such **Contractor** and any individual or legal entity in which the **Contractor** holds a ten (10%) percent or greater ownership interest in the **Contractor** either:

69.2.1 Have no business operations in Northern Ireland, or

69.2.2 Shall take lawful steps in good faith to conduct any business operations they have in Northern Ireland in accordance with the MacBride Principles, and shall permit independent monitoring of their compliance with such principles.

69.3 For purposes of this Article, the following terms shall have the following meanings:

69.3.1 "MacBride Principles" shall mean those principles relating to nondiscrimination in employment and freedom of work-place opportunity which require employers doing business in Northern Ireland to:

69.3.1(a) increase the representation of individuals from under-represented religious groups in the workforce, including managerial, supervisory, administrative, clerical and technical jobs;

69.3.1(b) take steps to promote adequate security for the protection of employees from under-represented religious groups both at the work-place and while traveling to and from **Work**;

69.3.1(c) ban provocative religious or political emblems from the workplace;

69.3.1(d) publicly advertise all job openings and make special recruitment efforts to attract applicants from under-represented religious groups;

69.3.1(e) establish layoff, recall and termination procedures which do not in practice favor a particular religious group;

69.3.1(f) abolish all job reservations, apprenticeship restrictions and different employment criteria which discriminate on the basis of religion;

69.3.1(g) develop training programs that will prepare substantial numbers of current employees from under-represented religious groups for skilled jobs, including the expansion of existing programs and the creation of new programs to train, upgrade and improve the skills of workers from under-represented religious groups;

69.3.1(h) establish procedures to asses, identify and actively recruit employees from under-represented religious groups with potential for further advancement; and

69.3.1(i) appoint a senior management staff member to oversee affirmative action efforts and develop a timetable to ensure their full implementation.

69.4 The **Contractor** agrees that the covenants and representations in Article 69.2 are material conditions to this **Contract**. In the event the **Agency** receives information that the **Contractor** who made the stipulation required by this Article is in violation thereof, the **Agency** shall review such information and give the **Contractor** an opportunity to respond. If the **Agency** finds that a violation has occurred, the **Agency** shall have the right to declare the **Contractor** in default in default and/or terminate this **Contract** for cause and procure supplies, services or **Work** from another source in the manner the **Agency** deems proper. In the event of such termination, the

Contractor shall pay to the **Agency**, or the **Agency** in its sole discretion may withhold from any amounts otherwise payable to the **Contractor**, the difference between the **Contract** price for the uncompleted portion of this **Contract** and the cost to the **Agency** of completing performance of this **Contract** either itself or by engaging another Contractor or Contractors. In the case of a requirement **Contract**, the **Contractor** shall be liable for such difference in price for the entire amount of supplies required by the **Agency** for the uncompleted term of **Contractor's Contract**. In the case of a construction **Contract**, the **Agency** shall also have the right to hold the **Contractor** in partial or total default in accordance with the default provisions of this **Contract**, and/or may seek debarment or suspension of the **Contractor**. The rights and remedies of the **Agency** hereunder shall be in addition to, and not in lieu of, any rights and remedies the **Agency** has pursuant to this **Contract** or by operation of **Law**.

ARTICLE 70. HEALTH INSURANCE COVERAGE

70.1 If the price for which this **Contract** was awarded exceeds $100,000, or if the price for which this **Contract** was awarded when combined with other construction or services contracts awarded the **Contractor** by the **City** in the year prior to award of this **Contract** exceeds $100,000, the **Contractor,** following registration of the **Contract**, shall be required to submit responses to requests for information regarding the nature of any health insurance provided by the Contractor to its employees and their spouses and domestic partners, upon request of the **Agency** or other designated **City** agency.

ARTICLE 71. PROHIBITION OF TROPICAL HARDWOODS

71.1 Tropical hardwoods, as defined in Section 165 of the New York State Finance **Law** ("Finance **Law**"), shall not be utilized in the performance of this **Contract** except as expressly permitted by Section 165 of the Finance **Law**.

ARTICLE 72. CONFLICTS OF INTEREST

72.1 Section 2604 of the **City** Charter and other related provisions of the **City** Charter, the Administrative Code and the Penal **Law** are applicable under the terms of this **Contract** in relation to Conflicts of Interest and shall be extended to **Subcontractors** authorized to perform **Work**, labor and services pursuant to this **Contract** and further, it shall be the duty and responsibility of the **Contractor** to so inform its respective **Subcontractors**. Notice is hereby given that, under certain circumstances, penalties may be invoked against the donor as well as the recipient of any form of valuable gift.

ARTICLE 73. MERGER CLAUSE

73.1 The Written **Contract** herein, contains all the terms and conditions agreed upon by the parties hereto, and no other agreement, oral or otherwise, regarding the subject matter of this **Contract** shall be deemed to exist or to bind any of the parties hereto, or to vary any of the terms contained herein.

ARTICLE 74. STATEMENT OF WORK

74.1 The **Contractor** shall furnish all labor and materials and perform all **Work** in strict accordance with the **Specifications** and **Addenda** thereto, numbered 1.

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: SEE BELOW Dollars, ($2,749,398.00), this said sum being the Amount at which the **Contract** was awarded to the **Contractor** at a public letting thereof, based upon the **Contractor's** bid for the **Contract.** Two Million Seven Hundred Fourty-Nine Thousand Three Hundred Ninety Eight and 00/100

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 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 II). SUBCONTRACTOR UTILIZATION PLANS WHICH DO NOT INCLUDE THE REQUIRED AFFIRMATIONS WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE TARGET SUBCONTRCTING PERCENTAGE IS GRANTED (SCHEDULE B PART III). IN THE EVENT THAT THE CITY DETERMINES THAT VENDOR HAS SUBMITTED A SUBCONTRACTOR UTILIZATION PLAN WHERE THE REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER ASPECTS OF THE PLAN ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE AFFIRMATION, THE VENDOR WILL BE NOTIFIED BY THE AGENCY AND WILL BE GIVEN FOUR (4) CALENDAR DAYS FROM RECEIPT OF NOTIFICATION TO CURE THE SPECIFIED DEFICIENCIES AND RETURN A COMPLETED PLAN TO THE AGENCY. FAILURE TO DO SO WILL RESULT IN A DETERMINATION THAT THE BID/PROPOSAL IS NON-RESPONSIVE. RECEIPT OF NOTIFICATION IS DEFINED AS THE DATE NOTICE IS EMAILED OR FAXED (IF THE VENDOR HAS PROVIDED AN EMAIL ADDRESS OR FAX NUMBER), OR NO LATER THAN FIVE (5) DAYS FROM THE DATE OF MAILING OR UPON DELIVERY, IF DELIVERED.

5. Where a Subcontractor Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multi-year contracts, such list shall also be submitted every year thereafter. **PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below $3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor must identify all those to which it intends to award construction subcontracts for any portion of the Wicks trade work at the time of bid submission, regardless of what point in the life of the contract such subcontracts will occur. In identifying intended subcontractors in the bid submission, bidders may satisfy any Subcontractor Participation Goals established for this Contract by proposing one or more subcontractors that are M/WBEs for any portion of the Wicks trade work if the amount to be awarded to such M/WBE subcontractor is under $1 million.** In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

6. M/WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the M/WBE participation goals. Such certification must occur prior to the firms' commencement of work as subcontractors. A list of M/WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311.

7. Where a Subcontractor Utilization Plan has been submitted, the Contractor shall, with each voucher for payment, and/or periodically as Agency may require, submit statements, certified under penalty of perjury, which shall include, but not be limited to, the total amount paid to subcontractors (including subcontractors that are not MBEs or WBEs); the names, addresses and contact numbers of each MBE or WBE hired as a subcontractor pursuant to such plan as well as the dates and amounts paid to each MBE or WBE. The Contractor shall also submit, along with its voucher for final payment, the total amount paid to subcontractors (including subcontractors that are not MBEs or WBEs); and a final list, certified under penalty of perjury, which shall include the name, address and contact information of each subcontractor that is an MBE or WBE hired pursuant to such plan, the work performed by, and the dates and amounts paid to each.

8. If payments made to, or work performed by, MBEs or WBEs are less than the amount specified in the Contractor's Subcontractor Utilization Plan, Agency shall take appropriate action, in accordance with Local Law

129 and Article II below, unless the Contractor has obtained a modification of its Subcontractor Utilization Plan in accordance with Local Law 129 and Part A, Section 11 below.

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:

By:_____
(Member of Firm or Officer of Corporation)

Title: President

(Where Contractor is a Corporation, add):
Attest:

Yonette J. Graham-Deland
Secretary

(Seal)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:

On this 25 day of Sept., 2013, before me personally came Gurwan Bharathan to me known, who, being by me duly sworn did depose and say that he resides at 35-48 87th St Jackson Heights NY 11372 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.

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 25 day of Sept., 2015 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 DATED
BUDGET DIRECTOR'S CERTIFICATE NO. DATED

APPROPRIATION
COMMISSIONER'S CERTIFICATE

In conformity with the provisions of Section 6-101of the Administrative Code of the City of New York, it is hereby certified that the estimated cost of the work, materials and supplies required by the within Contract, amounting to

Two Million Seven Hundred Fourty-Nine
Thousand Three Hundred Ninety-Eight and 00/100

Dollars ($ 2,749,398.00)

is chargeable to the fund of the Department of Design and Construction entitled Code

_____

_____

_____
Department of Design and Construction

I hereby certify that the specifications contained herein comply with the terms and conditions of the BUDGET.

_____
Deputy Commissioner

COMPTROLLER'S CERTIFICATE

The City of New York_____ _____

Pursuant to the provisions of Section 6-101 of the Administrative Code of the City of New York, I hereby certify that there remains unapplied and unexpended a balance of the above mentioned fund applicable to this Contract sufficient to pay the estimated expense of executing the same viz:

$_____

_____
Comptroller

MAYOR'S CERTIFICATE OR CERTIFICATE OF THE DIRECTOR OF THE BUDGET

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 9/24/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
New York Risk Solutions Inc.
65 West Hills Rd.
Huntington Station NY 11746

CONTACT NAME:
PHONE (A/C, No, Ext): 631-649-8310 **FAX (A/C, No):** 631-649-8307
E-MAIL ADDRESS: certificates@nyrisksolutions.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Allied World Assurance Co. Inc	19489
INSURER B : Tower National Insurance Co.	43702
INSURER C : RLI Insurance Company	13056
INSURER D : Navigators Insurance Company	42307
INSURER E : Alterra Excess and Surplus Ins	33189
INSURER F :	

INSURED
The Urban Group Ltd
76-08 Rockaway Blvd
Woodhaven NY 11421

THEUR-1

COVERAGES **CERTIFICATE NUMBER:** 2106768639 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	**GENERAL LIABILITY**			5050-0315	4/1/2013	4/1/2014	EACH OCCURRENCE	$1,000,000
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$100,000
	[ ] CLAIMS-MADE [X] OCCUR						MED EXP (Any one person)	$5,000
	X CONTRACTUAL						PERSONAL & ADV INJURY	$1,000,000
							GENERAL AGGREGATE	$2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$2,000,000
	[ ] POLICY [X] PRO-JECT [ ] LOC							$
B	**AUTOMOBILE LIABILITY**			CAC000574700	4/1/2013	4/1/2014	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	[ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS [X] NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
D	[ ] **UMBRELLA LIAB** [X] OCCUR			NY13EXC750689IV	4/1/2013	4/1/2014	EACH OCCURRENCE	$5,000,000
	X **EXCESS LIAB** [ ] CLAIMS-MADE						AGGREGATE	$5,000,000
	[ ] DED [X] RETENTION $ 10,000							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						[ ] WC STATU-TORY LIMITS [ ] OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [ ] **(Mandatory in NH)**	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
C	EXCESS LIABILITY			RXL0261882	4/1/2013	4/1/2014	$10,000,000	OCC/AGG
E	BUILDER'S RISK			MAXA6IM0049317	9/4/2013	9/4/2014	$2,749,398	LIMIT

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

THE FOLLOWING ENTITIES ARE INCLUDING AS ADDITIONAL INSUREDS ON A PRIMARY AND NON-CONTRIBUTORY BASIS AND WAIVER OF SUBROGATION APPLIES IF SUCH STATUS IS REQUIRED IN A WRITTEN AND EXECUTED CONTRACT WITH RESPECTS TO CAPIS ID NO.PW357-MOCS, NEW YORK CITY MAYOR'S OFFICE, 253 BROADWAY, 9TH FLOOR, NEW YORK, NY: THE CITY OF NEW YORK, ITS OFFICERS AND EMPLOYEES. ADDITIONAL INSURED ENDORSEMENTS ARE ATTACHED - CG 20 10 07/04 AND CG 20 37 07/04. THE CITY OF NEW YORK IS INCLUDED AS LOSS PAYEE WITH RESPECTS TO ABOVE BUILDER'S RISK POLICY.

CERTIFICATE HOLDER

NEW YORK CITY DEPARTMENT OF DESIGN & CONSTRUCTION
30-30 THOMSON AVENUE
LONG ISLAND CITY NY 11101

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location(s) Of Covered Operations
THE CITY OF NEW YORK, ITS OFFICERS AND EMPLOYEES	NEW YORK CITY MAYOR'S OFFICE, 253 BROADWAY, 9TH FLOOR, NEW YORK, NY
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location And Description of Completed Operations
THE CITY OF NEW YORK, ITS OFFICERS AND EMPLOYEES	NEW YORK CITY MAYOR'S OFFICE, 253 BROADWAY, 9TH FLOOR, NEW YORK, NY
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

New York State Insurance Fund

Workers' Compensation & Disability Benefits Specialists Since 1914

199 CHURCH STREET, NEW YORK, N.Y. 10007-1100
Phone: (888) 997-3863

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

^^^^^ 113528566
THE URBAN GROUP, LTD.
7608 ROCKAWAY BLVD
WOODHAVEN NY 11421

POLICYHOLDER	CERTIFICATE HOLDER
THE URBAN GROUP, LTD. 7608 ROCKAWAY BLVD WOODHAVEN NY 11421	NEW YORK CITY DEPT.OF DESIGN & CONSTRUCTION 30-30 THOMSON AVE. LONG ISLAND CITY NY 11101

POLICY NUMBER	CERTIFICATE NUMBER	PERIOD COVERED BY THIS CERTIFICATE	DATE
Z 2199 563-4	748635	01/01/2013 TO 01/01/2014	9/5/2013

THIS IS TO CERTIFY THAT THE POLICYHOLDER NAMED ABOVE IS INSURED WITH THE NEW YORK STATE INSURANCE FUND UNDER POLICY NO. 2199 563-4 UNTIL 01/01/2014, COVERING THE ENTIRE OBLIGATION OF THIS POLICYHOLDER FOR WORKERS' COMPENSATION UNDER THE NEW YORK WORKERS' COMPENSATION LAW WITH RESPECT TO ALL OPERATIONS IN THE STATE OF NEW YORK, EXCEPT AS INDICATED BELOW.

IF SAID POLICY IS CANCELLED, OR CHANGED PRIOR TO 01/01/2014 IN SUCH MANNER AS TO AFFECT THIS CERTIFICATE, 10 DAYS WRITTEN NOTICE OF SUCH CANCELLATION WILL BE GIVEN TO THE CERTIFICATE HOLDER ABOVE. NOTICE BY REGULAR MAIL SO ADDRESSED SHALL BE SUFFICIENT COMPLIANCE WITH THIS PROVISION. THE NEW YORK STATE INSURANCE FUND DOES NOT ASSUME ANY LIABILITY IN THE EVENT OF FAILURE TO GIVE SUCH NOTICE.

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS NOR INSURANCE COVERAGE UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICY.

NEW YORK STATE INSURANCE FUND

Sherwin Taylor

DIRECTOR,INSURANCE FUND UNDERWRITING

This certificate can be validated on our web site at https://www.nysif.com/cert/certval.asp or by calling (888) 875-5790
VALIDATION NUMBER: 719980351

U-26.3

NY RISK
SOLUTIONS
65 W. Hills Rd.
Huntington Station, NY 11746
Phone: (631) 649-8310
Fax: (631) 649-8307
www.nyrisksolutions.com
Insurance & Bonds

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.

New York Risk Solutions
[Name of broker (typewritten)]

65 West Hills Road, Huntington Station, NY 11746
[Address of broker (typewritten)]

[Signature of authorized official or broker]

Jeffrey Walsh, President
[Name and title of authorized official (typewritten)]

Sworn to before me this
24 day of September, 2013

NOTARY PUBLIC

ELIZABETH SIGNORILE
Notary Public, State of New York
No. 01SI6279147
Qualified in Suffolk County
Commission Expires April 8, 2017

Trusted Choice®
Independent Insurance Agent

STATE OF NEW YORK
WORKER'S 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

1a. Legal Name and Address of Insured (Use street address only)	1b. Business Telephone Number of Insured 1c. NYS Unemployment Insurance Employer Registration Number of Insured 1d. Federal Employer Identification Number of Insured or Social Security Number
2. Name and Address of the Entity requesting Proof of Coverage (Entity being listed as the Certificate Holder)	3a. Name of Insurance Carrier The First Rehabilitation Life Insurance Company of America 3b. Policy Number of Entity listed in box "1a": 3c. Policy effective period: _____ to _____

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 _____ By _____
(Signature of insurance carrier's authorized representative or NYS Licensed Insurance Agent of that insurance carrier)

Telephone Number _____ Title _____

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 the purposes of Section 220, Subd. 8 of the Disability Benefits Law. It must be mailed for completion to the Worker's Compensation Board, DB Plans Acceptance Unit, 20 Park Street, Albany, NY 12207.

PART 2. To be completed by NYS Worker's Compensation Board (Only if box "4b" of Part 1 has been checked)

State of New York
Worker's Compensation Board

According to information maintained by the NYS Worker's 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 Worker's Compensation Board Employee)

Telephone Number _____ Title _____

Please 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

Section 220. Subd. 8

(a) The head of 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 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.

<u>Performance Bond #1 (Pages 80 to 83)</u>: Use if the total contract price is $5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

_____

_____

_____

hereinafter referred to as the "Principal", and _____

_____

_____

_____

_____

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

_____

_____

_____

($_____) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

_____

_____

_____

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

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.

Bond No. 015042335

PERFORMANCE BOND #1

KNOW ALL PERSONS BY THESE PRESENTS, That we, The Urban Group, Ltd.

hereinafter referred to as the "Principal", and The Ohio Casualty Insurance Company

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

Two Million Seven Hundred Forty Nine Thousand Three Hundred Ninety Eight Dollars and No/100

($ 2,749,398.00) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

253 Broadway - 9th Floor - MOCS - Interior Renovation

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

<u>Performance Bond #1 (Pages 80 to 83)</u>: Use if the total contract price is $5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to (1) pay the City the cost to complete the contract as determined by the City in excess of the balance of the Contract held by the City, plus any damages or costs to which the City is entitled, up to the full amount of the above penal sum, (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof, or (3) tender a completion Contractor that is acceptable to the City. The Surety (Sureties) further agrees, at its option, either to notify the City that it elects to pay the city the cost of completion plus any applicable damages and costs under option (1) above, or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and, if the Surety elects to fully perform and complete the Work, then to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. If the Surety elects to tender payment pursuant to (1) above, then the Surety shall tender such amount within fifteen (15) business days notification from the City of the cost of completion. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and complete all Work as provided herein, or to tender a completion contractor.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, and waivers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to subcontractors shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal. Notwithstanding the above, if the City makes payments to the Principal before the time required by the contract that in the aggregate exceed $100,000 or 10% of the Contract price, whichever is less, and that have not become earned prior to the Principal being found to be in default, then all payments made to the Principal before the time required by the Contract shall be added to the remaining contract value available to be paid for the completion of the Contract as if such sums had not been paid to the Principal, but shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and to complete all Work as provided herein, or to tender a completion contractor.

Performance Bond #1 (Pages 80 to 83): Use if the total contract price is $5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this 28th day of August, 2013.

(Seal)

The Urban Group, Ltd. (L.S.)
Principal
By: _____

(Seal)

The Ohio Casualty Insurance Company
Surety
By: _____
Lisa Nosal, Atty-in-fact

(Seal)

_____
Surety
By: _____

(Seal)

_____
Surety
By: _____

Bond Premium Rate _____

Bond Premium Cost _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Performance Bond #1 (Pages 80 to 83): Use if the total contract price is $5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of NEW YORK County of QUEENS ss:

On this 28TH day of AUGUST, 2013, before me personally came GEWAN BHARATLALL to me known, who, being by me duly sworn did depose and say that he resides at 7608 ROCKAWAY BLVD. WOODHAVEN, NY 11421 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.

Notary Public or Commissioner of Deeds

GABRIELA BHARATLALL NOTARY PUBLIC STATE OF NEW YORK No. 01BH6098695 QUALIFIED IN QUEENS COUNTY MY COMM. EXP. 12-19-20

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * * * * *

Affix Acknowledgments and Justification of Sureties

ACKNOWLEDGEMENT OF SURETY

State of New Jersey]
|-ss
County of Passaic]

On 08/28/2013, before me personally came Lisa Nosal to me known, who, being by me duly sworn, did depose and say that she is an attorney-in-fact of The Ohio Casualty Insurance Company the corporation described in and which executed the within instrument; that she knows the corporate seal of said corporation, and that the seal affixed to the within instrument is such corporate seal, and that she signed the said instrument and affixed the 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.

My Commission expires:

Notary Public

STEPHANIE F FOY
NOTARY PUBLIC
STATE OF NEW JERSEY
MY COMMISSION EXPIRES OCTOBER 27, 2013

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 6098547

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Joseph W. Mallory; Lisa Nosal; Louis A. Vlahakes; Pamela J. Boyle; Robert E. Culnen

all of the city of Totowa, state of NJ each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 26th day of April, 2013.

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: _____
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss
COUNTY OF KING

On this 26th day of April, 2013, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of American Fire and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.

By: _____
KD Riley , Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 28th day of August, 2013.

By: _____
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Liberty Mutual SURETY

THE OHIO CASUALTY INSURANCE COMPANY

FINANCIAL STATEMENT — DECEMBER 31, 2012

Assets	
Cash and Bank Deposits	$161,199,261
*Bonds — U.S Government	377,344,263
*Other Bonds	2,720,695,206
*Stocks	653,169,702
Real Estate	27,623,539
Agents' Balances or Uncollected Premiums	719,172,780
Accrued Interest and Rents	34,142,770
Other Admitted Assets	407,161,007
Total Admitted Assets	**$5,100,508,528**

Liabilities		
Unearned Premiums		$1,070,033,142
Reserve for Claims and Claims Expense		2,216,154,467
Funds Held Under Reinsurance Treaties		0
Reserve for Dividends to Policyholders		286,452
Additional Statutory Reserve		0
Reserve for Commissions, Taxes and Other Liabilities		539,402,179
Total		**$3,825,876,240**
Special Surplus Funds	$ 3,579,638	
Capital Stock	4,500,000	
Paid in Surplus	532,278,647	
Unassigned Surplus	734,274,003	
Surplus to Policyholders		**1,274,632,288**
Total Liabilities and Surplus		**$5,100,508,528**

THE OHIO CASUALTY INSURANCE COMPANY INCORPORATED 1919 NEW HAMPSHIRE

* Bonds are stated at amortized or investment value; Stocks at Association Market Values.
The foregoing financial information is taken from The Ohio Casualty Insurance Company's financial statement filed with the state of Ohio Department of Insurance.

I, TIM MIKOLAJEWSKI, Assistant Secretary of The Ohio Casualty Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2012, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 25th day of March, 2013.

T A Mikolajewski

Assistant Secretary

Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

Bond No. 015042335

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, The Urban Group, Ltd.

hereinafter referred to as the "Principal", and The Ohio Casualty Insurance Company

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

Two Million Seven Hundred Forty Nine Thousand Three Hundred Ninety Eight Dollars and No/100

($2,749,398.00) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

253 Broadway - 9th Floor - MOCS - Interior Renovation

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so

Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

(a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.

(b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.

(c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.

(d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.

(e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments,waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.

Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

IN WITNESS HEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this 28TH day of AUGUST, 2013.

(Seal)

The Urban Group, Ltd.
_____(L.S.)
Principal

By: _____

(Seal)

The Ohio Casualty Insurance Company
Surety

By: _____
Lisa Nosal, Atty-in-fact

(Seal)

_____
Surety

By: _____

(Seal)

_____
Surety

By: _____

(Seal)

_____
Surety

By: _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of NEW YORK County of QUEENS ss:

On this 28TH day of AUGUST, 2013 before me personally came GEWAN BHARATLALL to me known, who, being by me duly sworn did depose and say that he resides at 7608 ROCKAWAY BLVD WOODHAVEN, NY 11421 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.

Notary Public or Commissioner of Deeds

GABRIELA BHARATLALL NOTARY No. 01BH6098695 QUALIFIED IN QUEENS COUNTY MY COMM. EXP. 12-19-20 PUBLIC STATE OF NEW YORK

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, _____before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * * * * *

Affix Acknowledgments and Justification of Sureties

ACKNOWLEDGEMENT OF SURETY

State of New Jersey]
|-ss
County of Passaic]

On 08/28/2013, before me personally came Lisa Nosal to me known, who, being by me duly sworn, did depose and say that she is an attorney-in-fact of The Ohio Casualty Insurance Company the corporation described in and which executed the within instrument; that she knows the corporate seal of said corporation, and that the seal affixed to the within instrument is such corporate seal, and that she signed the said instrument and affixed the 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.

My Commission expires:

Stephanie L. Foy
Notary Public

STEPHANIE FOY
NOTARY PUBLIC
STATE OF NEW JERSEY
MY COMMISSION EXPIRES OCTOBER 27, 2013

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 6098548

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Joseph W. Mallory; Lisa Nosal; Louis A. Viahakes; Pamela J. Boyle; Robert E. Culnen

all of the city of Totowa, state of NJ each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 26th day of April, 2013.

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: _____
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss
COUNTY OF KING

On this 26th day of April, 2013, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of American Fire and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.

By: _____
KD Riley , Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 28th day of August, 20 13.

By: _____
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Liberty Mutual SURETY

THE OHIO CASUALTY INSURANCE COMPANY

FINANCIAL STATEMENT — DECEMBER 31, 2012

Assets

Cash and Bank Deposits	$161,199,261
*Bonds — U.S Government	377,344,263
*Other Bonds	2,720,695,206
*Stocks	653,169,702
Real Estate	27,623,539
Agents' Balances or Uncollected Premiums	719,172,780
Accrued Interest and Rents	34,142,770
Other Admitted Assets	407,161,007
Total Admitted Assets	**$5,100,508,528**

Liabilities

Unearned Premiums		$1,070,033,142
Reserve for Claims and Claims Expense		2,216,154,467
Funds Held Under Reinsurance Treaties		0
Reserve for Dividends to Policyholders		286,452
Additional Statutory Reserve		0
Reserve for Commissions, Taxes and Other Liabilities		539,402,179
Total		**$3,825,876,240**
Special Surplus Funds	$ 3,579,638	
Capital Stock	4,500,000	
Paid in Surplus	532,278,647	
Unassigned Surplus	734,274,003	
Surplus to Policyholders		**1,274,632,288**
Total Liabilities and Surplus		**$5,100,508,528**

THE OHIO CASUALTY INSURANCE COMPANY INCORPORATED 1919 NEW HAMPSHIRE

* Bonds are stated at amortized or investment value; Stocks at Association Market Values.
The foregoing financial information is taken from The Ohio Casualty Insurance Company's financial statement filed with the state of Ohio Department of Insurance.

I, TIM MIKOLAJEWSKI, Assistant Secretary of The Ohio Casualty Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2012, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 25th day of March, 2013.

T A Mikolajewski

Assistant Secretary

<u>Performance Bond #1 (Pages 80 to 83)</u>: Use if the total contract price is $5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to (1) pay the City the cost to complete the contract as determined by the City in excess of the balance of the Contract held by the City, plus any damages or costs to which the City is entitled, up to the full amount of the above penal sum, (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof, or (3) tender a completion Contractor that is acceptable to the City. The Surety (Sureties) further agrees, at its option, either to notify the City that it elects to pay the city the cost of completion plus any applicable damages and costs under option (1) above, or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and, if the Surety elects to fully perform and complete the Work, then to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. If the Surety elects to tender payment pursuant to (1) above, then the Surety shall tender such amount within fifteen (15) business days notification from the City of the cost of completion. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and complete all Work as provided herein, or to tender a completion contractor.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, and waivers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to subcontractors shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal. Notwithstanding the above, if the City makes payments to the Principal before the time required by the contract that in the aggregate exceed $100,000 or 10% of the Contract price, whichever is less, and that have not become earned prior to the Principal being found to be in default, then all payments made to the Principal before the time required by the Contract shall be added to the remaining contract value available to be paid for the completion of the Contract as if such sums had not been paid to the Principal, but shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and to complete all Work as provided herein, or to tender a completion contractor.

Performance Bond #1 (Pages 80 to 83): Use if the total contract price is $5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this _____ day of _____, _____.

(Seal) _____(L.S.)
Principal

By:_____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

Bond Premium Rate _____

Bond Premium Cost _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Performance Bond #1 (Pages 80 to 83): Use if the total contract price is $5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____, _____, before me personally came _____ to me known, who, being by me duly sworn did depose and say that he resides at _____ _____that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

_____
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ _____described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

_____
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

_____
Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * * * * *

Affix Acknowledgments and Justification of Sureties

Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than $5 Million.

PERFORMANCE BOND #2

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

_____

_____

_____

hereinafter referred to as the "Principal", and _____

_____

_____

_____

_____

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

_____

_____

_____

($_____) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

_____

_____

_____

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than $5 Million.

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to either (1) pay the full amount of the above penal sum in complete discharge and exoneration of this bond and of all the liabilities of the Surety relating to this bond, or (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof. The Surety (Sureties) further agrees, at its option, either to tender the penal sum or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to commence and to complete all Work as provided herein.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any Work to be performed or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal.

Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than $5 Million.

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this _____ day of _____, _____.

(Seal) _____(L.S.)
Principal

By:_____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

Bond Premium Rate _____

Bond Premium Cost _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than $5 Million.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____, 20_____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he/she resides at _____ _____; that he/she is the _____ of ____ the corporation described in and which executed the foregoing instrument; and that he signed his name to the foregoing instrument by order of the directors of said corporation as the duly authorized and binding act thereof.

_____
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, 20_____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he/she resides at_____ _____; that he/she is _____ partner of _____, a limited/general partnership existing under the laws of the State of _____, the partnership described in and which executed the foregoing instrument; and that he/she signed his/her name to the foregoing instrument as the duly authorized and binding act of said partnership.

_____
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this_____day of _____ 20 _____before me personally came_____ to me known, who, being by me duly sworn did depose and say that he/she resides at_____ _____, and that he/she is the individual whose name is subscribed to the within instrument and acknowledged to me that by his/her signature on the instrument, said individual executed the instrument.

_____
Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * * * * *

Affix Acknowledgments and Justification of Sureties.

Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

_____

_____

_____

hereinafter referred to as the "Principal", and _____

_____

_____

_____

_____

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

_____

_____

_____

($_____) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

_____

_____

_____

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

(a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.

(b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.

(c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.

(d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.

(e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments,waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.

Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

IN WITNESS HEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this _____ day of _____, _____.

(Seal) _____(L.S.)
Principal

By:_____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he resides at _____ _____that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

_____
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ _____described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

_____
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, _____before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

_____
Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * * * * * *

Affix Acknowledgments and Justification of Sureties

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LABOR LAW §220 PREVAILING WAGE SCHEDULE

Workers, Laborers and Mechanics employed on a public work project must receive not less than the prevailing rate of wage and benefits for the classification of work performed by each upon such public work. Pursuant to Labor Law §220 the Comptroller of the City of New York has promulgated this schedule solely for Workers, Laborers and Mechanics engaged by private contractors on New York City public work contracts.

Contracting agencies anticipating doing work which requires the employment of a trade or classification not included in this schedule must request the Comptroller to establish a proper classification for the work pursuant to Labor Law §220 (3-a) (a). The prevailing rate schedule as promulgated by the Comptroller, must, in compliance with law, be annexed to and form part of the contract.

Contractors are solely responsible for maintaining original payroll records which delineate, among other things, the hours each employee worked within a given classification. Contractors using rates and/or classifications not promulgated by the Comptroller do so at their own risk. Additionally, prior to bid, Agency Chief Contracting Officers must contact the Bureau of Labor Law when the need arises for a work classification not published in this schedule.

The appropriate schedule of prevailing wages and benefits must be posted at all public work sites pursuant to Labor Law §220 (3-a) (a).

This schedule is applicable for work performed during the effective period, unless otherwise noted. You will be notified of any changes to this schedule by addenda published on our web site at www.comptroller.nyc.gov. The rate of wages and supplemental benefits to be paid or provided are those that prevail at the time the work is being performed. Preliminary schedules for future one-year periods are published annually in the City Record on or about June 1st of each succeeding year. Final schedules are published on or about July 1st in the City Record and on our web site at www.comptroller.nyc.gov.

The Comptroller's Office has attempted to include all overtime, shift and night differential, Holiday, Saturday, Sunday or other premium time work. However, this schedule does not set forth every prevailing practice with respect to such rates with which employers must comply. All such practices are nevertheless part of the employer's prevailing wage obligation and contained in the collective bargaining agreements of the prevailing wage unions. These collective bargaining agreements are available for inspection by appointment. Requests for appointments may be made by calling (212) 669-4443, Monday through Friday between the hours of 9 a.m. and 5 p.m.

Answers to questions concerning prevailing trade practices may be obtained from the Classification Unit by calling (212) 669-7974. Please direct all other compliance issues to: Bureau of Labor Law, Attn: Wasyl Kinach, P.E., Office of the Comptroller, 1 Centre Street, Room 1122, New York, N.Y. 10007; Fax (212) 669-4002.

Prevailing rates and ratios for apprentices are attached to this schedule in the Appendix. Pursuant to Labor Law §220 (3-e), only apprentices who are individually registered in a bona fide program to which the employer contractor is a participant, registered with the New York State Department of Labor, may be employed on a public work project. Workers who are not journey persons or not registered apprentices pursuant to Labor Law §220 (3-e) may not be substituted for apprentices and must be paid as journey persons.

Contractors are advised to review the applicable Collective Bargaining Agreements and the Comptroller's Prevailing Wage Schedule before bidding on Public Work. If there are any questions concerning prevailing wages, benefits, overtime, Holiday pay, shift differentials or any prevailing practice, please contact this office.

Public Work construction, reconstruction, demolition, excavation, rehabilitation, repair, renovation, alteration, or improvement contracts awarded pursuant to a Project Labor Agreement ("PLA") in accordance with Labor Law section 222 may have different labor standards for shift, premium and overtime work. Please refer to the PLA's pre-negotiated labor agreements for wage and benefit rates applicable to work performed outside of the regular workday. More information is available at the Mayor's Office of Contract Services (MOCS) web page at http://www.nyc.gov/html/mocs/html/vendors/pla.shtml.

All the provisions of Labor Law section 220 remain applicable to PLA work including, but not limited to, the enforcement of prevailing wage requirements by the Comptroller; however, we will enforce shift, premium, overtime and other non-standard rates as they appear in a project's pre-negotiated labor agreement.

Any error as to compensation under the prevailing wage law or other information as to trade classification, made by the contracting agency in the contract documents or in any other communication, will not preclude a finding against the contractor of prevailing wage violation.

In order to meet their obligation to provide prevailing supplemental benefits to each covered employee, employers must either:

1) Provide bona-fide benefits which cost the employer no less than the prevailing supplemental benefits rate; or
2) Supplement the employee's hourly wage by an amount no less than the prevailing supplemental benefits rate; or
3) Provide a combination of bona-fide benefits and wage supplements which cost the employer no less than the prevailing supplemental benefits rate in total.

Particular attention should be given to the supplemental benefits requirement. Although in most instances the payment or provision for supplemental benefits is for each hour worked, some classifications require the payment or provision of supplemental benefits for each hour paid. Consequently, some prevailing practices require benefits to be purchased at the overtime, shift differential, Holiday, Saturday, Sunday or other premium time rate.

Benefits are paid for *EACH HOUR WORKED* unless otherwise noted.

Wasyl Kinach, P.E.
Director of Classifications
Bureau of Labor Law

TABLE OF CONTENTS

ASBESTOS HANDLER
(Hazardous Material; Disturbs, removes, encapsulates, repairs, or encloses friable asbestos material)

Asbestos Handler

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.90
Supplemental Benefit Rate per Hour: $15.05

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Sunday.
Time and one half the regular hourly rate after 40 hours in any work week.

Overtime Holidays
Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day
Easter

Paid Holidays
None

(Local #78 and Local #12A)

BLASTER

Blaster

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $44.40
Supplemental Benefit Rate per Hour: $38.44

Blaster (Hydraulic)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.17
Supplemental Benefit Rate per Hour: $38.44

Blaster - Trac Drill Hydraulic

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $40.04
Supplemental Benefit Rate per Hour: $38.44

Blaster - Wagon: Air Trac: Quarry Bar: Drillrunners

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.30
Supplemental Benefit Rate per Hour: $38.44

Blaster - Operators of Jack Hammers

Chippers: Spaders: Concrete Breakers: and all other pneumatic tools of like usage: Walk Behind Self Propelled Hydraulic Asphalt and Concrete Breakers: Hydro (Water) Demolition

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.32
Supplemental Benefit Rate per Hour: $38.44

Blaster - Powder Carriers

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $34.66
Supplemental Benefit Rate per Hour: $38.44

Blaster - Hydraulic Trac Drill Chuck Tender

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $33.46
Supplemental Benefit Rate per Hour: $38.44

Blaster - Chuck Tender & Nipper

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $32.75
Supplemental Benefit Rate per Hour: $38.44

Blaster - Magazine Keepers: (Watch Person)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $19.76
Supplemental Benefit Rate per Hour: $38.44

Overtime Description

Magazine Keepers:
Time and one half for work performed in excess of forty (40) hours per week and for work performed on Saturdays, Sundays and Holidays.

All Other Employees:
Time and one-half for the first eight hours of work on Saturday and for Make-up Time. Double time for all hours over eight Monday through Friday (except make-up hours) and for all hours worked on Sunday and Holidays.

Overtime

Double time the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

A single shift shall be 8 hours plus an unpaid lunch, starting at 8:00 A.M (or between 6:00 A.M. and 10:00 A.M. on weekdays). When two (2) shifts are employed, each shift shall be 8 hours plus ½ hour unpaid lunch. When three (3) shifts are employed, each shift will work seven and one-half (7 ½) hours, but will be paid for eight (8) hours, since only one-half (½) hour is allowed for mealtime. When two (2) or more shifts are employed, single time will be paid for each shift. The first 8 hours of any and all work performed Monday through Friday inclusive of any off-shift shall be at the single time rate.

(Local #29)

BOILERMAKER

Boilermaker

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $49.47
Supplemental Benefit Rate per Hour: $39.78
Supplemental Note: The above rate applies to repair or maintenance and new construction; For time and one half overtime - $59.08; For double overtime - $78.37.

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $50.45
Supplemental Benefit Rate per Hour: $41.31
Supplemental Note: The above rate applies to repair or maintenance and new construction; For time and one half overtime - $61.37; For double overtime - $81.43.

Overtime Description

For Repair and Maintenance work:
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
For New Construction work:
Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

Quadruple time the regular rate for work on the following holiday(s).
Labor Day

Paid Holidays

Good Friday
Day after Thanksgiving
Day before Christmas
Day before New Year's Day

Shift Rates

When shifts are required, the first shift shall work eight (8) hours at the regular straight-time hourly rate. The second shift shall work seven and one-half (7 ½) hours and receive eight hours at the regular straight time hourly rate plus twenty-five cents ($0.25) per hour. The third shift shall work seven (7) hours and receive eight hours at the regular straight time hourly rate plus fifty cents ($0.50) per hour. A thirty (30) minute lunch period shall not be considered as time worked. Work in excess of the above shall be paid overtime at the appropriate new construction work or repair work overtime wage and supplemental benefit hourly rate.

(Local #5)

BRICKLAYER

Bricklayer

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $46.44
Supplemental Benefit Rate per Hour: $27.53

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Overtime rates to be paid outside the regular scheduled work day.

(Bricklayer District Council)

CARPENTER - BUILDING COMMERCIAL

Building Commercial

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $48.08
Supplemental Benefit Rate per Hour: $41.10

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
The second shift will receive one hour at the double time rate of pay for the last hour of the shift; eight hours pay for seven hours of work, nine hours pay for eight hours of work. There must be a first shift in order to work a second shift.

(Carpenters District Council)

CARPENTER - HEAVY CONSTRUCTION WORK
(Construction of Engineering Structures and Building Foundations)

Heavy Construction Work

Effective Period: 7/1/2013 - 7/17/2013
Wage Rate per Hour: $46.74
Supplemental Benefit Rate per Hour: $42.37

Effective Period: 7/18/2013 - 6/30/2014
Wage Rate per Hour: $46.82
Supplemental Benefit Rate per Hour: $44.97

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Carpenters District Council)

CEMENT & CONCRETE WORKER

Cement & Concrete Worker

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.33
Supplemental Benefit Rate per Hour: $26.17
Supplemental Note: $28.92 on Saturdays; $31.67 on Sundays & Holidays

Overtime Description
Time and one half the regular rate after 7 hour day (time and one half the regular rate after an 8 hour day when working with Dockbuilders on pile cap forms and for work below street level to the top of the foundation wall, not to exceed 2 feet or 3 feet above the sidewalk-brick shelf, when working on the foundation and structure.)

Overtime
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays
1/2 day before Christmas Day
1/2 day before New Year's Day

Shift Rates
On shift work extending over a twenty-four hour period, all shifts are paid at straight time.

(Cement Concrete Workers District Council)

CEMENT MASON

Cement Mason

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.63
Supplemental Benefit Rate per Hour: $39.05
Supplemental Note: Overtime supplemental benefit rate per hour: $57.55

Overtime Description
Time and one-half the regular rate after an 8 hour day, double time the regular rate after 10 hours. Time and one-half the regular rate on Saturday, double time the regular rate after 10 hours. Double time the regular rate on Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays
Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

Shift Rates
For an off shift day, (work at times other than the regular 7:00 A.M. to 3:30 P.M. work day) a cement mason shall be paid at the regular hourly rate plus a 25% per hour differential. Four Days a week at Ten (10)hour day.

(Local #780)

CORE DRILLER

Core Driller

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.44
Supplemental Benefit Rate per Hour: $19.75

Core Driller Helper

Effective Period: 7/1/2013 - 6/30/2014

Wage Rate per Hour: $28.60
Supplemental Benefit Rate per Hour: $19.75

Core Driller Helper(Third year in the industry)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.74
Supplemental Benefit Rate per Hour: $19.75

Core Driller Helper (Second year in the industry)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.88
Supplemental Benefit Rate per Hour: $19.75

Core Driller Helper (First year in the industry)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.02
Supplemental Benefit Rate per Hour: $19.75

Overtime Description

Time and one half the regular rate for work on a holiday plus Holiday pay when worked.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Shift Rates

The shift day shall be the continuous eight and one-half (8½) hours from 6:00 A.M. to 2:30 P.M. and from 2:30 P.M. to 11:00 P.M., including one-half (½) hour of employees regular rate of pay for lunch. When two (2) or more shifts are employed, single time shall be paid for each shift, but those employees employed on a shift other than from 8:00 A.M. to 5:00 P.M. shall, in addition, receive seventy-five cents ($0.75) per hour differential for each hour worked. When three (3) shifts are needed, each shift shall work seven and one-half (7 ½) hours paid for eight (8) hours of labor and be permitted one-half (½) hour for mealtime.

(Carpenters District Council)

DERRICKPERSON AND RIGGER

Derrick Person & Rigger

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $30.00
Supplemental Benefit Rate per Hour: $31.32

Overtime Description
The first two hours of overtime on weekdays and the first seven hours of work on Saturdays are paid at time and one half for wages and supplemental benefits. All additional overtimes is paid at double time for wages and supplemental benefits. Deduct $1.42 from the Staten Island hourly benefits rate before computing overtime.

Overtime
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Washington's Birthday
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
1/2 day on Christmas Eve if work is performed in the A.M.

(Local #197)

DIVER

Diver (Marine)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $59.40

Supplemental Benefit Rate per Hour: $44.97

Diver Tender (Marine)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.05
Supplemental Benefit Rate per Hour: $44.97

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates
When three shifts are utilized each shift shall work seven and one half-hours (7 1/2 hours) and paid for 8 hours, allowing for one half hour for lunch.

(Carpenters District Council)

DOCKBUILDER - PILE DRIVER

Dockbuilder - Pile Driver

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $46.82
Supplemental Benefit Rate per Hour: $44.97

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Carpenters District Council)

DRIVER: TRUCK (TEAMSTER)

Driver - Automobile Chauffeur (Dump Truck)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.11
Supplemental Benefit Rate per Hour: $40.20

Driver - Heavy Equipment Trailer Driver

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.61
Supplemental Benefit Rate per Hour: $40.20
Note: For time and one half overtime Wage Rate - $57.16; for double time overtime Wage Rate - $76.21

Driver - Euclid & Turnapull Operator

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.67
Supplemental Benefit Rate per Hour: $40.20

Driver - Six Wheeler(3 Axle) Tractors & Trailers

Effective Period: 7/1/2013 - 6/30/2014

Wage Rate per Hour: $39.11
Supplemental Benefit Rate per Hour: $40.20
Note: For time and one half overtime Wage Rate - $58.01; for double time overtime Wage Rate - $77.34

Driver - Boom Truck

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.36
Supplemental Benefit Rate per Hour: $40.20
Note: For time and one half overtime Wage Rate - $58.01; for double time overtime Wage Rate - $77.34

Overtime Description
For Paid Holidays: Holiday pay for all holidays shall be prorated based two hours per day for each day worked in the holiday week, not to exceed 8 hours of holiday pay. For Thanksgiving week, the prorated share shall be 5 1/3 hours of holiday pay for each day worked in Thanksgiving week.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Driver - Redi-Mix Driver (Sand & Gravel)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.71

Supplemental Benefit Rate per Hour: $37.27

Overtime Description
For Paid Holidays: Employees working two (2) days in the calendar week in which the holiday falls are to paid for these holidays, provided they shape each remaining workday during that calendar week.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
President's Day
Columbus Day
Veteran's Day

Triple time the regular rate for work on the following holiday(s).
New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Thanksgiving Day
Christmas Day

(Local #282)

ELECTRICIAN
(Including all low voltage cabling carrying data; video; and voice in combination with data and or video.)

Electrician "A" (Regular Day)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $52.00
Supplemental Benefit Rate per Hour: $46.13

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $53.00
Supplemental Benefit Rate per Hour: $47.54

Electrician "A" (Regular Day Overtime)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $78.00
Supplemental Benefit Rate per Hour: $49.39

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $79.50
Supplemental Benefit Rate per Hour: $50.86

Electrician "A" (Day Shift)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $52.00
Supplemental Benefit Rate per Hour: $46.13

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $53.00
Supplemental Benefit Rate per Hour: $47.54

Electrician "A" (Day Shift Overtime After 8 hours)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $78.00
Supplemental Benefit Rate per Hour: $49.39

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $79.50
Supplemental Benefit Rate per Hour: $50.86

Electrician "A" (Swing Shift)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $61.01
Supplemental Benefit Rate per Hour: $52.47

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $62.19
Supplemental Benefit Rate per Hour: $54.07

Electrician "A" (Swing Shift Overtime After 7.5 hours)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $91.52
Supplemental Benefit Rate per Hour: $56.30

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $93.29
Supplemental Benefit Rate per Hour: $57.97

Electrician "A" (Graveyard Shift)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $68.34
Supplemental Benefit Rate per Hour: $57.83

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $69.66
Supplemental Benefit Rate per Hour: $59.59

Electrician "A" (Graveyard Shift Overtime After 7 hours)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $102.51
Supplemental Benefit Rate per Hour: $62.11

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $104.49
Supplemental Benefit Rate per Hour: $63.96

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays
Time and one half the regular rate for work on a holiday.
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
When so elected by the Employer, one or more shifts of at least five days duration may be scheduled as follows: Day Shift: 8:00 am to 4:30 pm, Swing Shift 4:30 pm to 12:30 am, Graveyard Shift: 12:30 am to 8:00 am.

For multiple shifts of temporary light and/or power, the temporary light and/or power employee shall be paid for 8 hours at the straight time rate.

Electrician "M" (First 8 hours)

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $26.50
Supplemental Benefit Rate per Hour: $19.56
First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: $25.80
First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: $19.21
First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: $22.00
First and Second Year "M" Supplemental Rate- Hired after 5/10/07: $17.30

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $27.00
Supplemental Benefit Rate per Hour: $20.32
First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: $26.30
First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: $19.96
First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: $22.50
First and Second Year "M" Supplemental Rate- Hired after 5/10/07: $18.06

Electrician "M" (Overtime After First 8 hours)

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $39.75
Supplemental Benefit Rate per Hour: $21.23
First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: $38.70
First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: $20.83
First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: $33.00
First and Second Year "M" Supplemental Rate- Hired after 5/10/07: $18.68

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $40.50
Supplemental Benefit Rate per Hour: $21.01
First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: $39.45
First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: $21.61
First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: $33.75
First and Second Year "M" Supplemental Rate- Hired after 5/10/07: $19.47

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Local #3)

ELECTRICIAN - ALARM TECHNICIAN
(Scope of Work - Inspect, test, repair, and replace defective, malfunctioning, or broken devices, components and controls of Fire, Burglar and Security Systems)

Alarm Technician

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $30.40
Supplemental Benefit Rate per Hour: $13.90
Supplemental Note: $12.40 only after 8 hours worked in a day

Overtime Description

Time and one half the regular rate for work on the following holidays: Columbus Day, Veterans Day, Day after Thanksgiving.
Double time the regular rate for work on the following holidays: New Year's day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Paid Holidays

New Year's Day
Martin Luther King Jr. Day

President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Night Differential is based upon a ten percent (10%) differential between the hours of 4:00 P.M. and 12:30 A.M. and a fifteen percent (15%) differential for the hours 12:00 A.M. to 8:00 A.M.

Vacation

At least 1 year of employment.....ten (10) days
5 years or more of employment.....fifteen (15) days
10 years of employment.....twenty (20) days
Plus one Personal Day per year

Sick Days:
One day per Year

(Local #3)

ELECTRICIAN-STREET LIGHTING WORKER

Electrician - Electro Pole Electrician

Effective Period: 7/1/2013 - 5/20/2014
Wage Rate per Hour: $52.00
Supplemental Benefit Rate per Hour: $47.90

Effective Period: 5/21/2014 - 6/30/2014
Wage Rate per Hour: $53.00
Supplemental Benefit Rate per Hour: $49.34

Electrician - Electro Pole Foundation Installer

Effective Period: 7/1/2013 - 5/20/2014
Wage Rate per Hour: $39.42
Supplemental Benefit Rate per Hour: $36.46

Effective Period: 5/21/2014 - 6/30/2014
Wage Rate per Hour: $40.18
Supplemental Benefit Rate per Hour: $37.73

Electrician - Electro Pole Maintainer

Effective Period: 7/1/2013 - 5/20/2014

Wage Rate per Hour: $33.75
Supplemental Benefit Rate per Hour: $32.83

Effective Period: 5/21/2014 - 6/30/2014
Wage Rate per Hour: $34.40
Supplemental Benefit Rate per Hour: $34.00

Overtime Description

Electrician - Electro Pole Electrician: Time and one half the regular rate after a 7 hour day and after 5 consecutive days worked per week.
Electrician - Electro Pole Foundation Installer: Time and one half the regular rate after 8 hours within a 24 hour period and Saturday and Sunday.
Electrician - Electro Pole Maintainer: Time and one half the regular rate after a 7 hour day and after 5 consecutive days worked per week. Saturdays and Sundays may be used as a make-up day at straight time when a day is lost during the week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Local #3)

ELEVATOR CONSTRUCTOR

Elevator Constructor

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $57.01
Supplemental Benefit Rate per Hour: $34.48

Overtime Description

For New Construction: work performed after 7 or 8 hour day, Saturday, Sunday or between 4:30pm and 7:00am shall be paid at double time rate.

Existing buildings: work performed after an 8 hour day, Saturday, Sunday or between 5:30pm and 7:00 am shall be paid time and one half.

Overtime
Double time the regular rate for work on the following holiday(s).

Paid Holidays
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Vacation
Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ELEVATOR REPAIR & MAINTENANCE

Elevator Service/Modernization Mechanic

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.14
Supplemental Benefit Rate per Hour: $33.02

Overtime Description
For Service Work: Double time - all work performed on Sundays, Holidays, and between midnight and 7:00am.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.
Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day

Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

For Modernization Work (4pm to 12:30am) - regularly hourly rate plus a (15%) fifteen percent differential.

Vacation

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ENGINEER

Engineer - Heavy Construction Operating Engineer I

Cherrypickers 20 tons and over and Loaders (rubber tired and/or tractor type with a manufacturer's minimum rated capacity of six cubic yards and over).

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $61.05
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $97.68

Engineer - Heavy Construction Operating Engineer II

Backhoes, Basin Machines, Groover, Mechanical Sweepers, Bobcat, Boom Truck, Barrier Transport (Barrier Mover) & machines of similar nature. Operation of Churn Drills and machines of a similar nature, Stetco Silent Hoist and machines of similar nature, Vac-Alls, Meyers Machines, John Beam and machines of a similar nature, Ross Carriers and Travel Lifts and machines of a similar nature, Bulldozers, Scrapers and Turn-a-Pulls: Tugger Hoists (Used exclusively for handling excavated material); Tractors with attachments, Hyster and Roustabout Cranes, Cherrypickers. Austin Western, Grove and machines of a similar nature, Scoopmobiles, Monorails, Conveyors, Trenchers: Loaders-Rubber Tired and Tractor: Barber Greene and Eimco Loaders and Eimco Backhoes; Mighty Midget and similar breakers and Tampers, Curb and Gutter Pavers and Motor Patrol, Motor Graders and all machines of a similar nature. Locomotives 10 Tons or under. Mini-Max, Break-Tech and machines of a similar nature; Milling machines, robotic and demolition machines and machines of a similar nature, shot blaster, skid steer machines and machines of a similar nature including bobcat, pile rig rubber-tired excavator (37,000 lbs. and under), 2 man auger.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $59.24
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $94.78

Engineer - Heavy Construction Operating Engineer III

Minor Equipment such as Tractors, Post Hole Diggers, Ditch Witch (Walk Behind), Road Finishing Machines, Rollers five tons and under, Tugger Hoists, Dual Purpose Trucks, Fork Lifts, and Dempsey Dumpers, Fireperson.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $56.22
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $89.95

Engineer - Heavy Construction Maintenance Engineer I

Installing, Repairing, Maintaining, Dismantling and Manning of all equipment including Steel Cutting, Bending and Heat Sealing Machines, Mechanical Heaters, Grout Pumps, Bentonite Pumps & Plants, Screening Machines, Fusion Coupling Machines, Tunnel Boring Machines Moles and Machines of a similar nature, Power Packs, Mechanical Hydraulic Jacks; all drill rigs including but not limited to Churn, Rotary Caisson, Raised Bore & Drills of a similar nature; Personnel, Inspection & Safety Boats or any boats used to perform functions of same, Mine Hoists, Whirlies, all Climbing Cranes, all Tower Cranes, including but not limited to Truck Mounted and Crawler Type and machines of similar nature; Maintaining Hydraulic Drills and machines of a similar nature; Well Point System-Installation and dismantling; Burning, Welding, all Pumps regardless of size and/or motor power, except River Cofferdam Pumps and Wells Point Pumps; Motorized Buggies (three or more); equipment used in the cleaning and televising of sewers, but not limited to jet-rodder/vacuum truck, vacall/vactor, closed circuit television inspection equipment; high powered water pumps, jet pumps; screed machines and concrete finishing machines of a similar nature; vermeers.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $58.97
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $94.35

Engineer - Heavy Construction Maintenance Engineer II

On Base Mounted Tower Cranes

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $77.30
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $123.68

Engineer - Heavy Construction Maintenance Engineer III

On Generators, Light Towers

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.10
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $62.56

Engineer - Heavy Construction Maintenance Engineer IV

On Pumps and Mixers including mud sucking

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $40.11
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $64.18

Engineer - Heavy Construction Oilers I

Gradalls, Cold Planer Grader, Concrete Pumps, Driving Truck Cranes, Driving and Operating Fuel and Grease Trucks.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $53.22
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $85.15

Engineer - Heavy Construction Oilers II

All gasoline, electric, diesel or air operated Shovels, Draglines, Backhoes, Keystones, Pavers, Gunite Machines, Battery of Compressors, Crawler Cranes, two-person Trenching Machines.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $36.97
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $59.15

Engineer - Steel Erection Maintenance Engineers

Derrick, Travelers, Tower, Crawler Tower and Climbing Cranes

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $57.05
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $91.28

Engineer - Steel Erection Oiler I

On a Truck Crane

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $53.43
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $85.49

Engineer - Steel Erection Oiler II

On a Crawler Crane

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $40.84
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $65.34

Overtime Description

On jobs of more than one shift, if the next shift employee fails to report for work through any cause over which the employer has no control, the employee on duty who works the next shift continues to work at the single time rate.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day
Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

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Engineer - Building Work Maintenance Engineers I

Installing, repairing, maintaining, dismantling (of all equipment including: Steel Cutting and Bending Machines, Mechanical Heaters, Mine Hoists, Climbing Cranes, Tower Cranes, Linden Peine, Lorain, Liebherr, Mannes, or machines of a similar nature, Well Point Systems, Deep Well Pumps, Concrete Mixers with loading Device, Concrete Plants, Motor Generators when used for temporary power and lights), skid steer machines of a similar nature including bobcat.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $54.04
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime

Engineer - Building Work Maintenance Engineers II

On Pumps, Generators, Mixers and Heaters

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.10
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime

Engineer - Building Work Oilers I

All gasoline, electric, diesel or air operated Gradealls: Concrete Pumps, Overhead Cranes in Power Houses: Their duties shall be to assist the Engineer in oiling, greasing and repairing of all machines; Driving Truck Cranes: Driving and Operating Fuel and Grease Trucks, Cherrypickers (hydraulic cranes) over 70,000 GVW, and machines of a similar nature.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $51.40
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime

Engineer - Building Work Oilers II

Oilers on Crawler Cranes, Backhoes, Trenching Machines, Gunite Machines, Compressors (three or more in Battery).

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.31
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime

Overtime Description

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day
Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Shift Rates

Off Shift: double time the regular hourly rate.

(Local #15)

ENGINEER - CITY SURVEYOR AND CONSULTANT

Party Chief

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.55
Supplemental Benefit Rate per Hour: $17.65

Instrument Person

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $29.41
Supplemental Benefit Rate per Hour: $17.65

Rodperson

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.54
Supplemental Benefit Rate per Hour: $17.65

Overtime Description

Overtime Benefit Rate - $23.63 per hour (time & one half) $29.95 per hour (double time).
Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day
Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (BUILDING CONSTRUCTION)
(Construction of Building Projects, Concrete Superstructures, etc.)

Field Engineer - BC Party Chief

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $55.40
Supplemental Benefit Rate per Hour: $30.62
Supplemental Note: Overtime Benefit Rate - $42.73 per hour (time & one half) $54.84 per hour (double time).

Field Engineer - BC Instrument Person

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $43.10
Supplemental Benefit Rate per Hour: $30.62
Supplemental Note: Overtime Benefit Rate - $42.73 per hour (time & one half) $54.84 per hour (double time).

Field Engineer - BC Rodperson

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $27.96
Supplemental Benefit Rate per Hour: $30.62
Supplemental Note: Overtime Benefit Rate - $42.73 per hour (time & one half) $54.84 per hour (double time).

Overtime Description

Time and one half the regular rate after a 7 hour work and time and one half the regular rate for Saturday for the first seven hours worked, Double time the regular time rate for Saturday for work performed in excess of seven hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day
Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (HEAVY CONSTRUCTION)
(Construction of Roads, Tunnels, Bridges, Sewers, Building Foundations, Engineering Structures etc.)

Field Engineer - HC Party Chief

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $62.61
Supplemental Benefit Rate per Hour: $30.62
Supplemental Note: Overtime benefit rate - $42.73 per hour (time & one half), $54.84 per hour (double time).

Field Engineer - HC Instrument Person

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $46.00
Supplemental Benefit Rate per Hour: $30.62
Supplemental Note: Overtime benefit rate - $42.73 per hour (time & one half), $54.84 per hour (double time).

Field Engineer - HC Rodperson

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.61
Supplemental Benefit Rate per Hour: $30.62
Supplemental Note: Overtime benefit rate - $42.73 per hour (time & one half), $54.84 per hour (double time).

Overtime Description

Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day
Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (STEEL ERECTION)

Field Engineer - Steel Erection Party Chief

Effective Period: 7/1/2013 - 6/30/2014

Wage Rate per Hour: $58.50
Supplemental Benefit Rate per Hour: $30.62
Supplemental Note: Overtime benefit rate - $42.73 per hour (time & one half), $54.84 per hour (double time).

Field Engineer - Steel Erection Instrument Person

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.53
Supplemental Benefit Rate per Hour: $30.62
Supplemental Note: Overtime benefit rate - $42.73 per hour (time & one half), $54.84 per hour (double time).

Field Engineer - Steel Erection Rodperson

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $30.43
Supplemental Benefit Rate per Hour: $30.62
Supplemental Note: Overtime benefit rate - $42.73 per hour (time & one half), $54.84 per hour (double time).

Overtime Description
Time and one half the regular rate for Saturday for the first eight hours worked.
Double time the regular rate for Saturday for work performed in excess of eight hours.

Overtime
Time and one half the regular rate after an 8 hour day.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays
New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day
Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - OPERATING

Operating Engineer - Road & Heavy Construction I

Back Filling Machines, Cranes, Mucking Machines and Dual Drum Paver.

Effective Period: 7/1/2013 - 6/30/2014

Wage Rate per Hour: $67.70
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $108.32

Operating Engineer - Road & Heavy Construction II

Backhoes, Power Shovels, Hydraulic Clam Shells, Steel Erection, Moles and machines of a similar nature.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $70.10
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: 51.75 overtime hours
Shift Wage Rate: $112.16

Operating Engineer - Road & Heavy Construction III

Mine Hoists, Cranes, etc. (Used as Mine Hoists)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $72.34
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $115.74

Operating Engineer - Road & Heavy Construction IV

Gradealls, Keystones, Cranes on land or water (with digging buckets), Bridge Cranes, Vermeer Cutter and machines of a similar nature, Trenching Machines.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $70.63
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $113.01

Operating Engineer - Road & Heavy Construction V

Pile Drivers & Rigs (employing Dock Builder foreperson): Derrick Boats, Tunnel Shovels.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $69.23
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $110.77

Operating Engineer - Road & Heavy Construction VI

Mixers (Concrete with loading attachment), Concrete Pavers, Cableways, Land Derricks, Power Houses (Low Air Pressure Units).

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $65.76
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $105.22

Operating Engineer - Road & Heavy Construction VII

Barrier Movers , Barrier Transport and Machines of a Similar Nature.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $53.08
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $84.93

Operating Engineer - Road & Heavy Construction VIII

Utility Compressors

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.18
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $51.93

Operating Engineer - Road & Heavy Construction IX

Horizontal Boring Rig

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $62.53
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $100.05

Operating Engineer - Road & Heavy Construction X

Elevators (manually operated as personnel hoist).

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $57.46
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $91.94

Operating Engineer - Road & Heavy Construction XI

Compressors (Portable 3 or more in battery), Driving of Truck Mounted Compressors, Well-point Pumps, Tugger Machines Well Point Pumps, Churn Drill.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $44.63
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $71.41

Operating Engineer - Road & Heavy Construction XII

All Drills and Machines of a similar nature.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $66.45
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $106.32

Operating Engineer - Road & Heavy Construction XIII

Concrete Pumps, Concrete Plant, Stone Crushers, Double Drum Hoist, Power Houses (other than above).

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $64.34
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $102.94

Operating Engineer - Road & Heavy Construction XIV

Concrete Mixer

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $61.53
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $98.45

Operating Engineer - Road & Heavy Construction XV

Compressors (Portable Single or two in Battery, not over 100 feet apart), Pumps (River Cofferdam) and Welding Machines, Push Button Machines, All Engines Irrespective of Power (Power-Pac) used to drive auxiliary equipment, Air, Hydraulic, etc.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.44
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $66.30

Operating Engineer - Road & Heavy Construction XVI

Concrete Breaking Machines, Hoists (Single Drum), Load Masters, Locomotives (over ten tons) and Dinkies over ten tons, Hydraulic Crane-Second Engineer.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $58.74
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.85 overtime hours
Shift Wage Rate: $93.98

Operating Engineer - Road & Heavy Construction XVII

On-Site concrete plant engineer, On-site Asphalt Plant Engineer, and Vibratory console.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $59.21
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $94.74

Operating Engineer - Road & Heavy Construction XVIII

Tower Crane

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $85.00
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $136.00

Operating Engineer - Paving I

Asphalt Spreaders, Autogrades (C.M.I.), Roto/Mil

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $65.76
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $105.22

Operating Engineer - Paving II

Asphalt Roller

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $64.04
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $102.46

Operating Engineer - Paving III

Asphalt Plants

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $54.17
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $86.67

Operating Engineer - Concrete I

Cranes

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $70.32
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Concrete II

Compressors

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.76
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Concrete III

Micro-traps (Negative Air Machines), Vac-All Remediation System.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $56.16
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Steel Erection I

Three Drum Derricks

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $73.37
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $117.39

Operating Engineer - Steel Erection II

Cranes, 2 Drum Derricks, Hydraulic Cranes, Fork Lifts and Boom Trucks.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $70.50

Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $112.80

Operating Engineer - Steel Erection III

Compressors, Welding Machines.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.84
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $66.94

Operating Engineer - Steel Erection IV

Compressors - Not Combined with Welding Machine.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.85
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $63.76

Operating Engineer - Building Work I

Forklifts, Plaster (Platform machine), Plaster Bucket, Concrete Pump and all other equipment used for hoisting material.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $57.82
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Building Work II

Compressors, Welding Machines (Cutting Concrete-Tank Work), Paint Spraying, Sandblasting, Pumps (with the exclusion of Concrete Pumps), All Engines irrespective of Power (Power-Pac) used to drive Auxiliary Equipment, Air, Hydraulic, Jacking System, etc.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $43.28
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Building Work III

Double Drum

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $65.83

Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Building Work IV

Stone Derrick, Cranes, Hydraulic Cranes Boom Trucks.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $69.74
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Building Work V

Dismantling and Erection of Cranes, Relief Engineer.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $64.26
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Building Work VI

4 Pole Hoist, Single Drum Hoists.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $63.58
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Building Work VII

Rack & Pinion and House Cars

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $50.53
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
For New House Car projects started after 7/1/11 only: Wage Rate per Hour $40.31

Overtime Description

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

For House Cars and Rack & Pinion only: Overtime paid at time and one-half for all hours in excess of eight hours in a day, Saturday, Sunday and Holidays worked.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day
Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Shift Rates

For Steel Erection Only: Shifts may be worked at the single time rate at other than the regular working hours (8:00 A.M. to 4:30 P.M.) on the following work ONLY: Heavy construction jobs on work below the street level, over railroad tracks and on building jobs.

(Operating Engineer Local #14)

FLOOR COVERER

(Interior vinyl composition tile, sheath vinyl linoleum and wood parquet tile including site preparation and synthetic turf not including site preparation)

Floor Coverer

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $46.15
Supplemental Benefit Rate per Hour: $38.50

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Day after Thanksgiving

Christmas Day

Paid Holidays
1/2 day on Christmas Eve if work is performed in the A.M.
1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates
Two shifts may be utilized with the first shift working 8:00 A.M. to the end of the shift at the straight time of pay. The second shift will receive one hour at double time rate for the last hour of the shift. (eight for seven, nine for eight).

(Carpenters District Council)

GLAZIER
(New Construction, Remodeling, and Alteration)

Glazier

Effective Period: 7/1/2013 - 10/31/2013
Wage Rate per Hour: $42.00
Supplemental Benefit Rate per Hour: $33.24
Supplemental Note: Supplemental Benefit Overtime Rate: $41.24

Effective Period: 11/1/2013 - 6/30/2014
Wage Rate per Hour: $42.00
Supplemental Benefit Rate per Hour: $34.09
Supplemental Note: Supplemental Benefit Overtime Rate: $42.59

Overtime Description
An optional 8th hour can be worked at straight time rate. If 9th hour is worked, then both hours or more (8th & 9th or more) will be at the double time rate of pay.

Overtime
Double time the regular rate after a 7 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
Shifts shall be any 7 hours beyond 4:00 P.M. for which the glazier shall receive 8 hours pay for 7 hours worked.

(Local #1281)

GLAZIER - REPAIR & MAINTENANCE
(For the Installation of Glass - All repair and maintenance work on a particular building, whenever performed, where the total cumulative contract value is under $105,000. Except where enumerated (i.e. plate glass windows) does not apply to non-residential buildings.)

Craft Jurisdiction for repair, maintenance and fabrication

Plate glass replacement, Residential glass replacement, Residential mirrors and shower doors, Storm windows and storm doors, Residential replacement windows, Herculite door repairs, Door closer repairs, Retrofit apartment house (non commercial buildings), Glass tinting.

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $23.50
Supplemental Benefit Rate per Hour: $18.54

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $23.60
Supplemental Benefit Rate per Hour: $19.04

Overtime
Time and one half the regular rate after an 8 hour day.
Double time the regular rate for Sunday.
Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

(Local #1281)

HEAT AND FROST INSULATOR

Heat & Frost Insulator

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $56.48
Supplemental Benefit Rate per Hour: $33.31

Overtime Description
Double time shall be paid for supplemental benefits during overtime work.
8th hour paid at time and one half.

Overtime
Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Triple time the regular rate for work on the following holiday(s).
Labor Day

Paid Holidays
None

Shift Rates
The first shift shall work seven hours at the regular straight time rate. The second and third shift shall work seven hours the regular straight time hourly rate plus a fourteen percent wage and benefit premium.
Off hour work in occupied or retail buildings may be worked on weekdays with an increment of $1.00 per hour and eight hours pay for seven (7) hours worked. Double time will apply for over seven (7) hours worked on weekdays, weekends or holidays.

(Local #12)

HOUSE WRECKER
(TOTAL DEMOLITION)

House Wrecker - Tier A

On all work sites the first, second, eleventh and every third House Wrecker thereafter shall be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). The 10th and 20th House Wrecker shall be apprentices. Other House Wreckers shall be Tier B House Wreckers.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $34.01
Supplemental Benefit Rate per Hour: $25.14

House Wrecker - Tier B

On all work sites the first, second, eleventh and every third House Wrecker thereafter shall be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). The 10th and 20th House Wrecker shall be apprentices. Other House Wreckers shall be Tier B House Wreckers.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.75
Supplemental Benefit Rate per Hour: $18.62

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

(Mason Tenders District Council)

IRON WORKER - ORNAMENTAL

Iron Worker - Ornamental

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.30
Supplemental Benefit Rate per Hour: $43.54

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Overtime Description
Time and one half the regular rate after a 7 hour day for a maximum of two hours on any regular work day (the 8th and 9th hour) and double time shall be paid for all work on a regular work day thereafter, time and one half the regular rate for Saturday for the first seven hours of work and double time shall be paid for all work on a Saturday thereafter.

Overtime
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates
For off shift work - 8 hours pay for 7 hours of work. When two or three shifts are employed on a job, Monday through Friday, the workday for each shift shall be seven hours and paid for ten and one-half hours at the single time rate. When two or three shifts are worked on Saturday, Sunday or holidays, each shift shall be seven hours and paid fifteen and three-quarters hours.

(Local #580)

IRON WORKER - STRUCTURAL

Iron Worker - Structural

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $46.75
Supplemental Benefit Rate per Hour: $62.48
Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Overtime Description
Monday through Friday- the first eight hours are paid at straight time, the 9th and 10th hours are paid at time and one-half the regular rate, all additional weekday overtime is paid at double the regular rate. Saturdays- the first eight hours are paid at time and one-half the regular rate, double time thereafter. Sunday-all shifts are paid at double time.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
1/2 day on Christmas Eve if work is performed in the A.M.
1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates
Monday through Friday - First Shift: First eight hours are paid at straight time, the 9th & 10th hours are paid at time and a half, double time paid thereafter. Second and third Shifts: First eight hours are paid at time and one-half, double time thereafter. Saturdays: All shifts, first eight hours paid at time and one-half, double time thereafter: Sunday all shifts are paid at double time.

(Local #40 & #361)

LABORER
(Foundation, Concrete, Excavating, Street Pipe Layer and Common)

Laborer

Excavation and foundation work for buildings, heavy construction, engineering work, and hazardous waste removal in connection with the above work. Landscaping tasks in connection with heavy construction work, engineering work and building projects. Projects include, but are not limited to pollution plants, sewers, parks, subways, bridges, highways, etc.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.25
Supplemental Benefit Rate per Hour: $33.25

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).

New Year's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

Labor Day
Thanksgiving Day

Shift Rates

When two shifts are employed, single time rate shall be paid for each shift. When three shifts are found necessary, each shift shall work seven and one half hours (7 ½), but shall be paid for eight (8) hours of labor, and be permitted one half hour for lunch.

(Local #731)

LANDSCAPING

(Landscaping tasks, as well as tree pruning, tree removing, spraying and maintenance in connection with the planting of street trees and the planting of trees in city parks but not when such activities are performed as part of, or in connection with, other construction or reconstruction projects.)

Landscaper (Above 6 years experience)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $24.25
Supplemental Benefit Rate per Hour: $12.30

Landscaper (3 - 6 years experience)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.25
Supplemental Benefit Rate per Hour: $12.30

Landscaper (up to 3 years experience)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.75
Supplemental Benefit Rate per Hour: $12.30

Groundperson

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.75
Supplemental Benefit Rate per Hour: $12.30

Tree Remover / Pruner

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $29.25
Supplemental Benefit Rate per Hour: $12.30

Landscaper Sprayer (Pesticide Applicator)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $19.25
Supplemental Benefit Rate per Hour: $12.30

Watering - Plant Maintainer

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $14.25
Supplemental Benefit Rate per Hour: $12.30

Overtime Description
For all overtime work performed, supplemental benefits shall include an additional seventy-five ($0.75) cents per hour.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays
New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Shift Rates
Work performed on a 4pm to 12am shift has a 15% differential. Work performed on a 12am to 8am shift has a 20% differential.

(Local #175)

MARBLE MECHANIC

Marble Setter

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $49.19
Supplemental Benefit Rate per Hour: $32.24

Marble Finisher

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.05
Supplemental Benefit Rate per Hour: $31.43

Marble Polisher

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $34.73
Supplemental Benefit Rate per Hour: $24.60

Overtime Description
Supplemental Benefit contributions are to be made at the applicable overtime rates. Time and one half the regular rate after a 7 hour day or time and one half the regular rate after an 8 hour day - chosen by Employer at the start of the project and then would last for the full duration of the project.

Overtime
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

(Local #7)

MASON TENDER

Mason Tender

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.00
Supplemental Benefit Rate per Hour: $25.74

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates
The Employer may work two (2) shifts with the first shift at the straight time wage rate and the second shift receiving eight (8) hours paid for seven (7) hours work at the straight time wage rate.

(Local #79)

MASON TENDER (INTERIOR DEMOLITION WORKER)
(The erection, building, moving, servicing and dismantling of enclosures, scaffolding, barricades, protection and site safety structures etc., on Interior Demolition jobs.)

Mason Tender Tier A

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $34.07
Supplemental Benefit Rate per Hour: $19.77

Mason Tender Tier B

On Interior Demolition job sites 33 1/3 % of the employees shall be classified as Tier A Interior Demolition Workers and 66 2/3 % shall be classified as Tier B Interior Demolition Workers; provided that the employer may employ more than 33 1/3 % Tier A Interior Demolition Workers on the job site. Where the number of employees on a job site is not divisible by 3, the first additional employee (above the number of employees divisible by three) shall be a Tier B Interior Demolition Worker, and the second additional employee shall be a Tier A Interior Demolition Worker.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.27
Supplemental Benefit Rate per Hour: $14.08

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

(Local #79)

METALLIC LATHER

Metallic Lather

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.43
Supplemental Benefit Rate per Hour: $40.15
Supplemental Note: Supplemental benefits for overtime are paid at the appropriate overtime rate.

Overtime Description
Overtime would be time and one half the regular rate after a seven (7) or eight (8) hours workday, which would be set at the start of the job.

Overtime
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).

New Year's Day
Washington's Birthday
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.
1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

There shall be either two (2) or three (3) shifts, each shift shall be eight (8) hours with nine (9) hours pay, including one half (½) hour for lunch. Off-Hour Start shall commence after 3:30 P.M. and shall conclude by 6:00 A.M. The first consecutive seven (7) hours shall be at straight time with a differential of twelve dollars ($12.00) per hour. Fringes shall be paid at the straight time rate.

(Local #46)

MILLWRIGHT

Millwright

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $47.69
Supplemental Benefit Rate per Hour: $48.87

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays
1/2 day on Christmas Eve if work is performed in the A.M.
1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates
The first shift shall receive the straight time rate of pay. The second shift receives the straight time rate of pay plus fifteen (15%) per cent. Members of the second shift shall be allowed one half hour to eat, with this time being included in the hours of the workday established. There must be a first shift to work a second shift. All additional hours worked shall be paid at the time and one-half rate of pay plus fifteen (15%) per cent for weekday hours.

(Local #740)

MOSAIC MECHANIC

Mosaic Mechanic - Mosaic & Terrazzo Mechanic

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $44.39
Supplemental Benefit Rate per Hour: $35.11
Supplemental Note: Supplemental benefits for overtime to be paid at the rate of $46.08 per hour.

Mosaic Mechanic - Mosaic & Terrazzo Finisher

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.78
Supplemental Benefit Rate per Hour: $35.11
Supplemental Note: Supplemental benefits for overtime to be paid at the rate of $46.08 per hour.

Mosaic Mechanic - Machine Operator Grinder

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.78
Supplemental Benefit Rate per Hour: $35.11
Supplemental Note: Supplemental benefits for overtime to be paid at the rate of $46.08 per hour.

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Washington's Birthday
Good Friday
Independence Day

Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

(Local #7)

PAINTER

Painter - Brush & Roller

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $37.50
Supplemental Benefit Rate per Hour: $25.62
Supplemental Note: $30.25 on overtime

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $39.50
Supplemental Benefit Rate per Hour: $26.12
Supplemental Note: $30.75 on overtime

Spray & Scaffold / Decorative / Sandblast

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $40.50
Supplemental Benefit Rate per Hour: $25.62
Supplemental Note: $30.25 on overtime

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $42.50
Supplemental Benefit Rate per Hour: $26.12
Supplemental Note: $30.75 on overtime

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays
Time and one half the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day

Labor Day
Columbus Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

(District Council of Painters #9)

PAINTER - SIGN

Designer

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $36.15
Supplemental Benefit Rate per Hour: $9.66

Journeyperson

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $33.62
Supplemental Benefit Rate per Hour: $9.66

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates
All work performed outside the regular 8 hour work day (either 7:00 A.M to 3:30 P.M or 8:00 A.M. to 4:30 P.M) shall be paid at time and one half the regular hourly rate.

(Local #8A-28A)

PAINTER - STRIPER

Striper (paint)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $33.50
Supplemental Benefit Rate per Hour: $11.62
Supplemental Note: Overtime Supplemental Benefit rate - $7.42; New Hire Rate (0-3 months) - $0.00

Lineperson (thermoplastic)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $37.50
Supplemental Benefit Rate per Hour: $11.62
Supplemental Note: Overtime Supplemental Benefit rate - $7.42; New Hire Rate (0-3 months) - $0.00

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on the following holiday(s).

Paid Holidays
New Year's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates
Employees hired before April 1, 2003: 15% night shift premium differential for work commenced at 9:00 PM or later.

Vacation
Employees with one to two years service shall accrue vacation based on hours worked: 250 hours worked - 1 day vacation; 500 hours worked - 2 days vacation; 750 hours worked - 3 days vacation; 900 hours worked - 4 days vacation; 1,000 hours worked - 5 days vacation. Employees with two to five years service receive two weeks vacation. Employees with five to twenty years service receive three weeks vacation. Employees with twenty to twenty-five years service receive four weeks vacation. Employees with 25 or more years service receive five weeks vacation. Vacation must be taken during winter months. 2 Personal Days except employees hired after 4/1/12 who do not have 2 years of service.

(Local #917)

PAINTER - STRUCTURAL STEEL

Painters on Structural Steel

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $47.00
Supplemental Benefit Rate per Hour: $32.08

Painter - Power Tool

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $53.00
Supplemental Benefit Rate per Hour: $32.08

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates
Regular hourly rates plus a ten per cent (10%) differential

(Local #806)

PAPERHANGER

Paperhanger

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $39.00
Supplemental Benefit Rate per Hour: $29.23
Supplemental Note: Supplemental benefits are to be paid at the appropriate straight time and overtime rate.

Effective Period: 5/1/2014 - 6/30/2014

Wage Rate per Hour: $41.08
Supplemental Benefit Rate per Hour: $29.23
Supplemental Note: Supplemental benefits are to be paid at the appropriate straight time and overtime rate.

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays
Time and one half the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
Evening shift - 4:30 P.M. to 12:00 Midnight (regular rate of pay); any work performed before 7:00 A.M. shall be at time and one half the regular base rate of pay.

(District Council of Painters #9)

PAVER AND ROADBUILDER

Paver & Roadbuilder - Formsetter

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $43.54
Supplemental Benefit Rate per Hour: $33.55

Paver & Roadbuilder - Laborer

Paving and road construction work, regardless of material used, including but not limited to preparation of job sites, removal of old surfaces, asphalt and/or concrete, by whatever method, including but not limited to milling; laying of concrete; laying of asphalt for temporary, patchwork, and utility paving (but not production paving); site preparation and incidental work before the installation of rubberized materials and similar surfaces; installation and repair of temporary construction fencing; slurry seal coating, maintenance of safety surfaces; play equipment installation, and other related work.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.67
Supplemental Benefit Rate per Hour: $33.55

Production Paver & Roadbuilder - Screed Person

(Production paving is asphalt paving when using a paving machine or on a project where a paving machine is traditionally used)

Adjustment of paving machinery on production paving jobs.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.12
Supplemental Benefit Rate per Hour: $33.55

Production Paver & Roadbuilder - Raker

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $44.61
Supplemental Benefit Rate per Hour: $33.55

Production Paver & Roadbuilder - Shoveler

General laborer (except removal of surfaces - see Paver and Roadbuilder-Laborer) including but not limited to tamper, AC paint and liquid tar work.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.32
Supplemental Benefit Rate per Hour: $33.55

Overtime Description
Veteran's Day is a Paid Holiday for employees working on production paving.

If an employee works New Year's Day or Christmas Day, they receive the single time rate plus 25%.

Employees who work on a holiday listed below receive the straight time rate plus one day's pay for the holiday.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Paid Holidays
Memorial Day
Independence Day
Labor Day
Presidential Election Day
Thanksgiving Day

Shift Rates
When two shifts are employed, the work period for each shift shall be a continuous eight (8) hours. When three shifts are employed, each shift will work seven and one half (7 ½) hours but will be paid for eight (8) hours since only one half (1/2) hour is allowed for meal time.
When two or more shifts are employed, single time will be paid for each shift.

Night Work - On night work, the first eight (8) hours of work will be paid for at the single time rate, except that production paving work shall be paid at 20% over the single time rate for the screed person, rakers and shovelers directly involved only. All other workers will be exempt. Hours worked over eight (8) hours during said shift shall be paid for at the time and one-half rate.

(Local #1010)

PLASTERER

Plasterer

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.13
Supplemental Benefit Rate per Hour: $24.95

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates
When it is not possible to conduct alteration work during regular work hours, in a building occupied by tenants, said work shall proceed on a shift basis: however work over seven (7) hours in any twenty four (24) hour period, the time after seven (7) hours shall be considered overtime.
The second shift shall start at a time between 3:30 p.m. and 7:00 p.m. and shall consist of seven (7) working hours and shall receive eight (8) hours of wages and benefits at the straight time rate. The workers on the second shift shall be allowed one-half (½) hour to eat with this time being included in the seven (7) hours of work.

(Local #530)

PLASTERER - TENDER

Plasterer - Tender

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.00
Supplemental Benefit Rate per Hour: $25.74

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates
When work commences outside regular work hours, workers receive an hour additional (differential) wage and supplement payment. Eight hours pay for seven hours work or nine hours pay for eight hours work.

(Mason Tenders District Council)

PLUMBER

Plumber

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $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 $1.5 million or less, the hours of labor can be 8 hours per day at the employers option. On Alteration jobs when other mechanical trades at the site are working an eighth hour at straight time, then the plumber shall also work an eighth hour at straight time.

Overtime

Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Shift work, when directly specified in public agency or authority documents where plumbing contract is $8 million or less, will be permitted. 30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

PLUMBER (MECHNICAL EQUIPMENT AND SERVICE)
(Mechanical Equipment and Service work shall include any repair and/or replacement of the present plumbing system.)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $33.46
Supplemental Benefit Rate per Hour: $16.93

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
President's Day

Memorial Day
Independence Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

(Plumbers Local # 1)

PLUMBER (RESIDENTIAL RATES FOR 1, 2 AND 3 FAMILY HOME CONSTRUCTION)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $37.11
Supplemental Benefit Rate per Hour: $25.56

Overtime
Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

PLUMBER: PUMP & TANK
(Installation and Maintenance)

Plumber - Pump & Tank

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $53.01
Supplemental Benefit Rate per Hour: $31.86

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays
Time and one half the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
All work outside the regular workday (8:00 A.M. to 3:30 P.M.) is to be paid at time and one half the regular hourly rate

(Plumbers Local #1)

POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING RENOVATION)

Pointer - Waterproofer, Caulker Mechanic

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.41
Supplemental Benefit Rate per Hour: $23.29

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:30 P.M.) is to be paid at time and one half the regular rate.

(Bricklayer District Council)

ROOFER

Roofer

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.00
Supplemental Benefit Rate per Hour: $27.37

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates
Second shift - Regular hourly rate plus a 10% differential. Third shift - Regular hourly rate plus a 15% differential.

(Local #8)

SANDBLASTER - STEAMBLASTER
(Exterior Building Renovation)

Sandblaster / Steamblaster

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.41
Supplemental Benefit Rate per Hour: $23.29

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays
Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates
All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:30 P.M.) is to be paid at time and one half the regular rate.

(Bricklayer District Council)

SHEET METAL WORKER

Sheet Metal Worker

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.96
Supplemental Benefit Rate per Hour: $43.19
Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Sheet Metal Worker - Duct Cleaner

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $12.90
Supplemental Benefit Rate per Hour: $8.07

Sheet Metal Worker - Fan Maintenance

(The temporary operation of fans or blowers in new or existing buildings for heating and/or ventilation, and/or air conditioning prior to the completion of the project.)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $36.77
Supplemental Benefit Rate per Hour: $43.19

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
Work that can only be performed outside regular working hours (seven hours of work between 7:30 A.M. and 3:30 P.M.) - First shift (work between 3:30 P.M. and 11:30 P.M.) - 10% differential above the established hourly rate. Second shift (work between 11:30 P.M. and 7:30 A.M.) - 15% differential above the established hourly rate.

For Fan Maintenance: On all full shifts of fan maintenance work the straight time hourly rate of pay will be paid for each shift, including nights, Saturdays, Sundays, and holidays. No journeyperson engaged in fan maintenance shall work in excess of forty (40) hours in any work week.

(Local #28)

SHEET METAL WORKER - SPECIALTY (Decking & Siding)

Sheet Metal Specialty Worker

The first worker to perform this work must be paid at the rate of the Sheet Metal Worker. The second and third workers shall be paid the Specialty Worker Rate. The ratio of One Sheet Metal Worker, then Two Specialty Workers shall be utilized thereafter.

Effective Period: 7/1/2013 - 7/31/2013
Wage Rate per Hour: $41.28
Supplemental Benefit Rate per Hour: $22.88
Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Effective Period: 8/1/2013 - 6/30/2014
Wage Rate per Hour: $40.78
Supplemental Benefit Rate per Hour: $23.38
Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

(Local #28)

SIGN ERECTOR
(Sheet Metal, Plastic, Electric, and Neon)

Sign Erector

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.80
Supplemental Benefit Rate per Hour: $42.17

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.
Time and one half the regular rate for work on the following holiday(s).

Paid Holidays
New Year's Day
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates
Time and one half the regular hourly rate is to be paid for all hours worked outside the regular workday either (7:00 A.M. through 2:30 P.M.) or (8:00 A.M. through 3:30 P.M.)

(Local #137)

STEAMFITTER

Steamfitter I

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $52.50
Supplemental Benefit Rate per Hour: $50.54
Supplemental Note: Overtime supplemental benefit rate: $100.34

Overtime
Double time the regular rate after a 7 hour day.

Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

Work performed between 3:30 P.M. and 7:00 A.M. and on Saturdays, Sundays and Holidays shall be at double time the regular hourly rate and paid at the overtime supplemental benefit rate above.

Steamfitter II

For heating, ventilation, air conditioning and mechanical public works contracts with a dollar value not to exceed $15,000,000 and for fire protection/sprinkler public works contracts not to exceed $1,500,000.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $52.50
Supplemental Benefit Rate per Hour: $50.54
Supplemental Note: Overtime supplemental benefit rate: $100.34

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
May be performed outside of the regular workday except Saturday, Sunday and Holidays. A shift shall consist of eight working hours. All work performed in excess of eight hours shall be paid at double time. No shift shall commence after 7:00 P.M. on Friday or 7:00 P.M. the day before holidays. All work performed after 12:01 A.M. Saturday or 12:01 A.M. the day before a Holiday will be paid at double time. When shift work is performed the wage rate for regular time worked is a thirty percent premium together with fringe benefits.

On Transit Authority projects, where work is performed in the vicinity of tracks all shift work on weekends and holidays may be performed at the regular shift rates.

Local #638

STEAMFITTER - REFRIGERATION AND AIR CONDITIONER (Maintenance and Installation Service Person)

Refrigeration and Air Conditioner Mechanic

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.05
Supplemental Benefit Rate per Hour: $12.26

Refrigeration and Air Conditioner Service Person V

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $31.26
Supplemental Benefit Rate per Hour: $11.13

Refrigeration and Air Conditioner Service Person IV

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.90
Supplemental Benefit Rate per Hour: $10.16

Refrigeration and Air Conditioner Service Person III

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.23
Supplemental Benefit Rate per Hour: $9.44

Refrigeration and Air Conditioner Service Person II

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $18.44
Supplemental Benefit Rate per Hour: $8.78

Refrigeration and Air Conditioner Service Person I

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $13.48
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
Double time the regular rate for work on the following holiday(s).
New Year's Day
Independence Day
Labor Day
Veteran's Day
Thanksgiving Day
Christmas Day

Double time and one half the regular rate for work on the following holiday(s).
Martin Luther King Jr. Day
President's Day
Memorial Day
Columbus Day

Paid Holidays
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day

(Local #638B)

STONE MASON - SETTER

Stone Mason - Setters

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $47.72
Supplemental Benefit Rate per Hour: $35.28

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Washington's Birthday
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
1/2 day on Christmas Eve if work is performed in the A.M.

Shift Rates
For all work outside the regular workday (8:00 A.M. to 3:30 P.M. Monday through Friday), the pay shall be straight time plus a ten percent (10%) differential.

(Bricklayers District Council)

TAPER

Drywall Taper

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $44.32
Supplemental Benefit Rate per Hour: $21.66

Effective Period: 1/1/2014 - 6/24/2014
Wage Rate per Hour: $44.82
Supplemental Benefit Rate per Hour: $21.66

Effective Period: 6/25/2014 - 6/30/2014

Wage Rate per Hour: $45.32
Supplemental Benefit Rate per Hour: $21.66

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays
Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Thanksgiving Day
Christmas Day

Paid Holidays
Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

Shift Rates
Time and one half the regular rate outside the regular work hours (8:00 A.M. through 3:30 P.M.)

(Local #1974)

TELECOMMUNICATION WORKER (Voice Installation Only)

Telecommunication Worker

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.94
Supplemental Benefit Rate per Hour: $13.19
Supplemental Note: The above rate applies for Manhattan, Bronx, Brooklyn, Queens. $12.64 for Staten Island only.

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Lincoln's Birthday
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

Paid Holidays

New Year's Day
Lincoln's Birthday
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day
Employees have the option of observing either Martin Luther King's Birthday or the day after Thanksgiving instead of Lincoln's Birthday

Shift Rates

For any workday that starts before 8A.M. or ends after 6P.M. there is a 10% differential for the applicable worker's hourly rate.

Vacation

After 6 months.....one week.
After 12 months but less than 7 years.....two weeks.
After 7 or more but less than 15 years.....three weeks.
After 15 years or more but less than 25 years.....four weeks.

(C.W.A.)

TILE FINISHER

Tile Finisher

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.49
Supplemental Benefit Rate per Hour: $27.40

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TILE LAYER - SETTER

Tile Layer - Setter

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $48.35
Supplemental Benefit Rate per Hour: $31.44

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving

Christmas Day

Shift Rates
Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TIMBERPERSON

Timberperson

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.63
Supplemental Benefit Rate per Hour: $44.54

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.
Time and one half the regular hourly rate after 40 hours in any work week.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates
Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Local #1536)

TUNNEL WORKER

Blasters, Mucking Machine Operators (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $54.20
Supplemental Benefit Rate per Hour: $48.20

Tunnel Workers (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $52.31
Supplemental Benefit Rate per Hour: $46.59

Top Nipper (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $51.35
Supplemental Benefit Rate per Hour: $45.78

Outside Lock Tender, Outside Gauge Tender,Muck Lock Tender (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $50.42
Supplemental Benefit Rate per Hour: $44.91

Bottom Bell & Top Bell Signal Person: Shaft Person (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $50.42
Supplemental Benefit Rate per Hour: $44.92

Changehouse Attendant: Powder Watchperson (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $43.94
Supplemental Benefit Rate per Hour: $42.55

Blasters (Free Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $51.72
Supplemental Benefit Rate per Hour: $46.03

Tunnel Workers (Free Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $49.48

Supplemental Benefit Rate per Hour: $44.06

All Others (Free Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.73
Supplemental Benefit Rate per Hour: $40.75

Microtunneling (Free Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.58
Supplemental Benefit Rate per Hour: $35.25

Overtime Description

For Repair-Maintenance Work on Existing Equipment and Facilities - Time and one half the regular rate after a 7 hour day, or for Saturday, or for Sunday. Double time the regular rate for work on a holiday.
For Small-Bore Micro Tunneling Machines - Time and one-half the regular rate shall be paid for all overtime.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

(Local #147)

WELDER
TO BE PAID AT THE RATE OF THE JOURNEYPERSON IN THE TRADE PERFORMING THE WORK.

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OFFICE OF THE COMPTROLLER

CITY OF NEW YORK

220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

APPENDIX

Pursuant to Labor Law §220 (3-e), only apprentices who are individually registered in a bona fide program to which the employer contractor is a participant and registered with the New York State Department of Labor, may be employed on a public work project.
Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the journey person wage rate for the classification of work he actually performed.

Apprentice ratios are established to ensure the proper safety, training and supervision of apprentices. A ratio establishes the number of journey workers required for each apprentice in a program and on a job site. Ratios are interpreted as follows: in the case of a 1:1, 1:4 ratio, there must be one journey worker for the first apprentice, and four additional journey workers for each subsequent apprentice.

TABLE OF CONTENTS

ASBESTOS HANDLER
(Ratio of Apprentice Journeyperson: 1 to 1, 1 to 3)

Asbestos Handler (First 1000 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 78% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $15.05

Asbestos Handler (Second 1000 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $15.05

Asbestos Handler (Third 1000 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 83% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $15.05

Asbestos Handler (Fourth 1000 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 89% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $15.05

(Local #78)

BOILERMAKER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Boilermaker (First Year)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $28.75

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $29.74

Boilermaker (Second Year: 1st Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.33

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $31.40

Boilermaker (Second Year: 2nd Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $31.91

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $33.05

Boilermaker (Third Year: 1st Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 80% of Journeyperson's rat
Supplemental Benefit Rate Per Hour: $33.49

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rat
Supplemental Benefit Rate Per Hour: $34.69

Boilermaker (Third Year: 2nd Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 85% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $35.05

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 85% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $36.34

Boilermaker (Fourth Year: 1st Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $36.63

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $38.00

Boilermaker (Fourth Year: 2nd Six Months)

Effective Period: 7/1/2013 - 12/31/2013

Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $38.19

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $39.65

(Local #5)

BRICKLAYER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Bricklayer (First 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Second 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Third 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Fourth 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Fifth 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Sixth 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 95% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: $16.60

(Bricklayer District Council)

CARPENTER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Carpenter (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

Carpenter (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

Carpenter (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

Carpenter (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

(Carpenters District Council)

CEMENT MASON
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Cement Mason (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's Rate

Cement Mason (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's Rate

Cement Mason (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 70% of Journeyperson's Rate

(Local #780)

CEMENT AND CONCRETE WORKER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Cement & Concrete Worker (0 - 500 hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $18.04

Cement & Concrete Worker (501 - 1000 hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $18.87

Cement & Concrete Worker (1001 - 2000 hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $24.25

Cement & Concrete Worker (2001 - 4000 hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $25.07

(Cement Concrete Workers District Council)

DERRICKPERSON & RIGGER (STONE)
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Derrickperson & Rigger (stone) - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: 50% of Journeyperson's rate

Derrickperson & Rigger (stone) - Second Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

Derrickperson & Rigger (stone) - Second Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

Derrickperson & Rigger (stone) - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

(Local #197)

DOCKBUILDER/PILE DRIVER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Dockbuilder/Pile Driver (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

Dockbuilder/Pile Driver (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

Dockbuilder/Pile Driver (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

Dockbuilder/Pile Driver (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

(Carpenters District Council)

ELECTRICIAN
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Electrician (First Term: 0-6 Months)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $12.50
Supplemental Benefit Rate per Hour: $10.86
Overtime Supplemental Rate per Hour: $11.68

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $12.50
Supplemental Benefit Rate per Hour: $11.10
Overtime Supplemental Rate per Hour: $11.93

Electrician (First Term: 7-12 Months)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $13.50
Supplemental Benefit Rate per Hour: $11.37
Overtime Supplemental Rate per Hour: $12.26

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $13.50
Supplemental Benefit Rate per Hour: $11.62
Overtime Supplemental Rate per Hour: $12.51

Electrician (Second Term: 0-6 Months)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $14.50

Supplemental Benefit Rate per Hour: $11.88
Overtime Supplemental Rate per Hour: $12.83

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $14.50
Supplemental Benefit Rate per Hour: $12.13
Overtime Supplemental Rate per Hour: $13.08

Electrician (Second Term: 7-12 Months)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $15.50
Supplemental Benefit Rate per Hour: $12.39
Overtime Supplemental Rate per Hour: $13.41

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $15.50
Supplemental Benefit Rate per Hour: $12.64
Overtime Supplemental Rate per Hour: $13.66

Electrician (Third Term: 0-6 Months)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $16.50
Supplemental Benefit Rate per Hour: $12.90
Overtime Supplemental Rate per Hour: $13.98

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $16.50
Supplemental Benefit Rate per Hour: $13.15
Overtime Supplemental Rate per Hour: $14.23

Electrician (Third Term: 7-12 Months)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $17.50
Supplemental Benefit Rate per Hour: $13.40
Overtime Supplemental Rate per Hour: $14.56

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $17.50
Supplemental Benefit Rate per Hour: $13.65
Overtime Supplemental Rate per Hour: $14.81

Electrician (Fourth Term: 0-6 Months - Hired on or after 5/10/07)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $18.50
Supplemental Benefit Rate per Hour: $13.91
Overtime Supplemental Rate per Hour: $15.13

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $18.50
Supplemental Benefit Rate per Hour: $14.16
Overtime Supplemental Rate per Hour: $15.38

Electrician (Fourth Term: 7-12 Months - Hired on or after 5/10/07)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $20.25
Supplemental Benefit Rate per Hour: $14.80
Overtime Supplemental Rate per Hour: $16.14

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $20.50
Supplemental Benefit Rate per Hour: $15.18
Overtime Supplemental Rate per Hour: $16.53

Electrician (Fifth Term: 0-12 Months - Hired on or after 5/10/07)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $22.00
Supplemental Benefit Rate per Hour: $17.30
Overtime Supplemental Rate per Hour: $18.68

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $22.50
Supplemental Benefit Rate per Hour: $18.06
Overtime Supplemental Rate per Hour: $19.47

Electrician (Fifth Term: 13-18 Months - Hired on or after 5/10/07)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $26.50
Supplemental Benefit Rate per Hour: $19.56
Overtime Supplemental Rate per Hour: $21.23

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $27.00
Supplemental Benefit Rate per Hour: $20.32
Overtime Supplemental Rate per Hour: $22.01

Electrician (Fourth Term: 0-6 Months - Hired before 5/10/07)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $22.10
Supplemental Benefit Rate per Hour: $15.74
Overtime Supplemental Rate per Hour: $17.20

Effective period: 5/14/2014 - 6/30/2014

Wage Rate per Hour: $22.10
Supplemental Benefit Rate per Hour: $15.99
Overtime Supplemental Rate per Hour: $17.45

Electrician (Fourth Term: 7-12 Months - Hired before 5/10/07)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $23.95
Supplemental Benefit Rate per Hour: $16.69
Overtime Supplemental Rate per Hour: $18.26

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $24.20
Supplemental Benefit Rate per Hour: $17.06
Overtime Supplemental Rate per Hour: $18.66

Electrician (Fifth Term: 0-18 Months - Hired before 5/10/07)

Effective period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $25.80
Supplemental Benefit Rate per Hour: $19.21
Overtime Supplemental Rate per Hour: $20.83

Effective period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $26.30
Supplemental Benefit Rate per Hour: $19.96
Overtime Supplemental Rate per Hour: $21.61

Overtime Description

Overtime Wage paid at time and one half the regular rate
For "A" rated Apprentices (work in excess of 7 hours per day)
For "M" rated Apprentices (work in excess of 8 hours per day)

(Local #3)

ELEVATOR CONSTRUCTOR
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Elevator (Constructor) - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $26.87

Elevator (Constructor) - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $27.92

Elevator (Constructor) - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $29.38

Elevator (Constructor) - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: $30.84

(Local #1)

ELEVATOR REPAIR & MAINTENANCE
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Elevator Service/Modernization Mechanic (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Per Hour: $26.79

Elevator Service/Modernization Mechanic (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Benefit Per Hour: $27.12

Elevator Service/Modernization Mechanic (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Per Hour: $28.43

Elevator Service/Modernization Mechanic (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Per Hour: $29.74

(Local #1)

ENGINEER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 5)

Engineer - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.49
Supplemental Benefit Rate per Hour: $20.68

Engineer - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $28.11
Supplemental Benefit Rate per Hour: $20.68

Engineer - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.92
Supplemental Benefit Rate per Hour: $20.68

Engineer - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $33.73
Supplemental Benefit Rate per Hour: $20.68

(Local #15)

ENGINEER - OPERATING
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 5)

Operating Engineer - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour 40% of Journeyperson's Rate
Supplemental Benefit Per Hour: $18.60

Operating Engineer - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's Rate
Supplemental Benefit Per Hour: $18.60

Operating Engineer - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's Rate
Supplemental Benefit Per Hour: $18.60

(Local #14)

FLOOR COVERER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Floor Coverer (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $25.75

Floor Coverer (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $25.75

Floor Coverer (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $25.75

Floor Coverer (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $25.75

(Carpenters District Council)

GLAZIER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Glazier (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $11.97

Glazier (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $21.13

Glazier (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $23.54

Glazier (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $28.34

(Local #1281)

HEAT & FROST INSULATOR
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Heat & Frost Insulator (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Heat & Frost Insulator (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Heat & Frost Insulator (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 70% of Journeyperson's rate

Heat & Frost Insulator (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #12)

HOUSE WRECKER
(TOTAL DEMOLITION)
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

House Wrecker - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.36
Supplemental Benefit Rate per Hour: $16.35

House Wrecker - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $21.46
Supplemental Benefit Rate per Hour: $16.35

House Wrecker - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.01
Supplemental Benefit Rate per Hour: $16.35

House Wrecker - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.36
Supplemental Benefit Rate per Hour: $16.35

(Local #79)

IRON WORKER - ORNAMENTAL
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Iron Worker (Ornamental) - 1st Four Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $35.78

Iron Worker (Ornamental) 5 - 10 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $36.75

Iron Worker (Ornamental) 11 - 16 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $37.72

Iron Worker (Ornamental) 17 - 22 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $39.66

Iron Worker (Ornamental) 23 - 28 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 85% of Journeyperson's rate
Supplemental Rate Per Hour: $40.63

Iron Worker (Ornamental) 29 - 36 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Rate Per Hour: $42.57

Iron Worker (Ornamental) - 1st Ten Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $33.84

Iron Worker (Ornamental) - 11 - 16 Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Rate Per Hour: $34.81

Iron Worker (Ornamental) - 17 - 22 Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $35.78

Iron Worker (Ornamental) - 23 - 28 Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $37.72

Iron Worker (Ornamental) - 29 - 36 Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $39.66

(Local #580)

IRON WORKER - STRUCTURAL
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Iron Worker (Structural) - 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $24.48
Supplemental Benefit Rate per Hour: $43.87

Iron Worker (Structural) - 7- 18 Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.08
Supplemental Benefit Rate per Hour: $43.87

Iron Worker (Structural) - 19 - 36 months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.68
Supplemental Benefit Rate per Hour: $43.87

(Local #40 and #361)

LABORER (FOUNDATION, CONCRETE, EXCAVATING, STREET PIPE LAYER & COMMON)
(Ratio Apprentice to Journeyperson: 1 to 1, 1 to 3)

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - First 1000 hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $33.25

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Second 1000 hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $33.25

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Third 1000 hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: $33.25

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Fourth 1000 hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Rate Per Hour: $33.25

(Local #731)

MARBLE MECHANICS
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Cutters & Setters - First 750 Hours

Effective Period: 7/1/2013 - 6/30/2014

Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Cutters & Setters - Second 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

Cutters & Setters - Third 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

Cutters & Setters - Fourth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Cutters & Setters - Fifth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

Cutters & Setters - Sixth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 95% of Journeyperson's rate

Polishers & Finishers - First 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Polishers & Finishers - Second 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Polishers & Finishers - Third 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Polishers & Finishers - Fourth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 90% of Journeyperson's rate

(Local #7)

MASON TENDER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Mason Tender - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.63
Supplemental Benefit Rate per Hour: $17.06

Mason Tender - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $21.73
Supplemental Benefit Rate per Hour: $17.06

Mason Tender - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.33
Supplemental Benefit Rate per Hour: $17.06

Mason Tender - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.93
Supplemental Benefit Rate per Hour: $17.06

(Local #79)

METALLIC LATHER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Metallic Lather (First Year -Called Prior to 6/29/11)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $28.11

Supplemental Benefit Rate per Hour: $22.79

Metallic Lather (Second Year - Called Prior to 6/29/11)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $32.71
Supplemental Benefit Rate per Hour: $24.44

Metallic Lather (Third Year - Called Prior to 6/29/11)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $37.77
Supplemental Benefit Rate per Hour: $25.59

Metallic Lather (First Year -Called On Or After 6/29/11)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $17.71
Supplemental Benefit Rate per Hour: $19.85

Metallic Lather (Second Year - Called On Or After 6/29/11)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.81
Supplemental Benefit Rate per Hour: $19.85

Metallic Lather (Third Year - Called On Or After 6/29/11)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $27.91
Supplemental Benefit Rate per Hour: $19.85

(Local #46)

MILLWRIGHT
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Millwright (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $26.23
Supplemental Benefit Rate per Hour: $31.51

Millwright (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $31.00
Supplemental Benefit Rate per Hour: $34.77

Millwright (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.77
Supplemental Benefit Rate per Hour: $39.19

Millwright (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.30
Supplemental Benefit Rate per Hour: $44.63

(Local #740)

PAVER AND ROADBUILDER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Paver and Roadbuilder - First Year (Minimum 1000 hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $26.19
Supplemental Benefit Rate per Hour: $16.20

Paver and Roadbuilder - Second Year (Minimum 1000 hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $27.77
Supplemental Benefit Rate per Hour: $16.20

(Local #1010)

PAINTER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Painter - Brush & Roller - First Year

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $15.00
Supplemental Benefit Rate per Hour: $11.38

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $15.80
Supplemental Benefit Rate per Hour: $11.88

Painter - Brush & Roller - Second Year

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $18.75
Supplemental Benefit Rate per Hour: $15.23

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $19.75
Supplemental Benefit Rate per Hour: $15.73

Painter - Brush & Roller - Third Year

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $22.50
Supplemental Benefit Rate per Hour: $18.14

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $23.70
Supplemental Benefit Rate per Hour: $18.64

Painter - Brush & Roller - Fourth Year

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $30.00
Supplemental Benefit Rate per Hour: $23.52

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $31.60
Supplemental Benefit Rate per Hour: $24.02

(District Council of Painters)

PAINTER - STRUCTURAL STEEL
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Painters - Structural Steel (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Painters - Structural Steel (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Painters - Structural Steel (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #806)

PLASTERER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Plasterer - First Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $12.76

Plasterer - First Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: $13.24

Plasterer - Second Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $15.21

Plasterer - Second Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $16.29

Plasterer - Third Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $18.46

Plasterer - Third Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: $19.54

(Local #530)

PLUMBER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Plumber - First Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $14.00
Supplemental Benefit Rate per Hour: $0.71

Plumber - First Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $14.00
Supplemental Benefit Rate per Hour: $2.96

Plumber - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $18.26
Supplemental Benefit Rate per Hour: $16.32

Plumber - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.36
Supplemental Benefit Rate per Hour: $16.32

Plumber - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.21
Supplemental Benefit Rate per Hour: $16.32

Plumber - Fifth Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $24.61
Supplemental Benefit Rate per Hour: $16.32

Plumber - Fifth Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $36.68
Supplemental Benefit Rate per Hour: $16.32

(Plumbers Local #1)

POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING RENOVATION)
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Pointer - Waterproofer, Caulker Mechanic - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.00
Supplemental Benefit Rate per Hour: $3.64

Pointer - Waterproofer, Caulker Mechanic - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $27.25
Supplemental Benefit Rate per Hour: $8.59

Pointer - Waterproofer, Caulker Mechanic - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $32.23
Supplemental Benefit Rate per Hour: $11.34

Pointer - Waterproofer, Caulker Mechanic - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014

Wage Rate per Hour: $38.66
Supplemental Benefit Rate per Hour: $11.34

(Bricklayer District Council)

ROOFER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Roofer - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 35% of Journeyperson's Rate

Roofer - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's Rate

Roofer - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's Rate

Roofer - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's Rate

(Local #8)

SHEET METAL WORKER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Sheet Metal Worker - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 30% of Journeyperson's rate
Supplemental Rate Per Hour: $15.37

Sheet Metal Worker - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 35% of Journeyperson's rate
Supplemental Rate Per Hour: $18.24

Sheet Metal Worker - Third Year (1st Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $20.06

Sheet Metal Worker - Third Year (2nd Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: $21.87

Sheet Metal Worker - Fourth Year (1st Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $23.69

Sheet Metal Worker - Fourth Year (2nd Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $25.33

Sheet Metal Worker - Fifth Year (1st Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $27.47

Sheet Metal Worker - Fifth Year(2nd Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $31.23

(Local #28)

SIGN ERECTOR
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Sign Erector - First Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 35% of Journeyperson's rate
Supplemental Rate Per Hour: $5.96

Sign Erector - First Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $6.75

Sign Erector - Second Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: $7.55

Sign Erector - Second Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $8.34

Sign Erector - Third Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $9.13

Sign Erector - Third Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $9.92

Sign Erector - Fourth Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $10.72

Sign Erector - Fourth Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $11.51

Sign Erector - Fifth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: $12.30

Sign Erector - Sixth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $12.30

(Local #137)

STEAMFITTER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Steamfitter - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Per Hour: 40% of Journeyperson's rate

Steamfitter - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Rate Per Hour: 50% of Journeyperson's rate.

Steamfitter - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Rate per Hour: 65% of Journeyperson's rate.

Steamfitter - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Rate Per Hour: 80% of Journeyperson's rate.

Steamfitter - Fifth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Rate Per Hour: 85% of Journeyperson's rate.

(Local #638)

STONE MASON - SETTER
(Ratio Apprentice of Journeyperson: 1 to 1, 1 to 2)

Stone Mason - Setters - First 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Second 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Third 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Fourth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Fifth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Sixth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 100% of Journeyperson's rate
Supplemental Rate Per Hour: 50% of Journeyperson's rate

(Bricklayers District Council)

TAPER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Drywall Taper - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Drywall Taper - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Drywall Taper - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #1974)

TILE LAYER - SETTER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Tile Layer - Setter - First 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Tile Layer - Setter - Second 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

Tile Layer - Setter - Third 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

Tile Layer - Setter - Fourth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Tile Layer - Setter - Fifth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

Tile Layer - Setter - Sixth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 95% of Journeyperson's rate

(Local #7)

TIMBERPERSON
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Timberperson - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $30.04

Timberperson - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $30.04

Timberperson - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $30.04

Timberperson - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $30.04

(Local #1536)

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LABOR LAW § 230 AND NYC ADMINISTRATIVE CODE § 6-130
BUILDING SERVICE EMPLOYEES

PREVAILING WAGE FOR BUILDING SERVICE EMPLOYEES ON NYC CONTRACTS PURSUANT TO LABOR LAW § 230 ET SEQ.

Building service employees on public contracts must receive not less than the prevailing rate of wage and supplements for the classification of work performed. In accordance with Labor Law §230 et seq. the Comptroller of the City of New York has promulgated this schedule of prevailing wages and supplemental benefits for building service employees engaged on New York City public building service contracts in excess of $1,500.00. Prevailing rates are required to be annexed to and form part of the contract pursuant to §231 (4).

Contracting agencies that anticipate doing work that may require building service trades or classifications not included in this schedule may request the Comptroller to establish a proper classification and wage determination for the work. Contractors using trades and/or classifications for which the Comptroller has not promulgated wages and benefits do so at their own risk.

Contractors are advised to review the applicable Comptroller's Prevailing Wage Schedule before bidding on public work. Any Prevailing Wage Rate error made by the Contracting Agency, whether in a contract document or other communication, will not preclude a finding against the contractor of a prevailing-wage violation.

PREVAILING WAGE FOR BUILDING SERVICE EMPLOYEES IN NEW YORK CITY LEASED OR FINANCIALLY ASSISTED FACILITIES PURSUANT TO NYC ADMINISTRATIVE CODE § 6-130

Covered landlords & covered financial assistance recipients shall ensure that all building service employees performing building service work at the premises to which a lease or financial assistance pertains are paid no less than the prevailing wage listed in the Labor Law §230 Prevailing Wage Schedule.

Covered Landlords include:

Businesses (other than not-for-profit organizations) leasing to New York City agencies commercial office space or commercial office facilities of 10,000 square feet or more where the City leases or rents no less than 51% of the total square footage of the building to which the lease applies (no less than 80% in Staten Island or in an area not defined as an exclusion area pursuant to section 421-a of the real property tax law on the date of enactment of the local law).

Covered Financial Assistance Recipients include:

Businesses (other than not-for-profit organizations) with annual gross revenues of five million dollars or more who have received financial assistance from the City of New York (as defined in New York City Administrative Code §6-130) with a total value of one million dollars or more.

Exemptions: Business Improvement Districts and employers with manufacturing operations at the premises to which the financial assistance pertains.

The information is intended to assist you in meeting your prevailing wage obligation. You should consult New York City Administrative Code §6-130 to determine whether you are covered by this prevailing wage law. New York City Administrative Code § 6-130 requires the City to maintain an updated list of covered landlords and financial assistance recipients who are subject to the prevailing wage requirement.

Labor Law § 231 (6) and NYC Administrative Law §6-130 require contractors to post on the site of the work a current copy of this schedule of wages and supplements.

This schedule is applicable to work performed during the effective period, unless otherwise noted. Changes to this schedule are published on our web site www.comptroller.nyc.gov. Contractors must pay the wages and supplements in effect when the building service employee performs the work. Preliminary schedules for future one-year periods appear in the City Record on or about June 1 each succeeding year. Final schedules appear on or about July 1 in the City Record and on our web site www.comptroller.nyc.gov.

Contractors are solely responsible for maintaining original payroll records delineating, among other things, the hours worked by each employee within a given classification.

Some of the rates in this schedule are based on collective bargaining agreements. The Comptroller's Office has attempted to include all overtime, shift and night differential, Holiday, Saturday, Sunday or other premium time work. However, this schedule does not set forth every prevailing practice with respect to such rates with which employers must comply. All such practices are nevertheless part of the employer's prevailing wage obligation and contained in the collective bargaining agreements of the prevailing wage unions. These collective bargaining agreements are available for inspection by appointment. Requests for appointments may be made by calling (212) 669-4443, Monday through Friday between the hours of 9 a.m. and 5 p.m.

Answers to questions concerning prevailing trade practices may be obtained from the Classification Unit by calling (212) 669-7974. Please direct all other compliance issues to: Bureau of Labor Law, Attn: Wasyl Kinach, P.E., Office of the Comptroller, 1 Centre Street, Room 1122, New York, N.Y. 10007; Fax (212) 669-4002.

In order to meet their obligation to provide prevailing supplemental benefits to each covered employee, employers must either:

1) Provide bona-fide benefits which cost the employer no less than the prevailing supplemental benefits rate; or
2) Supplement the employee's hourly wage by an amount no less than the prevailing supplemental benefits rate; or
3) Provide a combination of bona-fide benefits and wage supplements which cost the employer no less than the prevailing supplemental benefits rate in total.

Benefits are paid for *EACH HOUR WORKED* unless otherwise noted.

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OFFICE OF THE COMPTROLLER
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TEL: (212) 669-4443
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If you are a Covered Building Service Employee and you have been paid less than the Prevailing Wage and Benefits, please contact us at 212–669–4443 or download our complaint form from our website at WWW.COMPTROLLER.NYC.GOV (click on the Bureau of Labor Law).

Si es un empleado de servicios a edificios elegible y recibió menos del sueldo prevalente y beneficios, por favor contáctenos en 212-669-4443 o descarga un formulario de reclamo del sitio del Internet WWW.COMPTROLLER.NYC.GOV (oprime "Oficina de Derecho Laboral").

Wasyl Kinach, P.E.
Director of Classifications
Bureau of Labor Law

TABLE OF CONTENTS

BOILER SERVICEPERSON/TANK CLEANER MECHANIC (LOW PRESSURE)

Boiler Service Person/Tank Cleaner Mechanic (Low Pressure)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $11.37
Supplemental Benefit Rate per Hour: $5.57

Overtime Description
Work in excess of 8 hours performed on a Sunday or Holiday shall be paid two and one half times the regular rate.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays
New Year's Day
Martin Luther King Jr. Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day
Employee's Birthday

Vacation
1 year service.....five (5) days
3 years service or more.....ten (10) days
8 years service or more.....fifteen (15) days
13 years service or more.....twenty (20) days

SICK LEAVE:
1-2 years employment.....4 days
2-3 years employment.....5 days
3-4 years employment.....6 days
4-5 years employment.....8 days
6 years or more employment.....10 days

(Local #32 B/J)

BUILDING CLEANER AND MAINTAINER (OFFICE)

Office Building Class "A" Handyperson (Over 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $25.10
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.55
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "A" Foreperson, Starter (Over 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $24.99
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.44
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "A" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Over 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $22.97
Supplemental Benefit Rate per Hour: $9.51
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $23.42
Supplemental Benefit Rate per Hour: $9.91
Supplemental Note: for new employee 0-12 months of employment - $7.22; for new employee 13-24 months of employment - $9.58

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Office Building Class "B" Handyperson (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $25.07
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.52
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "B" Foreperson, Starter (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $24.95
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.40
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "B" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $22.94
Supplemental Benefit Rate per Hour: $9.51
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $23.39
Supplemental Benefit Rate per Hour: $9.91
Supplemental Note: for new employee 0-12 months of employment - $7.22; for new employee 13-24 months of employment - $9.58

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Office Building Class "C" Handyperson (Less than 120,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $25.02
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.47
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "C" Foreperson, Starter (Less than 120,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $24.91
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.36
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "C" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Less than 120,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $22.90
Supplemental Benefit Rate per Hour: $9.51
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment; and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $23.35
Supplemental Benefit Rate per Hour: $9.91
Supplemental Note: for new employee 0-12 months of employment - $7.22; for new employee 13-24 months of employment - $9.58

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for work on a holiday plus the day's pay.
Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Vacation

Less than 6 months of work.....no vacation
6 months of work.....three (3) days
1 year of work.....ten (10) days
5 years of work.....fifteen (15) days
15 years of work.....twenty (20) days
21 years of work.....twenty-one (21) days
22 years of work.....twenty-two (22) days
23 years of work.....twenty-three (23) days
24 years of work.....twenty-four (24) days
25 years or more of work.....twenty-five (25) days
Plus two Personal Days per year.

Sick Leave:
10 sick days per year.
Unused sick leave paid in the succeeding January, one full day pay for each unused sick day.

(Local #32 B/J)

BUILDING CLEANER AND MAINTAINER (RESIDENTIAL)

Residential Building Class "A" Handyperson

Residential Buildings Class "A": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of over $4000.00 a room.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.57
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: Effective 1/1/2014 - $9.83

Residential Building Class "A" Cleaner/Porter

Residential Buildings Class "A": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of over $4000.00 a room.

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $21.34
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

NEW HIRE: Porter/Cleaner, may be paid a starting rate of 80% of the hourly rate published above. Upon completion of 30 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $21.34
Supplemental Benefit Rate per Hour: $9.83
Supplemental Note: for new employee 0-12 months of employment - $7.22; for new employee 13-24 months of employment - $9.58

NEW HIRE: Porter/Cleaner, may be paid a starting rate of 80% of the hourly rate published above. Upon completion of 30 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Residential Building Class "B" Handyperson

Residential Building Class "B": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of over $2000.00 a room and not over $4000.00 a room.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.51
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: Effective 1/1/2014 - $9.83

Residential Building Class "B" Cleaner/Porter

Residential Building Class "B": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of over $2000.00 a room and not over $4000.00 a room.

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $21.28
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

NEW HIRE: Porter/Cleaner, may be paid a starting rate of 80% of the hourly rate published above. Upon completion of 30 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2014 - 6/30/2014

Wage Rate per Hour: $21.28
Supplemental Benefit Rate per Hour: $9.83
Supplemental Note: for new employee 0-12 months of employment - $7.22; for new employee 13-24 months of employment - $9.58

NEW HIRE: Porter/Cleaner, may be paid a starting rate of 80% of the hourly rate published above. Upon completion of 30 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Residential Building Class "C" Handyperson

Residential Building Class "C": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of $2000.00 or less a room.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.45
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: Effective 1/1/2014 - $9.83

Residential Building Class "C" Cleaner/Porter

Residential Building Class "C": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of $2000.00 or less a room.

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $21.23
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

NEW HIRE: Porter/Cleaner, may be paid a starting rate of 80% of the hourly rate published above. Upon completion of 30 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $21.23
Supplemental Benefit Rate per Hour: $9.83
Supplemental Note: for new employee 0-12 months of employment - $7.22; for new employee 13-24 months of employment - $9.58

NEW HIRE: Porter/Cleaner, may be paid a starting rate of 80% of the hourly rate published above. Upon completion of 30 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for work on a holiday plus the day's pay.
Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Thanksgiving Day
Christmas Day

Vacation

6 months.....three (3) days
1 year.....ten (10) days
5 years.....fifteen (15) days
15 years.....twenty (20) days
21 years.....twenty-one (21) days
22 years.....twenty-two (22) days
23 years.....twenty-three (23) days
24 years.....twenty-four (24) days
25 years.....twenty-five (25) days
Plus two Personal Days per year.

SICK LEAVE
After 1 year of service.....ten (10) days per year.
(Local #32 B/J)

BUILDING HVAC SERVICES OPERATOR

Engineer (Refrigeration)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $35.18
Supplemental Benefit Rate per Hour: $15.78

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $36.73
Supplemental Benefit Rate per Hour: $16.35

Fireperson

Fireperson (Helper): Assist the Engineer

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $27.39
Supplemental Benefit Rate per Hour: $15.41

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $28.60

Supplemental Benefit Rate per Hour: $15.97

Overtime Description
All hours worked on a holiday shall be paid at two and one half times the regular wage rate in lieu of the paid day off.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Paid Holidays
New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day
Plus six (6) floating Holidays

Vacation
6 months ..... three (3) days
1 year ..... ten (10) days
5 years ..... fifteen (15) days
15 years ..... twenty (20) days
21 years..... twenty-one (21) days
22 years ..... twenty-two (22) days
23 years ..... twenty-three (23) days
24 years ..... twenty-four (24) days
25 years ..... twenty-five (25) days

(Local #94)

CLEANER (PARKING GARAGE)

Garage Cleaner

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $11.20
Supplemental Benefit Rate per Hour: $1.72

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

FUEL OIL

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (5th Year and above)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $30.61
Supplemental Benefit Rate per Hour: $20.42

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (4th Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $28.00
Supplemental Benefit Rate per Hour: $20.42

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (3rd Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $26.00
Supplemental Benefit Rate per Hour: $20.42

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (2nd Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $24.00
Supplemental Benefit Rate per Hour: $20.42

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (1st Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.00
Supplemental Benefit Rate per Hour: $20.42

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
Martin Luther King Jr. Day
Lincoln's Birthday
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day

Veteran's Day

Triple time the regular rate for work on the following holiday(s).
New Year's Day
Thanksgiving Day
Christmas Day

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
Lincoln's Birthday
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

Vacation

Less than 75 days worked.....no vacation.
75 days worked, but less than 110 days worked in a calendar year.....five (5) days the following year.
110 days or more worked in a calendar year.....ten (10) days the following year.

SICK LEAVE:
1 day sick leave earned for each 40 days worked in the preceding calendar year for a maximum of five (5) days per calendar year.

(Local #553)

GARDENER

Gardener

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $17.16
Supplemental Benefit Rate per Hour: $1.72

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

LOCKSMITH

Locksmith

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $19.63
Supplemental Benefit Rate per Hour: $6.20

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

MEDICAL WASTE REMOVAL

Driver

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $18.00
Supplemental Benefit Rate per Hour: $9.34

Helper

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $14.25
Supplemental Benefit Rate per Hour: $9.34

Tractor Trailer Driver

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.50
Supplemental Benefit Rate per Hour: $9.34

Overtime Description
Time and one half the regular hourly rate after an 8 hour day or after 40 hours in any work week. The seventh day of work in a workweek is paid at double time the regular hourly rate. Time and one half the regular hourly rate for work on a holiday plus days pay for below paid holidays.

Paid Holidays
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day

Christmas Day

Vacation

1 year of service but less than five years.....ten (10) days
5 years of service but less than ten years.....fifteen (15) days
10 years of service.....sixteen (16) days
11 years.....seventeen (17) days
12 years.....eighteen (18) days
13 years.....nineteen (19) days
14 years.....twenty (20) days
20 years.....twenty-one (21) days
21 years.....twenty-two (22) days
22 years.....twenty-three (23) days
23 years.....twenty-four (24) days
24 years.....twenty-five (25) days
Plus 5 Personal Days

(Local #813)

MOVER - OFFICE FURNITURE AND EQUIPMENT

Heavy and Tractor Trailer Truck Driver

Tractor-trailer combination or a truck with a capacity of at least 26,000 pounds Gross Vehicle Weight (GVW)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.57
Supplemental Benefit Rate per Hour: $4.49

Light Truck Driver

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $19.81
Supplemental Benefit Rate per Hour: $4.49

Laborer and Freight, Stock, and Material Movers, Hand

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $17.51
Supplemental Benefit Rate per Hour: $4.49

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

REFUSE REMOVER

Refuse Remover

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $29.27
Supplemental Benefit Rate per Hour: $4.49

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

SECURITY GUARD (ARMED)

Security Guard (Armed)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $28.00
Supplemental Benefit Rate per Hour: $4.90
Supplemental Note: for new employee 0-30 days of employment - $4.26; for new employee 31-120 days of employment - $4.43; for new employee 121 days - 2 years of employment - $4.54

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $28.25
Supplemental Benefit Rate per Hour: $5.02
Supplemental Note: for new employee 0-30 days of employment - $4.44; for new employee 31-120 days of employment - $4.61; for new employee 121 days - 2 years of employment - $4.63

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime Description
A guard who works a holiday is paid the regular rate plus receives the paid holiday.
Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day
Personal Day

Vacation

Months on payroll	Vacation with Pay
6	3 days
12	5 days
24	10 days
60	15 days
180	20 days
300	25 days

Sick Leave
Employees accrue paid sick leave at the rate of one (1) sick day for every six (6) months worked, up to a maximum of six (6) days a year.

(Local #32B/J)

SECURITY GUARD (UNARMED)

Security Guard (Unarmed) 0 - 6 months

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $12.85
Supplemental Benefit Rate per Hour: $4.54
Supplemental Note: for new employee 0-30 days of employment - $4.26; for new employee 31-120 days of employment - $4.43

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $13.10
Supplemental Benefit Rate per Hour: $4.63
Supplemental Note: for new employee 0-30 days of employment - $4.44; for new employee 31-120 days of employment - $4.61

Security Guard (Unarmed) 7 - 12 months

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $13.35
Supplemental Benefit Rate per Hour: $4.54

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $13.60
Supplemental Benefit Rate per Hour: $4.63

Security Guard (Unarmed) 13 - 18 months

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $13.85
Supplemental Benefit Rate per Hour: $4.54

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $14.10
Supplemental Benefit Rate per Hour: $4.63

Security Guard (Unarmed) 19 - 24 months

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $14.35
Supplemental Benefit Rate per Hour: $4.54

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $14.60
Supplemental Benefit Rate per Hour: $4.63

Security Guard (Unarmed) 25 - 30 months

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $14.85
Supplemental Benefit Rate per Hour: $4.90

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $15.10
Supplemental Benefit Rate per Hour: $5.02

Security Guard (Unarmed) 31 months or more

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $15.15
Supplemental Benefit Rate per Hour: $4.90

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $15.60
Supplemental Benefit Rate per Hour: $5.02

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime Description

A guard who works a holiday is paid the regular rate plus receives the paid holiday.
Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day
Personal Day

Vacation

Months on payroll	Vacation with Pay
6	3 days
12	5 days
24	10 days
60	15 days
180	20 days
300	25 days

Sick Leave
Employees accrue paid sick leave at the rate of one (1) sick day for every six (6) months worked, up to a maximum of six (6) days a year.

(Local #32B/J)

WINDOW CLEANER

Window Cleaner

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $26.44
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $26.90
Supplemental Benefit Rate per Hour: $9.91

Power Operated Scaffolds, Manual Scaffolds, and Boatswain Chairs

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $28.69
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $29.27
Supplemental Benefit Rate per Hour: $9.91

Window Cleaner Apprentice (0 - 3 months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $19.59
Supplemental Benefit Rate per Hour: None

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $19.92
Supplemental Benefit Rate per Hour: None

Window Cleaner Apprentice (4 - 7 months)

Employee must be a registered apprentice with the New York State Department of Labor

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $21.18
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $21.54
Supplemental Benefit Rate per Hour: $9.91

Window Cleaner Apprentice (8 - 11 months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $22.44
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $22.82
Supplemental Benefit Rate per Hour: $9.91

Window Cleaner Apprentice (12 - 15 months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $23.72
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $24.12
Supplemental Benefit Rate per Hour: $9.91

Window Cleaner Apprentice (16 - 17 months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $25.01
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014

Wage Rate per Hour: $25.44
Supplemental Benefit Rate per Hour: $9.91

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day
Personal Day

Vacation

After 7 months but less than 1 year of service.....five (5) days
1 year but less than 5 years of service.....ten (10) days
5 years of service but less than 15 years of service.....fifteen (15) days
15 years of service but less than 21 years of service.....twenty (20) days
21 years.....twenty-one (21) days
22 years.....twenty-two (22) days
23 years.....twenty-three (23) days
24 years.....twenty-four (24) days
25 years or more of service.....twenty-five (25) days
Plus 1 day per year for medical visit

SICK LEAVE:
10 days after one year worked. Unused sick days to be paid in cash.

(Local #32 B/J)

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June 01, 2013

NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

DDC STANDARD GENERAL CONDITIONS

FOR SINGLE CONTRACT PROJECTS

NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

June 01, 2013

No Text

June 01, 2013

NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

DIVISION 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
TABLE OF CONTENTS

NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

NO TEXT

SECTION 01 10 00
SUMMARY

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

B. Addendum to the General Conditions: These General Conditions include and are supplemented by the Addendum to the General Conditions (the "Addendum"). The Addendum includes the following: (1) schedules referred to in these General Conditions (Schedule A through F), (2) information regarding the applicability of various articles, and (3) amended articles, if any.

1.2 SUMMARY:

A. This section includes the following:

1. Scope and Intent
2. Provisions Referenced in the Contract
3. Performance of Work During Non-Regular Work Hours (Pursuant to a Change Order)
4. Interruption of Services at Existing Facilities

1.3 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 SCOPE AND INTENT:

A. Description of Project: Refer to the Addendum for a description of the project.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.4 B

B. LEED: The City of New York will seek U.S. Green Building Council (USGBC) LEED (Leadership in Energy and Environmental Design) certification for this Project as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS" and the Addendum to the General Conditions.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.4 C

C. COMMISSIONING: The project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS, and the Addendum to the General Conditions. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

D. PROGRESS SCHEDULE: Refer to Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION for requirements of the project.

E. COMPLETION OF WORK: Work to be done under the Contract is comprised of the furnishing of all labor, materials, equipment and other appurtenances, and obtaining all regulatory agency approvals necessary and required to complete the construction work in accordance with the Contract.

F. OMISSION OF DETAILS: All work called for in the Specifications applicable to the 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. The cost of such work shall be deemed included in the total Contract Price.

G. WORK NOT IN SPECIFICATIONS OR CONTRACT DRAWINGS: Work not particularly specified in the Specifications nor detailed on the Contract Drawings but involved in carrying out their intent or in the complete and proper execution of the work, is required, and shall be performed by the Contractor. The cost of such work shall be deemed included in the total Contract Price.

H. SILENCE OF THE SPECIFICATIONS: The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best practice is to prevail and that only the best material and workmanship is to be used and interpretation of the Specifications shall be made upon that basis.

I. CONFLICT BETWEEN CONTRACT DRAWINGS AND SPECIFICATIONS: Should any conflict occur in or between the Drawings and Specifications, 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 before the submission of the bid as to what shall govern.

1.5 CONTRACT DRAWINGS AND SPECIFICATIONS:

A. SCHEDULE C - The Contract Drawings are listed in Schedule C, which is set forth in the Addendum. Such drawings referred to in the Contract, and in the applicable Specifications for the Contract, bear the general title:

City of New York
Department of Design and Construction
Division of Public Buildings

B. DOCUMENTS FURNISHED TO THE CONTRACTOR - After the award of the Contract, the Contractor will be furnished with five (5) complete sets of paper prints of all Contract Drawings mentioned in Paragraph A above, as well as a copy of the Specifications.

C. ADDITIONAL COPIES of Drawings and Specifications, when requested, will be furnished to the Contractor if available.

D. 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.

E. COMPENSATION - Where Supplementary Drawings entail extra work, compensation therefore 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.

F. SUPPLEMENTARY DRAWING PRINTS - Three (3) copies of prints of these Supplementary Drawings will be furnished to the Contractor.

G. 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.

1.6 COORDINATION:

A. COORDINATION AND COOPERATION - The Contractor shall consult and study the requirements of the Contract Drawings and Specifications for all required work, including all work to be performed by trade subcontractors, so that the Contractor may become acquainted with the work of the project as a whole in order to achieve the proper coordination and cooperation necessary for the efficient and timely performance of the work.

B. CONTRACTOR TO CHECK DRAWINGS: - 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.

1.7 SHOP DRAWINGS AND RECORD DRAWINGS:

Refer to Division I Section 01 33 00 – SUBMITAL PROCEDURES and Section 01 78 39 – PROJECT RECORD DRAWINGS for requirements applicable to shop drawings and record drawings.

1.8 TEMPORARY FACILITIES, SERVICES AND CONTROLS:

Refer to Division I Section 01 50 00 – TEMPORARY FACILITIES SERVICES AND CONTROLS for the responsibilities of the Contractor.

1.9 DUST CONTROL:

The Contractor shall prepare, execute and manage a "Dust Control Plan" for the prevention of the emission of dust from construction related activities in compliance with 15 RCNY 13-01 et. seq.

1.10 PROVISIONS REFERENCED IN THE CONTRACT:

A. SCHEDULE A - Various Articles of the Contract refer to requirements set forth in Schedule A of the General Conditions. Schedule A, which is included in the Addendum, sets forth (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to the Contract.

B. EXTENSION OF TIME - Applications for Extensions of Time, as indicated in Article 13 of the Contract, shall be made in accordance with the Rules of the Procurement Policy Board.

C. PARTIAL PAYMENTS FOR MATERIALS IN ADVANCE OF THEIR INCORPORATION IN THE WORK PURSUANT TO ARTICLE 42 OF THE CONTRACT – In order to better insure the availability of materials, fixtures and equipment when needed for the work, the Commissioner may authorize partial payment for certain materials, fixtures and equipment, prior to their incorporation in the work, but only in strict accordance with, and subject to, all the terms and conditions set forth in the Specifications, unless an alternate method of payment is elsewhere provided in the Specifications for specified materials, fixtures or equipment.

1. 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 therefore.

6. The Contractor shall pay any and all costs of handling and delivery of materials, to the place of storage and from the place of storage to the site of the work; and the City shall have the right to retain from any partial or final payment an amount sufficient to cover the cost of such handling and delivery.

7. In the event that the whole or any part of these materials are lost, damaged or destroyed in advance of their satisfactory incorporation in the work, the Contractor, at the Contractor's own cost, shall replace such lost, damaged or destroyed materials of the same character and quality. The City will reimburse the Contractor for the cost of the replaced materials to the extent, and only to the extent, of the funds actually received by the City under the policies of insurance hereinbefore referred to. Until such time as the materials are replaced, the City will deduct from the value of the stored materials or from any other money due under the Contract, the amount paid to the Contractor for such lost, damaged or destroyed materials.

8. Should any of the materials paid for the City hereunder be subsequently rejected or incorporated in the work in a manner or by a method not in accordance with the Contract Documents, the Contractor shall remove and replace, at Contractor's own cost, such defective or improperly incorporated material with materials complying with the Contract Documents. Until such materials are replaced, the City will deduct from the value of the stored materials or from any other money due the Contractor, the amount paid by the City for such rejected or improperly incorporated materials.

9. Payments for the cost of materials made hereunder shall not be deemed to be an acceptance of such materials as being in accordance with the Contract Documents, and the Contractor always retains and must comply with the Contractor's duty to deliver to the site and properly incorporate in the work only materials which comply with the Contract Documents.

10. The Contractor shall retain any and all risks in connection with the damage, destruction or loss of the materials paid for hereunder to the time of delivery of the same to the site of the work and their proper incorporation in the work in accordance with the Contract Documents.

11. The Contractor shall comply with all laws and the regulations of any governmental body or agency pertaining to the priority purchase, allocation and use of the materials.

12. When requesting payment for such materials, the Contractor shall submit with the partial estimate duly authenticated documents of title, such as bills of sale, invoices or warehouse receipts, all in quadruplicate. The executed bills of sale shall transfer title to the materials from the Contractor to the City. (In the event that the invoices state that the material has been purchased by a subcontractor, bills of sale in quadruplicate will also be required transferring title to the materials from subcontractor to the Contractor).

13. Where the Contractor, with the approval of the Commissioner, has purchased unusually large quantities of materials in order to assure their availability for the work, the Commissioner, at the Commissioner's option, may waive the requirements of Paragraph 12 provided the Contractor furnishes evidence in the form of an affidavit from the Contractor in quadruplicate, and such other proof as the Commissioner may require, that the Contractor is the sole owner of such materials and has purchased them free and clear of all liens and other encumbrances. In such event, the Contractor shall pay for such materials and submit proof thereof, in the same manner as provided in Paragraph 12 hereof, within seven (7) days after receipt of payment therefore from the Comptroller. Failure on the part of the Contractor to submit satisfactory evidence that all such materials have been paid for in full, shall preclude the Contractor from payments under the Contract.

14. The Contractor shall include in each succeeding partial estimate requisition a summary of materials stored which shall set forth the quantity and value of materials in storage, on or off the site, at the end of each preceding estimate period; the amount removed for incorporation in the work; the quantity and value of materials delivered during the current period and the total value of materials on hand for which payment thereof will be included in the current payment estimate.

15. Upon proof to the satisfaction of the Commissioner of the actual cost of such materials and upon submission of proper proof of title as required under Paragraph 12 or Paragraph 13 hereof, payment will be made therefore to the extent of 85%, provided however, that the cost so verified, established and approved shall not exceed the estimated cost of such materials included in the approved detailed breakdown estimate submitted in accordance with Article 41 of the Contract; if it does, the City will pay only 85% approved estimated cost.

16. Upon the incorporation in the work of any such materials, which have been paid for in advance of such incorporation in accordance with the foregoing provisions, payment will be made for such materials incorporated in the work pursuant to Article 42 of the Contract, less any sums paid pursuant to Paragraph 15 herein.

D. MOBILIZATION PAYMENT – A line item for mobilization shall be allowed on the Contractor's Detailed Bid Breakdown submitted in accordance with Article 41 of the Contract. The Mobilization Payment is intended to include the cost of required bonds, insurance coverage and/or any other expenses required for the initiation of the Contract Work. All costs for mobilization shall be deemed included in the total Contract Price. The Detailed Bid Breakdown shall reflect, and the Mobilization Payment shall be made, in accordance with the following schedule:

Contract Amount		**Percent**		**Mobilization**
Less than - $ 50,000	x	0	=	0
$ 50,000 - $ 100,000	x		=	$ 6,000
$ 100,001 - $ 500,000	x	6	=	$ 6,000 (min) - $ 30,000 (max)
$ 500,000 - $ 2,500,000	x	5	=	$ 30,000 (min) - $ 125,000 (max)
Over - $ 2,500,000	x	4	=	$ 125,000 (min) - $ 300,000 (max)

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.

E. ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING: The Contractor shall submit reports to the Commissioner regarding the use of Ultra Low Sulfur Diesel Fuel in Non-Road Vehicles, and the implementation of Best Available Technology (BAT), as set forth in Article 5.4 of the Contract. Such reports shall be submitted in accordance with the schedule, format, directions and procedures established by the Commissioner.

1.11 PERFORMANCE OF WORK DURING NON-REGULAR WORK HOURS:

A. NON-REGULAR WORK HOURS: The Commissioner may issue a change order in accordance with Article 25 of the Contract which (1) directs the Contractor to perform the Work, or specific components thereof, during other than regular work hours (i.e., evenings, weekends and holidays), and (2) provides compensation to the Contractor for costs in connection with the performance of Work during other than regular work hours. The Commissioner may issue a change order if a delay has occurred and such delay is not the fault of the Contractor, or if the work is of such an important nature that delay in completing such work would result in serious disadvantage to the public.

B. PROCEDURE: The Contractor shall (1) obtain whatever permits may be required for performance of the work during other than regular business hours, and (2) pay all necessary fees in connection with such permits. In addition, if directed by the Commissioner, the Contractor shall make immediate application to the Commissioner of the Department of Labor, State of New York, for dispensation in accordance with Subdivision 2 of Section 220 of the Labor Law.

1.12 INTERRUPTION OF SERVICES AT EXISTING FACILITIES:

A. EVENING AND WEEKEND WORK - Where performance of the Work requires the temporary shutdown(s) of services, such shutdown(s) shall be made at night or on weekends or at such times that will cause no interference with the established routines and operations of the facility in question.

1 Where weekend or evening work is required due to unavoidable service shutdowns, such work shall be performed at no extra cost to the City. Components of the Work that must be performed during other than regular work hours are indicated in the Drawings and/or the Specifications.

B. INTERRUPTION OF EXISTING FACILITIES:

1 The Contractor shall not interrupt any of the services of the facility nor interfere with such services in any way without the permission of the Commissioner. Such interruption or interferences shall be made as brief as possible, and only at such time stated.

2 Under no circumstances shall the Contractor, its subcontractors, or its workers, be permitted to use any part of the project as a shop, without the permission of the Commissioner.

3 Unnecessary noise shall be avoided at all times and necessary noise shall be reduced to a minimum.

4 Toilet facilities, water and electricity must be operational at all times (i.e. 24/7). No services of the facility can be interrupted in any way without the permission of the Commissioner. Careful coordination of all work with the Resident Engineer must be done to maintain the operational level of the project personnel at the facility.

5 The Contractor shall schedule the work to avoid noise interference that will affect the normal functions of the facility. In particular, construction operations producing noises that are objectionable to the functions of the facility must be scheduled at times of day or night, day of the week, or weekend, which will not interfere with personnel at the facility. Any additional cost resulting from this scheduling shall be borne by the Contractor.

6 The Contractor shall arrange to work continuously, including evening and weekend hours, if required, to assure that services will be shut down only during the time actually required to make the necessary connections to the existing facility.

7 The Contractor shall give ample written notice in advance to the Commissioner and personnel at the facility of any required shutdown.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

B. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."

C. COMMISSIONING: Refer to the Addendum to identify whether this project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

1.2 SUMMARY:

A. This Section includes administrative provisions for coordinating construction operations on the Project including without limitation the following.

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Interpretation (RFIs).

B. This section includes the following:

1. Definitions
2. Coordination
3. Submittals
4. Administrative and Supervisory Personnel
5. Project Meetings
6. Requests for Interpretation (RFI's)
7. Correspondence
8. Contractor's Daily Reports
9. Alternate and Substitute Equipment

C. RELATED SECTIONS: include without limitation the following:

1. Section 01 10 00 SUMMARY
2. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
3. Section 01 33 00 SUBMITTALS
4. Section 01 35 26 SAFETY REQUIREMENTS
5. Section 01 73 00 EXECUTION REQUIREMENTS
6. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

7. Section 01 77 00 PROJECT CLOSEOUT PROCEDURES

1.3 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 COORDINATION:

A. Coordination: The Contractor shall coordinate its construction operations, including those of its subcontractors, with other entities to ensure the efficient and orderly installation of each part of the Work. The Contractor shall coordinate the various operations required by different Sections of the Specifications that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence in order to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. The Contractor shall prepare memoranda for distribution to its subcontractors and other involved entities, outlining special procedures required for coordination. Such memoranda shall include required notices, reports, and meeting minutes as applicable.

C. Administrative Procedures: The Contractor shall coordinate scheduling and timing of required administrative procedures with other construction activities and activities of its subcontractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include without limitation the following:

1. Preparation of Contractor's Construction Schedule.
2. Installation and removal of temporary facilities and controls.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Pre-installation conferences..
6. Startup and adjustment of systems.
7. Project closeout activities.

D. Conservation: The Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

E. Salvaged Items, Material and/or Equipment: The Specifications may identify certain items, materials or equipment which must be salvaged by the Contractor and handled or disposed of as directed. The Contractor shall comply with all directions in the Specifications regarding the salvaging and handling of identified items, material or equipment.

1.5 SUBMITTALS:

A. Submit shop drawings, product data, samples etc. in compliance with Section 01 33 00, SUBMITTAL PROCEDURES.

B. Coordination Drawings: The Contractor shall prepare applicable Coordination Drawings in compliance with the requirements for Coordination Drawings in Section 01 33 00, SUBMITTAL PROCEDURES.

C. Safety Plan in compliance with Section 01 35 26, SAFETY REQUIREMENTS PROCEDURES.

D. Waste Management Plan in compliance with Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

E. Key Personnel Names: Within 15 days after the Notice to Proceed, the Contractor shall submit a list of key personnel assignments of the Contractor and its subcontractors, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in case of the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

2. In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work. Include special personnel required for coordinating all operations by its subcontractors.

1.6 PROJECT MEETINGS:

A. General: The Resident Engineer will hold regularly scheduled construction progress meetings at the site, at which time the Contractor and appropriate subcontractors shall have their representatives present to discuss all details relative to the execution of the work. The Resident Engineer shall preside over these meetings.

1. Agenda: Prior to each meeting, the Resident Engineer will consult with the Contractors and will prepare an agenda of items to be discussed. In general, after informal discussion of any item on the agenda, the Resident Engineer will summarize the discussion in a brief written statement, and the Contractor will then dictate a brief statement for the record.

2. Coordination: In addition to construction progress meetings called by the Resident Engineer, the Contractor shall hold regularly scheduled meetings for the purpose of coordinating; expediting and scheduling the work in accordance with the master coordinated Job Progress Chart. The Contractors and its subcontractors, material suppliers or vendors whose presence is necessary, are required to attend. These meetings may, at the discretion of the Contractor, be held at the same place and immediately following the project meetings held by the Resident Engineer. Minutes of these meetings shall be recorded, typed and printed by the Contractor and distributed to all parties concerned.

B. PRECONSTRUCTION KICK-OFF MEETING:

1. The Resident Engineer will schedule a preconstruction kick-off meeting either at DDC's main office or at the Project site to review responsibilities and personnel assignments and clarify the

role of each participant. Unless otherwise directed the Design Consultant will record and distribute meeting minutes.

2. Attendees: Authorized representative of the Client Agency; Design Consultant; the Contractor and its superintendents, subcontractor(s) and their superintendent(s); LEED sub-consultant and Commissioning Authority /Agent (CxA) as applicable and other concerned parties. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Contract Work.
3. Agenda: Includes without limitation the following as applicable:
   a. Establishing construction schedule
   b. Schedule for regular construction meetings
   c. Phasing
   d. Critical work sequencing and long-lead items
   e. Designation of key personnel and their duties
   f. Reviewing Application for Payment and Change Order Procedures
   g. Procedures for Requests for Information (RFIs.)
   h. Review Permits and Approval requirements
   i. Review all recent Administrative Code reporting requirements relating to the project, (i.e. LL 77, LL86 etc.)
   j. Procedures for testing and inspecting
   k. Reviewing special conditions at the Project site
   l. Distribution of the Contract Documents
   m. Submittal procedures
   n. Safety Procedures
   o. LEED requirements
   p. Commissioning Requirements
   q. Preparation of Record Documents
   r. Historic Treatment requirements
   s. Use of the premises
   t. Work restrictions
   u. Client Agency occupancy requirements
   v. Responsibility for temporary facilities, services and controls
   w. Construction Waste Management and Disposal
   x. Indoor Air Quality Management Plan
   y. Dust Mitigation Plan
   z. Office, work, and storage areas
   aa. Equipment deliveries and priorities
   bb. Security
   cc. Progress cleaning
   dd. Working hours

C. CONSTRUCTION PROGRESS MEETINGS:

1. The Resident Engineer will schedule and conduct construction progress meetings at bi-weekly intervals or as otherwise determined. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work. Unless otherwise directed the Design Consultant will record and distribute meeting minutes.
2. Attendees:
   a. Design Consultant and applicable sub-consultants
   b. Client Agency Representative
   c. Representatives from the Contractor, sub-contractor(s), suppliers or other entities involved in the current progress, planning, coordination or future activities of the Work
   d. Other appropriate DDC personnel, DDC consultants and concerned parties
3. Agenda: Includes without limitation the following:
   a. Review the Construction Schedule and progress of the Work. Determine if the Work is on time, ahead of schedule or behind schedule. Determine actions to be taken to maintain or accelerate the schedule
   b. Review and approve prior meeting minutes and follow up open issues
   c. Coordinate work between each subcontractor
   d. Sequence of Operations
   e. Status of submittals, deliveries and off-site fabrication
   f. Status of inspections and approvals by governing agencies
   g. Temporary facilities and controls
   h. Review Site Safety
   i. Quality and work standards
   j. Field observations
   k. Status of correction of deficient items
   l. RFI's
   m. Pending changes
   n. Status of outstanding Payments and Change Orders
   o. LEED requirements including Construction Waste Management, Indoor Air Quality Plan, Dust Mitigation and Commissioning
   p. Status of Administrative Code reporting requirements related to the project.

1.7 REQUESTS FOR INFORMATION (RFI):

A. Procedure: Immediately on discovery of the need for information or interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, the Contractor shall prepare and submit an RFI in the form specified by the Resident Engineer.

1. RFI shall originate with the Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
2. Coordinate and submit RFI in a prompt manner to the Resident Engineer so as to avoid delays in Contractor's work or work of its subcontractors.
3. RFI Log: The Contractor shall prepare, maintain, and submit a tabular log of RFIs organized by the RFI number monthly to the Resident Engineer.

4. On receipt of responses and action to the RFI, the Contractor shall update the RFI log and immediately distribute the RFI response to affected parties. Review response(s) and notify the Resident Engineer immediately if the Contractor disagrees with response(s).

1.8 CORRESPONDENCE:

Copies of all correspondence to DDC shall be sent directly to the Resident Engineer at the job site.

1.9 CONTRACTOR'S DAILY REPORTS:

The Contractor shall prepare and submit Daily Construction Progress Reports as outlined in Section 01 32 00, CONSTRUCTION PROGRESS DOCUMENTATION.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for establishing an effective base line schedule for the project and documenting the progress of construction during performance of the Work by developing, revising as necessary, various documents including but not limited to the following:

1. Baseline Construction Schedule.
2. Composite Schedule for entire project
3. Recovery Composite Schedule
4. Revised and/or updated Composite Schedule
5. Submittals Schedule.
6. Daily construction reports.
7. Material location reports.
8. Field condition reports.
9. Special reports.

B. RELATED SECTIONS: include without limitation the following:

1. Section 01 10 00 SUMMARY
2. Section 01 32 22 PHOTOGRAPHIC DOCUMENTATION
3. Section 01 33 00 SUBMITTAL PROCEDURES
4. Section 01 40 00 QUALITY REQUIREMENTS

1.3 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

C. Baseline Construction Schedule:
A horizontal bar chart type schedule (Microsoft Project OR similar program) listing all the activities and their duration for entire contract duration OR construction period, including logical ties and interrelations between the activities necessary for the timely and successful completion of the project. Critical path activities shall be clearly marked. The Baseline construction schedule is a preliminary schedule that must be reviewed and approved by the Resident Engineer.

D. Composite Schedule:
A composite horizontal bar chart type schedule (Microsoft Project OR similar program) listing all activities to be performed by the Contractor and its subcontractors, the duration of each activity including logical ties and interrelations between activities, and the sequence of each of necessary activities for the timely and successful completion of the project within the stipulated contract duration. Critical path activities shall be clearly marked. The Composite schedule must be signed and submitted by the Contractor within thirty (30) calendar days after the date established for commencement of the Contract, unless otherwise directed. The Composite Schedule must be reviewed and approved by the Resident Engineer.

E. Recovery Composite Schedule: A Recovery Composite Schedule is not required unless the City issues an Acceleration Change Order.

A Composite Schedule outlining and incorporating extraordinary efforts required to recover lost time with the aim of achieving completion of the project within the stipulated contract duration, plus authorized time extensions. In such case special attention must be given to keep the delays as minimum as possible and must establish the nature of efforts such as extended hours of work, weekend work, accelerated fabrication, required action(s) or effort(s) by the Contractor, its subcontractors, consultants, clients, end users and/or other concerned parties.

Such schedule must be prepared and submitted within Five (5) calendar days of request by the Resident Engineer. The Recovery Composite Schedule must be reviewed and approved by the Resident Engineer.

F. Revised and/or Updated Composite Schedule:

A Baseline construction schedule OR Composite Schedule OR Recovery Composite Schedule for the project that shows the actual duration of all the completed activities, including duration of and the reasons for delays, if any has occurred, AND revisions to all remaining activities of the Contractor and its subcontractors, including changes, if any, to logical ties, interrelations and the sequence of each of the outlined activities. Any such revisions should be shown on the row just below the approved schedule of the respective activity so that revisions can be compared.

The Revised and/or updated Composite Schedule must be reviewed and approved by the Resident Engineer.

G. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

H. Event: The starting or ending point of an activity.

I. Fragment: A part of the activity that breaks down activities into smaller activities for greater detail.

J. Milestone: A key or critical point in time for reference or measurement.

K. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

PART II – PRODUCTS

2.1 BASELINE CONSTRUCTION SCHEDULE:

A. The Contractor shall prepare a Baseline horizontal bar-chart-type construction schedule for the project. Submit the Baseline Construction Schedule to the Resident Engineer within (15) fifteen calendar days after the date established for commencement of the Contract, unless directed otherwise. The Baseline Schedule must be reviewed and approved by the Resident Engineer.

1. Provide a separate time bar for each significant construction activity. Coordinate each activity on the schedule with other construction activities for proper interrelationship & sequence.
2. Duration: The duration of each activity on the schedule besides installation must clearly show required duration of filing for permits, inspections, testing, approvals, shop drawings and materials submittals and approvals, fabrication, delivery, phasing for each construction activity.
3. Schedule shall be time-scaled in not more than weekly increments, with the dates of the first day (Monday) of each week indicated.
4. Completion of all the project activities shall be indicated in advance of the date established for completion of the Contract, allowing time for required inspection and punch list work.
5. Clearly show time bar for all the tasks, to be completed before start of physical work of scheduled activities, including but not limited to obtaining required permit, subcontractor approval, submission and approval of shop drawings, field verification, time for fabrication and delivery, testing of materials and/or samples, preparation and approval of mock-up sample, curing, pre-testing of soil, pre-testing of equipment - including start up, testing & adjusting, filing for inspection by regulatory agencies, training, final use, etc. required to maintain orderly progress of the activity. A special consideration must be given to those activities requiring early approvals because of long lead-time for manufacture or fabrication.
6. Phasing: Arrange all activities in proper sequence to reflect requirements for phased completion, work by other entities, work by the City, City furnished items, coordination with existing work, limitations arising due to continued occupancies, non-interruptible services, partial completion for occupancy, site restrictions, provisions for future work, seasonal variations, environmental control, and similar conditions of the project.
7. Arrange all activities and/or show interrelationship and logical sequence of all activities, determine and mark all critical path activities including any phasing reflecting actual project condition.
8. Keep at least two blank horizontal bars between all activities for recording actual progress and submitting Revised Schedule as defined in Sub-Section 1.3 G
9. If necessary a new revised schedule shall be prepared in the same manner as outlined above.

2.2 COMPOSITE SCHEDULE FOR THE PROJECT:

A. The Contractor shall prepare a Composite Schedule based on the approved Baseline Schedule Such schedule shall indicate graphically and chronologically the start and completion of each and every activity, including all the pre-activity and post activity tasks. Keep at least two blank horizontal bars between all activities for recording actual progress and/or revisions.

1. If necessary the Contractors shall meet with each subcontractor and with the Resident Engineer to review and make warranted adjustments and finalize the Composite Schedule. Once the schedule is finalized, the Contractor shall sign and date a reproducible form of the Composite Schedule. The Composite Schedule must be finalized and signed by the Contractor within (30) thirty calendar days after the date established for commencement of the Contract, unless directed otherwise. The Composite Schedule must be reviewed and approved by the Resident Engineer.

2.3 RECOVERY COMPOSITE SCHEDULE:

A. A Recovery Composite Schedule is not required unless the City issues an Acceleration Change Order. A Recovery Composite Schedule outlining and incorporating extraordinary efforts required to recover lost time with the aim of achieving completion of the project within the stipulated contract duration, plus authorized time extensions, must be developed and submitted within (5) five calendar days of the request by the Resident Engineer. Such Recovery Composite Schedule shall include all information as defined in Article 1.3 F and shall be prepared in the same manner as outlined in Sub-Sections 2.1 and 2.2. The Recovery Composite Schedule must be reviewed and approved by the Resident Engineer.

2.4 REVISED AND/OR UPDATED COMPOSITE SCHEDULE:

A. The Contractor shall revise and/or update the approved Composite Schedule as directed. The Revised schedule shall be prepared in the same manner as outlined above in Sub-Sections 2.1 and 2.2.

B. The Contractor shall mark actual progress, delays, work stoppage etc. in the row just below the approved schedule for the respective activity so that revisions can be compared.

C. Such schedule also shall indicate graphically and chronologically any revisions to the start and completion of the remaining activities including revisions to all the pre-activity and post activity tasks for all subcontractors.

D. If necessary, the Contractor shall meet with each subcontractor and with the Resident Engineer to review and make warranted adjustments and finalize the Revised Composite Schedule. Once the schedule is finalized, the Contractor shall sign and date a reproducible form of the Schedule. Such schedule must be prepared and submitted by the Contractor within Five (5) calendar days of request by the Resident Engineer. The Revised Composite Schedule must be reviewed and approved by the Resident Engineer.

2.5 SUBMITTALS SCHEDULE:

A. Preparation: The Contractor shall submit a schedule of submittals, arranged in chronological order by dates required by the construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

B. SCHEDULE F: Schedule F sets forth all submittal requirements for shop drawings and material samples. Schedule F is included in the Addendum. At the kick-off meeting, the Contractor must review this Schedule with the Resident Engineer and the Design 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 business days prior to the date of the manufacture of the item or materials to be installed. In addition, if so directed by the Commissioner, the Schedule F provided by the Contractor must indicate a submission date for shop drawings and/or material samples of specified items or materials which is within 60 business days after the kick-off meeting. In the event of any conflict between the Specifications and Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and the Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.

C. Review: The Resident Engineer will review the Schedule F submitted by Contractor. Upon acceptance, the Resident Engineer will date and sign the schedule as approved and transmit it to the Consultant, Contractor and others within DDC as he/she deems appropriate.

2.6 REPORTS:

A. Daily Construction Reports: The Contractor shall submit to the Resident Engineer written Daily Construction Reports at the end of each work day, recording basic information such as the date, day, weather conditions, and contract days passed, remaining contract duration/days and the following information concerning the Project.

Information: The reports shall be prepared by the Contractor's Superintendent and shall bear the Contractor's Superintendents signature. Each report shall contain the following information:

1. List of name of Contractor, subcontractors, their work force in each category, and details of activities performed.
2. The type of materials and/or major equipment being installed by the Contractor and/or by each subcontractor.
3. The major construction equipment being used by the Contractor and/or subcontractors.
4. Material and Equipment deliveries.
5. High and low temperatures and general weather conditions.
6. Accidents.
7. Meetings and significant decisions.
8. Unusual events.
9. Stoppages, delays, shortages, and losses.
10. Meter readings and similar recordings
11. Emergency procedures.
12. Orders and/or requests of authorities having jurisdiction.
13. Approved Change Orders received and implemented.
14. Field Orders and Directives received and implemented.
15. Services connected and disconnected.
16. Equipment or system tests and startups.
17. Partial Completions and occupancies.
18. Substantial Completions authorized.

NOTE: If there is NO ACTIVITY at site, a daily report indicating so and the reason for no activity at the site must be submitted.

B. Material Location Reports: The contractor shall submit a Material Location Report at weekly OR monthly intervals as determined and established by the Resident Engineer. Such report shall include a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit a Request For Information (RFI) form with a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.7 SPECIAL REPORTS:

A. Accident report, incident report, special condition report for the conditions out of control of any party involved with the project effecting project progress, explaining impact on the project schedule and cost if any.

PART III – EXECUTION (Not Used)
END OF SECTION 01 32 00

No Text

SECTION 01 32 33
PHOTOGRAPHIC DOCUMENTATION

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SECTION 01 32 33

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]

1.2 SUMMARY:

A. This Section includes the following:
1. Photographic Media
2. Construction Photographs
3. Pre-construction Photographs
4. Periodic Construction Progress Photographs
5. Special Photographs
6. DVD Recordings
7. Final Completion Construction Photographs

B. RELATED SECTIONS: include without limitation the following:

1.	Section 01 10 00	SUMMARY
2.	Section 01 33 00	SUBMITTAL PROCEDURES
3.	Section 01 35 91	HISTORIC TREATMENT PROCEDURES
4.	Section 01 78 39	CONTRACT RECORD DOCUMENTS
5.	Section 01 81 19	INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS

C. PHOTOGRAPHER - The Contractor shall employ and pay for the services of a professional photographer who shall take photographs showing the progress of the work for all Contracts.

1.3 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 SUBMITTALS:

A. Qualification Data: For photographer.

B. Key Plan: With each Progress Photograph Submittal include a key plan of Project site and building with notation of vantage points marked for location and direction of each image. Indicate location, elevation or story of construction. Include same label information as corresponding set of photographs.

C. Construction Progress Photograph Prints: Take Progress Photographs bi-weekly and submit four color prints of each photographic view for each trade to the Resident Engineer. Such photographs shall be included in each monthly progress report or as otherwise directed by the Resident Engineer.

D. Construction Photograph Negatives: Submit a complete set of photographic negatives in individually protected negative sleeves with each submittal of prints. Identify negatives with label matching photographic prints.

E. Digital Images: If Digital Media is used, submit a complete set of digital color image electronic files on CD-ROM with each submittal of prints. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, un-cropped.

1.5 QUALITY ASSURANCE:

A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.6 COORDINATION:

A. The Contractor and its subcontractor(s) shall cooperate with the photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.7 COPYRIGHT:

A. The Contractor shall include the provisions set forth below in the agreement between the Contractor and the Photographer who will provide the construction photographs described in this section. The Contractor shall submit to the Resident Engineer a copy of its agreement with the Photographer.

B. Any photographs, images and/or other materials produced pursuant to this Agreement, and any and all drafts and/or other preliminary materials in any format related to such items produced pursuant to this Agreement, shall upon their creation become the exclusive property of the City.

C. Any photographs, images and/or other materials provided pursuant to this Agreement ("Copyrightable Materials") shall be considered "work-made-for-hire" within the meaning and purview of Section 101 of the United States Copyright Act, 17 U.S.C. § 101, and the City shall be the copyright owner thereof and of all aspects, elements and components thereof in which copyright protection might exist. To the extent that the Copyrightable Materials do not qualify as "work-made-for-hire," the Photographer hereby irrevocably transfers, assigns and conveys exclusive copyright ownership in and to the Copyrightable Materials to the City, free and clear of any liens, claims, or other encumbrances. The Photographer shall retain no copyright or intellectual property interest in the Copyrightable Materials. The Copyrightable Materials shall be used by the Photographer for no purpose other than in the performance of this Agreement without the prior written permission of the City. The Department may grant the Photographer a license to use the Copyrightable Materials on such terms as determined by the Department and set forth in the license.

D. The Photographer acknowledges that the City may, in its sole discretion, register copyright in the Copyrightable Materials with the United States Copyright Office or any other government agency authorized to grant copyright registrations. The Photographer shall fully cooperate in this effort, and agrees to provide any and all documentation necessary to accomplish this.

E. The Photographer represents and warrants that the Copyrightable Materials: (i) are wholly original material not published elsewhere (except for material that is in the public domain); (ii) do not violate any copyright Law; (iii) do not constitute defamation or invasion of the right of privacy or publicity; and (iv) are not an infringement, of any kind, of the rights of any third party. To the extent that the Copyrightable Materials incorporate any non-original material, the Photographer has obtained all necessary permissions and clearances, in writing, for the use of such non-original material under this Agreement, copies of which shall be provided to the City.

PART II – PRODUCTS

2.1 PHOTOGRAPHIC MEDIA:

A. Photographic Film: Medium format, 2-1/4 by 2-1/4 inches (60 by 60 mm).

B. Digital Images:

1. Construction Progress Images: Color images in JPEG format with minimum sensor size of 1.3 megapixels.

2. Presentation Quality Images: Provide Color images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of 4.0 megapixels, and at an image resolution of not less than 1024 by 768 with 8"x10" original capture at 300 dpi or greater.

C. Prints:

1. Format: 8-by-10-inch (203-by-254-mm) smooth-surface matte color prints on single-weight commercial-grade stock paper, with 1inch wide margins and punched for standard 3-ring binder.

2. Identification: On the front of each photograph affix a label in the margin with Project name and date photograph was taken. On the back of each print, provide an applied label or rubber-stamped impression with the following information:
   a. Project Contract I.D. Number.
   b. Project Contract Name.
   c. Name of Contractor. (and Subcontractor Trade Represented)
   d. Subject of Image Taken.
   e. Date and time photograph was taken if not date stamped by camera.
   f. Description of vantage point, indicating location, direction and other pertinent information.
   g. Unique sequential identifier.
   h. Name and address of photographer.

PART III – EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS:

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location and direction of view.

B. Film Images:

1. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.

2. Field Office Prints: Retain one set of prints of progress photographs in the field office at Project site, available at all times for reference. Identify photographs same as for those submitted to Commissioner.

C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in filename for each image.

2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Commissioner.

3.2 PRE-CONSTRUCTION & PRE-DEMOLITION PHOTOGRAPHS:

A. Before commencement of Contract work at the site, take color photographs of Project site and surrounding properties, including existing structures or items to remain during construction, from different vantage points, as directed by the Resident Engineer.

1. Flag applicable excavation areas and construction limits before taking construction photographs.

2. Take photographs of minimum eight (8) views to show existing conditions adjacent to property before starting the Work.

3. Take applicable photographs of minimum eight (8) views of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.

4. Take additional photographs as required or directed by the Resident Engineer to record settlement or cracking of adjacent structures, pavements, and improvements.

B. Demolition Operations: Take photographs as directed by the Resident Engineer of minimum of eight (8) views each before commencement of demolition operations, at mid-point of operations and at completion of operations.

C. Pre-Demolition Photographs: Take archival quality color photographs, to include all exterior building facades, of all structures at the Project site designated to be fully demolished or removed in compliance with NYC Building Code requirements. Submit four (4) complete sets of pre-demolition photographs, in the format specified herein, to the Resident Engineer for submission to the Department of Buildings.

3.3 PERIODIC CONSTRUCTION PROGRESS PHOTOGRAPHS:

A. Take photographs of minimum eight (8) views bi-weekly as directed by the Resident Engineer of construction progress for each contract trade. Select vantage points to show status of construction and progress since last photographs were taken.

3.4 SPECIAL PHOTOGRAPHS:

A. The photographer shall take special photographs of subject matter or events as specified in other sections of the Project Specifications from vantage points specified or as otherwise directed by the Resident Engineer.

B. Historical Elements: As required in Section 01 35 91, HISTORIC TREATMENT PROCEDURES, for Contract work at designated landmark structures or sites the photographer, as specified and required by individual sections of the Contract documents or at the direction of the Commissioner, shall take images of existing elements scheduled to be removed for replacement, repair or replication in quantities as directed, including post-construction photographs of completed work as directed by the Commissioner.

1. Take Presentation Quality Photographs of designated landmark structures as directed by the Commissioner for submission to the New York City Landmarks Preservation Commission. Provide a minimum of four color photographic prints of each view as directed.

3.5 DVD RECORDING:

A. When DVD Recording of Demonstration and Training sessions is required for Non-Commissioned projects the Contractor shall provide the services of a Videographer as indicated in Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.

3.6 FINAL COMPLETION CONSTRUCTION PHOTOGRAPHS:

A. Take color photographs of minimum eight (8) unobstructed views of the completed project or project and site, as directed by the Commissioner and after all scaffolding, hoists, shanties, field offices or other temporary work has been removed and final cleaning is done after date of Substantial Completion for submission as Project Record Documents. Submit four (4) sets of each view of Presentation Quality photographic prints including negatives and/or digital images electronic file

END OF SECTION 01 32 33

No Text

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART I – GENERAL:

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Coordination Drawings, Catalogue Cuts, Material Samples and other submittals required by the Contract Documents.

B. Review of submittals does not relieve the Contractor of responsibility for any Contractor's errors or omissions in such submittals, nor from responsibility for complying with the requirements of the Contract.

C. Responsibility of the Contractor: The approval of Shop Drawings will be general and shall not relieve the Contractor of responsibility for the accuracy of such Shop Drawings, nor for the proper fitting and construction of the work, nor of the furnishing of materials or work required by the Contract and not indicated on the Shop Drawings. Approval of Shop Drawings shall not be construed as approving departures from the Contract Drawings, Supplementary Drawings or Specifications.

D. This Section includes the following:
1. Definitions
2. Submission Procedures
3. Coordination Drawings
4. LEED Submittals
5. Ultra Low Sulfur Diesel Fuel Reporting
6. Construction Photographs and DVD Recordings
7. As-Built Documents

1.3 RELATED SECTIONS: Include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 31 00	PROJECT MANAGEMENT AND COORDINATION
C.	Section 01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
D.	Section 01 32 33	PHOTOGRAPHIC DOCUMENTATION
E.	Section 01 77 00	CLOSEOUT PROCEDURES
F.	Section 01 78 39	CONTRACT RECORD DOCUMENTS
G.	Section 01 81 13	SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or

combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

C. Submittals: Written and graphic information that requires responsive actions and includes without limitation all shop drawings, product data, letters of certification, tests and other information required for quality control and as required by the Contract Documents.

D. Informational Submittals: Written information that does not require responsive action. Submittals may be rejected for non-compliance with the Contract.

E. Shop Drawings: Include drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, except for coordination drawings, specifically prepared for the project by the Contractor or any subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the work shall be fabricated and/or installed.

F. Coordination Drawings: As required in Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION.

G. Product Data and Quality Assurance Submittals: Includes manufacturer's standard catalogs, pamphlets and other printed materials including without limitation the following:

1. Catalogue and Product specifications
2. Installation instructions
3. Color charts
4. Catalog cuts
5. Rough-in diagrams and templates
6. Wiring diagrams
7. Performance curves
8. Operational range diagrams
9. Mill reports
10. Design data and calculations
11. Certification of compliance or conformance
12. Manufacturer's instructions and field reports

1.5 COORDINATION DRAWINGS:

A. The Contractor shall provide reproducible Coordination Drawing(s) of the reflective ceiling showing the integration of all applicable contract work, including general construction work as well as trade work (Plumbing, HVAC, and Electrical) to be performed by subcontractors. The Coordination Drawing(s) shall include, without limitation, the following information:
   1. General Construction work showing the reflective ceiling plan including starting points, ceiling and beam soffits elevations, ceiling heights, roof openings, etc.
   2. HVAC Contract work showing ductwork, heating and sprinkler piping, location of grilles, registers etc. and access doors in hung ceilings. Locations shall be fixed by elevations and dimensions from column centerlines and/or walls.
   3. Plumbing Contract work including piping, valves, cleanouts etc., indicating locations and elevations and shall indicate the necessary access doors.
   4. Electrical Contract work indicating fixtures, large conduit runs, clearances, pull boxes, junction boxes, sound system speakers, etc.

B. The Contractor shall issue the completed Coordination Drawing(s) to the Resident Engineer for his/her review. The Resident Engineer may call as many meetings as necessary with the Contractor, including

attendance by applicable subcontractors, and may call on the services of the Design Consulting where necessary, to resolve any conflicts that become apparent.

C. Upon resolution of any conflicts, the Contractor shall provide a final Coordination Drawing(s) which will become the Master Coordination Drawing(s). The Master Coordination Drawing(s) shall be signed and dated by the Contractor to indicate acceptance of the arrangement of the work.

D. A reproducible copy of the Master Coordination Drawing(s) shall be provided by the Contractor to each of the appropriate subcontractor(s), the Resident Engineer and the Design Consultant for information.

E. Shop Drawings shall not be submitted prior to acceptance of the final coordinated drawings and shall be prepared in accordance with the Master Coordination Drawing(s). No work will be permitted without accepted Shop Drawings. It is therefore essential that this procedure be instituted as quickly as possible.

1.6 SUBMITTAL PROCEDURES:

A. Refer to Section 01 35 03 GENERAL MECHANICAL REQUIREMENTS and Section 01 35 06 GENERAL ELECTRICAL REQUIREMENTS for additional submittal requirements involving electrical and mechanical work or equipment of any nature called for the project.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activities, with the Submittal Schedule specified in Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
3. The Commissioner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: The Submittals Schedule is set forth in Schedule F, which is included in the Addendum.

D. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Design Consultant.
3. Include the following minimum information on label for processing and recording action taken:
   a. Project name, DDC Project Number and Contract Number
   b. Date.
   c. Name and address of Design Consultant.
   d. Name and address of Contractor.
   e. Name and address of subcontractor.
   f. Name and address of supplier.
   g. Name of manufacturer.
   h. Submittal number or other unique identifier, including revision identifier.
   i. Number and title of appropriate Specification Section.
   j. Drawing number and detail references, as appropriate.
   k. Location(s) where product is to be installed, as appropriate.
   l. Other necessary identification.

E. Transmittal:

1. Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form in triplicate. Transmittals received from sources other than the

Contractor will be returned without review. Re-submission of the same drawings or product data shall bear the original number of the prior submission and the original titles.

2. Transmittal Form: Provide locations on form for the following information:

   a. Project name, DDC Project number and Contract Number
   b. Date.
   c. Destination (To:).
   d. Source (From:)
   e. Names of Contractor, subcontractor, manufacturer, and supplier.
   f. Category and type of submittal.
   g. Submittal purpose and description.
   h. Specification Section number and title.
   i. Drawing number and detail references, as appropriate.
   j. Transmittal number, numbered consecutively.
   k. Submittal and transmittal distribution record.
   l. Remarks.
   m. Signature of transmitter.

F. Shop Drawings:

1. Procedures for Preparing, Forwarding, Checking and Returning all Shop Drawings shall be, generally, as follows:

   a. The Contractor shall make available to its subcontractors the necessary Contract Documents and shall instruct such subcontractor to determine dimensions and conditions in the field, particularly with reference to coordination between the trade subcontractors. The Contractor shall direct its subcontractors to prepare Shop Drawings for submission to the Design Consultant in accordance with the requirements of these General Conditions. The Contractor shall also direct its subcontractors to "Ring Up" corrections made on all re-submissions for approval, so as to be readily seen, and that the symbol "sub" be used to identify the source of the correction or information that has been added.

      The Contractor shall:

      1. Review and be responsible to the Commissioner, for information shown on its subcontractor's Shop and Installation drawings and manufacturers' data, and also for conformity to Contract Documents.
      2. "Ring Up" corrections made on all submissions for approval, so as to be readily seen, and that the symbol "GC", "PL", "HVAC" or "EL" be used to indicate that the correction and/or information added was made by the Contractor and/or its subcontractor(s).
      3. Clearly designate which entity is to perform the work when the term, "work by others" or other similar phrases are indicated on the Contract Drawings before submission to the Design Consultant.
      4. Stamp submissions "Recommended for Acceptance", date and forward to the Design Consultant.

2. The Contractor shall promptly prepare and submit project specific layout detail and Shop Drawings of such parts of the work as are indicated in the Specifications, Schedule F of the Addendum or as required. These Shop Drawings shall be made in accordance with the Contract Drawings, Specifications and Supplementary Drawings, if any. The Shop Drawings shall be accurate and distinct and give all the dimensions required for the fabrication, erection and installation of the work.

3. Size of Drawings: The Shop Drawings, unless otherwise directed, shall be on sheets of the same size as the Contract Drawings, drawn accurately and of sufficient scale to be legible, with a one half (1/2) inch marginal space on each side and a two (2) inch marginal space for binding on the left side.

4. Scope of Drawings: Shop Drawings shall be numbered consecutively and shall accurately and distinctly represent all aspects of the work, including without limitation the following:

   a. All working and erection dimensions.
   b. Arrangements and sectional views.
   c. Necessary details, including performance characteristics, and complete information for making necessary connections with other work.
   d. Kinds of materials including thickness and finishes.
   e. Identification of products.
   f. Fabrication and installation drawings.
   g. Roughing-in and setting diagrams.
   h. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
   i. Shop work manufacturing instructions.
   j. Templates and patterns.
   k. Schedules.
   l. Design calculations.
   m. Compliance with specified standards.
   n. Notation of coordination requirements.
   o. Notation of dimensions established by field measurement.
   p. Relationship to adjoining construction clearly indicated.
   q. Seal and signature of professional engineer if specified.
   r. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
   s. All other information necessary for the work and/or required by the Commissioner.

5. Titles and Reference: Shop Drawings shall be dated and contain:
   a. Name of the Project, DDC Project Number and Contract Number.
   b. The descriptive names of equipment, or materials covered by the Contract Drawings and the classified item number or numbers, if any, under which it is, or they are required.
   c. The locations or points and sequence at which materials, or equipment, are to be installed in the work.
   d. Cross references to the section number, detail number and paragraph number of the Contract Specifications.
   e. Cross references to the sheet number, detail number, etc., of the Contract Drawings.

6. Field Measurements: In addition to the above requirements, the Shop Drawings shall be signed by the Contractor and, if applicable, the subcontractor responsible for preparation of the Shop Drawings. Each Shop Drawing shall be stamped with the following wording:

   FIELD MEASUREMENTS: The Contractor certifies that it has verified and supplemented the Contract Drawings by taking all required field measurements, which said measurements correctly reflect all field conditions and that this Shop Drawing incorporates said measurements.

7. Contractor's Statement with Submittal: Any Submittal by the Contractor for acceptance, including without limitation, all dimensional drawings of equipment, blueprints, catalogues, models, samples and other data relative to the equipment, the materials, the work or any part thereof, must be accompanied by a statement that the Submittal has been examined by the Contractor and that everything shown in the Submittal is in accordance with the requirements of the Contract Drawings and Specifications. If there is any discrepancy between what is shown in the Submittal and the requirements of the Contract Drawings and Specifications, the Contractor shall, in its statement, list and clearly describe each such discrepancy.

   Acceptance will be given based upon the Contractor's representation that what is shown in the Submittal is in accordance with the requirements of the Contract Drawings and Specifications. If

the Contractor's statement indicates any discrepancy between what is shown in the Submittal and the requirements of the Contract Drawings and Specifications, such change is subject to review and prior written acceptance by the Design Consultant. In addition, such change may require a change order in accordance with Article 25 of the Contract. In the event any such change is approved, any additional expense or increased cost in connection with the change is the sole responsibility of the Contractor.

8. Submission of Shop Drawings:

   a. Initial Submission: The Contractor shall submit seven (7) copies of each Shop Drawing to the Design Consultant for his/her review and acceptance. The Design Consultant will transmit Shop Drawings to appropriate sub-consultants for review and acceptance, including Commissioning Authority/Agent as applicable. A satisfactory Shop Drawing will be stamped "No Exceptions Taken", be dated and distributed by the Design Consultant as follows:
      1) Two (2) copies thereof will be returned to the Contractor by letter.
      2) Three (3) copies of the approved Shop Drawing and copy of the transmittal letter to the Contractor will be forwarded to DDC.
      3) One copy will be retained by the Design Consultant.
      4) One copy will be forwarded / retained by sub-consultant(s) as appropriate.

      Should the Shop Drawing(s) be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return the Shop Drawings to the Contractor with the necessary corrections and changes to be made as indicated thereon.

   b. Revisions: The Contractor must make such corrections and changes and again submit seven (7) copies of each shop drawing to the Design Consultant. The Contractor shall revise and resubmit the Shop Drawing as required by the Design Consultant until the Shop Drawings are stamped "No Exceptions Taken". However, Shop Drawings which have been stamped "Make Corrections Noted" shall be considered an "Acceptable" Shop Drawing and NEED NOT be resubmitted.

   c. Commencement of Work: No work or fabrication called for by the Shop Drawings shall be done until the acceptance of the said drawings by the Design Consultant is given. In addition to the foregoing Shop Drawing transmissions, a copy of any Shop Drawing prepared by any of the Contractor's subcontractors which Shop Drawing indicated work related to, adjacent to, impinging upon, or affecting work to be done by other subcontractors shall be transmitted to the subcontractors so affected. [These accepted Shop Drawings shall be distributed to the affected subcontractors when required with a copy of the transmittal to the Resident Engineer.]

   d. Variations: If the Shop Drawings show variations from the Contract requirements because of standard shop practice or other reasons, the Contractor shall make specific mention of such variations in its letter of submittal. Acceptance of the Shop Drawings shall constitute acceptance of the subject matter thereof only and not of any structural apparatus shown or indicated.

G. Product Data:

1. General: Except as otherwise prescribed herein, the submission, review and acceptance of Product Data and Catalogue cuts shall conform to the procedures specified in Sub-Section 1.6 F, Shop Drawings.

2. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

3. Mark each copy of each submittal to show which products and options are applicable.

4. Include the following information, as applicable:

a. Manufacturer's written recommendations.
b. Manufacturer's product specifications.
c. Manufacturer's installation instructions.
d. Standard color charts.
e. Manufacturer's catalog cuts.
f. Wiring diagrams showing factory-installed wiring.
g. Printed performance curves.
h. Operational range diagrams.
i. Mill reports.
j. Standard product operation and maintenance manuals.
k. Compliance with specified referenced standards.
l. Testing by recognized testing agency.
m. Application of testing agency labels and seals.
n. Notation of coordination requirements.

5. Submit Product Data before or concurrent with Samples.

6. Submission of Product Data:

   a. Initial Submission: The Contractor shall submit seven (7) sets of Product Data to the Design Consultant for his/her review and acceptance. The Design Consultant will transmit Product Data to appropriate sub-consultants for review and acceptance, including Commissioning Authority/Agent as applicable. A satisfactory catalogue cut will be stamped "No Exception Taken", be dated and distributed as follows:

      1) Two (2) copies thereof will be returned to the Contractor by letter.

      2) Three (3) copies of the Product Data and copy of the transmittal letter to the Contractor will be forwarded to DDC

      3) One copy will be retained by the Design Consultant.

      4) One copy will be forwarded / retained by sub-consultant(s) as appropriate.

      Should the Product Data be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return one (1) set of such Product Data to the Contractor with the necessary corrections and changes to be made indicated and one (1) set to DDC.

7. Revisions: The Contractor must make such corrections and changes and again submit seven (7) copies of each Product Data for the review of the Design Consultant. The Contractor shall revise and resubmit the Product Data as required by the Design Consultant until the submission is stamped "No Exceptions Taken" by the Design Consultant. However, Product Data which has been stamped "Make Corrections Noted" shall be considered an "Accepted" Product Data and NEED NOT be resubmitted.

H. Samples of Materials:

1. For samples of materials involving electrical work of any nature, refer to Section 00 35 06 - General Electrical Requirements.

2. Samples shall be in triplicate, of sufficient size to show the quality, type, range of color, finish and texture of the material.

3. Each of the samples shall be labeled as follows:

   a. Name of the Project, DDC Project Number and Contract Number.
   b. Name and quality of the material.
   c. Date.

d. Name of Contractor, subcontractor, manufacturer and supplier.
e. Related Specification or Contract Drawing reference to the samples submitted.

4. A letter of transmittal, in triplicate, from the Contractor requesting acceptance must accompany all such samples.

5. Transportation charges to the Design Consultant's office must be prepaid on all samples forwarded.

6. Samples for testing purposes shall be as required in the Specifications.

7. Samples on Display: When samples are specified to be equal to approved product, they shall be carefully examined by the Contractor and by those whom the Contractor expects to employ for the furnishing of such materials.

8. Timely Submissions Log/Schedule: Samples shall be submitted in accordance with approved Shop Drawing log so as to permit proper consideration without delaying any operation under the project. Materials should not be ordered until acceptance is received, in writing, from the Design Consultant. All materials shall be furnished equal in every respect to the accepted samples.

9. The Acceptance of any samples will be given as promptly as possible, and shall be only for the characteristic color, texture, strength, or other feature of the material named in such approval, and no other. When this approval is issued by the Design Consultant, it is done with the distinct understanding that the materials to be furnished will fully and completely comply with the Specifications, the determination of which may be made at some later date by a laboratory test or by other procedure. Use of materials will be permitted only so long as the quality remains equal to the approved samples and complies in every respect with the Specifications, and the colors and textures of the samples on file in the office of the Design Consultant, for the project.

10. Acceptability of test Data: The Commissioner will be the final judge as to acceptability of laboratory test data and performance in service of materials submitted.

11. Valuable Samples: Valuable samples, such as hardware, plumbing and electrical fixtures, etc., not destroyed by inspection or test, will be returned to the Contractor and may be incorporated into the work after all questions of acceptability have been settled, providing suitable permanent records are made as to the location of the samples, their properties, etc.

12. Equivalent Quality: Any material, article and/or equipment which is designated in the Drawings and/or Specifications by a number in the catalogue of any manufacturer or by a manufacturer's grade or trade name is designated for the purpose of describing the material, article and/or equipment and fixing the standard of performance and/or function, as well as the quality and/or finish. Any material, article and/or equipment which is other than what is specified in the Drawings and/or Specifications will only be accepted if the Commissioner makes a written determination that such material, article and/or equipment is equivalent to that which is specified in the Drawings and/or Specifications.

13. The submission of any material, article and/or equipment as the equal of any material, article and/or equipment set forth in the Drawings and/or Specifications as a standard shall be accompanied by any and all information essential for determining whether such proposed material, article and/or equipment is equivalent to that which is specified. Such information shall include, without limitation, illustrations, drawings, descriptions, catalogues, records of tests, samples, as well as information regarding the finish, durability and satisfactory use of such proposed material, article and/or equipment under similar operating conditions.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.7

1.7 LEED SUBMITTALS:

A. Comply with submittal requirements specified in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL; Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS; Section 01 81 13.13, VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS; Section 01 81 19, INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS and Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.

B. LEED Building submittal information shall be assembled into one package per each applicable specification section, separate from all other non-LEED submittals. Each submittal package shall have a separate transmittal and identification as described in Sub-Section 1.6 herein.

C. Number of Copies: Submit FOUR (4) copies of LEED submittals, in accordance with procedure described in Sub-Section 1.6 herein, unless otherwise indicated.

1. LEED Submittals shall be clearly marked "LEED".

D. Material Safety Data Sheets (MSDSs) for LEED Certification: Submit information necessary to show compliance with LEED certification requirements, which will be the limit of the Design Consultant's review for LEED compliance.

1. Designated LEED submittals that include non-LEED MSDS data will not be reviewed. The entire submittal will be returned for re-submission.

E. Product Cut Sheets and/or Shop Drawings for LEED Certification: Provide product cut sheets and/or shop drawings with the Contractor's or sub-contractor's stamp, confirming that the submitted products are the products installed in the Project. For detailed requirements refer to Sub-Section 1.6 of Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED PROJECTS.

1. Provide the quantity, length, area, volume, weight, and/or cost of each product submitted as required to satisfy LEED documentation requirements. Refer to Sub-Section 1.6 of Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED PROJECTS.

1.8 ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING:

A. In accordance with Section 01 10 00 Summary, Sub-Section 1.5 E, the Contractor shall submit reports to the Commissioner regarding the use of Ultra Low Sulfur Diesel Fuel and Best Available Technology (BAT) in Non road Vehicles. Submission of such reports shall be in accordance with the schedule, format, directions and procedures established by the Commissioner.

1.9 CONSTRUCTION PHOTOGRAPHS AND DVD RECORDINGS:

A. Submit construction progress photographs and DVD recordings in accordance with requirements of Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION

1.10 AS-BUILT DOCUMENTS:

A. Submit all as-built documents in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 33 00

SECTION 01 35 03
GENERAL MECHANICAL REQUIREMENTS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 03

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. The General Mechanical Requirements contained herein shall be followed by the Contractor, as well as its subcontractor for HVAC work. This Section sets forth the General Requirements applicable to mechanical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.

1.3 RELATED SECTIONS: Include without limitation the following:

A. Section 01 10 00 SUMMARY
B. Section 01 33 00 SUBMITTAL PROCEDURES
C. Section 01 35 06 GENERAL ELECTRICAL REQUIREMENTS
D. Section 01 42 00 REFERENCES
E. Section 01 77 00 CLOSEOUT PROCEDURES
F. Section 01 78 39 CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

A. CONCEALED PIPING AND DUCTS -: shall mean piping and ducts hidden from sight in masonry or other construction, in floor fill, trenches, partitions, hung ceilings, furred spaces, pipe shafts and in service tunnels not used for passage. Where piping and ducts run in areas that have hung ceilings, such piping and ducts shall be installed in the hung ceilings. For work on existing piping any insulation on such existing piping is to be tested for asbestos and abated, if found to be positive by a certified asbestos contractor. Such testing and abatement shall occur prior to the performance of any work on these pipes.

1.5 SUBMITTALS:

A. INTENT OF MECHANICAL CONTRACT DRAWINGS – Mechanical Contract Drawings are in part diagrammatic and show the general arrangement of the equipment, ducts and piping included in the Contract and the approximate size and location of the equipment.

B. The Contractor shall follow these Contract Drawings in laying out the work and verify the spaces in which it will be installed. The Contractors shall submit, as directed, Mechanical Shop Drawings, roughing drawings, manufacturer's Shop Drawings, field drawings, cuts, bulletins, etc., of all materials, equipment and methods of installation shown or specified in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

1. Submit sheet metal shop standards. Submit manufacturer's product data including gauges, materials, types of joints, scaling materials and installations for metal ductwork materials and products.

2. Submit scaled layout drawing (3/8"=1') of metal ductwork and fittings including, but not limited to, duct sizes, locations, elevations, slopes of horizontal runs, wall and floor penetrations and connections. Show modifications of indicated requirements made to conform to local shop practice and how those modifications ensure that free area, materials and rigidity are not reduced. Layouts should include all the room plans, mechanical equipment rooms and penthouses. Method of attachment of duct hangers to building construction all with the support details. Coordinate shop drawings with related trades prior to submission.

3. Indicate duct fittings, particulars such as gauges, sizes, welds and configuration prior to start of work for low-pressure systems.

4. Submit maintenance data and parts lists for metal ductwork materials and products. Include this data, product data and shop drawings in maintenance manual.

1.6 ACCESSIBILITY:

All work shall be installed by the Contractor so as to be readily accessible for inspection, operation, maintenance and repair. Minor deviations from the arrangement indicated on the Contract Drawings may be made to accomplish this, but they shall not be made without approval by the Commissioner.

1.7 CHANGES IN PIPING, DUCTS, AND EQUIPMENT:

Wherever field conditions are such that for proper execution of the work, reasonable changes in location of piping, ducts and equipment are necessary and required, the Contractor shall make such changes as directed and approved, without extra cost to the City.

1.8 CLEANING OF PIPING, DUCTS, AND EQUIPMENT:

Piping, ducts and equipment shall be thoroughly cleaned by the 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. For work on existing piping, ducts and equipment the Contractor shall pay special attention during this task so as not to disturb the insulation on such piping, ducts or equipment.

1.9 STANDARDIZATION OF SIMILAR EQUIPMENT:

Unless otherwise particularly specified, all equipment of the same kind, type or classification, and used for identical purposes, shall be the product of one (1) manufacturer.

1.10 SUPPORTING STRUCTURES DESIGNED BY THE CONTRACTOR:

Unless otherwise specified, supporting structures for equipment to be furnished by the Contractor shall be designed by an Engineer licensed in New York State retained by the Contractor. Supporting structures shall be 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:

A. Structural Steel - ASTM Standard Specifications, AISC and New York City Construction Codes.

B. Concrete for supports for equipment shall conform to the Specifications for concrete herein, but in no case shall be less than the requirements of the New York City Construction Codes for average concrete.

C. Steel reinforcement for concrete shall be of intermediate grade and shall meet the requirements of the Standard Specifications for Billet Steel-Concrete Reinforcement Bars, ASTM.

D. Drawings and calculations shall be submitted for review and acceptance in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

1.11 ELIMINATION OF NOISE:

A. All systems and/or equipment provided under the Contract shall operate without objectionable noise or vibration.

B. Should operation of any one or more of the several systems produce noise or vibration which is, in the opinion of the Commissioner, objectionable, the Contractor shall at its own expense make changes in piping, equipment, etc. and do all work necessary to eliminate objectionable noise or vibration.

C. Should noise or vibration found objectionable by the Commissioner be transmitted by any pipe or portions of the structure from systems and/or equipment installed under the Contract, the Contractor shall at its own expense install such insulators and make such changes in or additions to the installations as may be necessary to prevent transmission of this noise or vibration.

1.12 PRELIMINARY FIELD TEST:

As soon as conditions permit, the 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.

1.13 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.

1.14 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 in accordance with Section 01 77 00 CLOSEOUT PROCEDURES. The work shall not be deemed substantially complete until the certificates have been delivered.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 35 03

No Text

SECTION 01 35 06
GENERAL ELECTRICAL REQUIREMENTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section sets forth the General Requirements applicable to electrical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Project Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.

B. This Section includes the following:

1. Procedure for Electrical Approval
2. Submittals
3. Electrical Installation Procedures
4. Electrical Conduit System Including Boxes (Pull, Junction and Outlet)
5. Electrical Wiring Devices
6. Electrical Conductors and Terminations
7. Circuit Protective Devices
8. Distribution Centers
9. Motors
10. Motor Control Equipment
11. Schedule of Electrical Equipment

1.3 RELATED SECTIONS: Include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 33 00	SUBMITTAL PROCEDURES
C.	Section 01 35 03	GENERAL MECHANICAL REQUIREMENTS
D.	Section 01 42 00	REFERENCES
E.	Section 01 77 00	CLOSEOUT PROCEDURES
F.	Section 01 78 39	CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

A. WIRING: means both wire and raceway (rigid steel, heavy wall conduit unless specifically indicated otherwise).

B. POWER WIRING: means wiring from a panel board or other specified source to a starter (if required) then to a disconnect (if required), then to the final point of usage such as a motor, unit or device.

C. CONTROL and/or INTERLOCK WIRING: means that wiring that signals the device to operate or shut down in response to a signal from a remote control device such as a temperature, smoke, pressure, float,

etc. device (starters and disconnect switches are not included in this definition) regardless of the voltage required for the controlling device.

D. RIGID STEEL CONDUIT: shall mean rigid steel, heavy wall conduit that is hot dipped galvanized inside and outside. The conduit shall meet the requirements of the latest edition, as amended, of the "Standard for Rigid Steel Conduit" of the Underwriters' Laboratories, Inc. Unless otherwise specified in the Specifications or indicated on the Contract Drawings, rigid steel conduit shall be used for all exposed work, for all underground conduits in contact with earth and for fire alarms systems, as required by the New York City Construction Codes.

E. ELECTRICAL METALLIC TUBING (EMT): shall mean industry standard thin wall conduit of galvanized steel only. All elbows, bends, couplings and similar fittings which are installed as a part of the conduit system shall be compatible for use with electric metallic tubing. Couplings and terminating fittings shall be of the pressure type as approved by the Commissioner. Set screw fittings will not be acceptable. EMT shall meet the requirements of the latest edition, as amended, of the "Standard for Electrical Metallic Tubing of the Underwriters Laboratories Inc." EMT may only be used where specifically indicated. In no case will EMT be permitted in spaces other than hung ceilings and dry wall partitions.

F. FLEXIBLE METALLIC CONDUIT (FMC): Shall mean a conduit made through the coiling of a self-interlocking ribbed strip of aluminum or steel, forming a hollow tube through which wires can be pulled. For final connections to motors and motorized equipment, not more than a 4' - 0" length of flexible conduit may be used. For watertight installations, this conduit shall be of a watertight type, attached with watertight glands or fittings for final connections from outlet box to recessed lighting fixtures and in locations only where specifically permitted by the Specifications or Contract Drawings.

1.5 PROCEDURE FOR ELECTRICAL APPROVAL:

This Sub-Section sets forth General Electrical information, as well as required approvals for all electrical work required for the Project, including ancillary electrical work which may be included in the work of other trade subcontractors.

A. ELECTRIC SERVICE: The electric service supply is subject to commercial and operating variation of the utility company. Proper provision shall be made to have all apparatus operate normally under these conditions.

B. ACCEPTANCE: Acceptance and approval of the work will be contingent upon the inspection and test of the installation by the City regulatory agency.

C. TESTS: The Contractor shall notify the Commissioner when the Contractor has completed the work and is ready to have it inspected and tested. Upon completion of the work tests shall be made as required by the Commissioner of all electrical materials, electrical and associated mechanical equipment, and of appliances installed hereunder. The Contractor shall furnish all labor and material for such tests. Should the tests show that any of the material, appliances or workmanship is not first class or not in compliance with the Contract, the Contractor on written notice shall remove and promptly replace them with other materials in conformity with the Contract.

D. CERTIFICATE OF THE BUREAU OF ELECTRICAL CONTROL, OF THE DEPARTMENT OF BUILDINGS (B.E.C.): The Contractor must file prior to requesting a substantial completion inspection a Certificate of Inspection issued by B.E.C. On completion of the work the Contractor shall obtain certificates of inspection, approval, acceptance and compliance from all agencies and/or entities having jurisdiction over the work and shall deliver these certificates to the Commissioner in accordance with Section 01 77 00 CLOSEOUT PROCEDURES.

E. RESPONSIBILITY FOR CARE AND PROTECTION OF EQUIPMENT:

1. 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 the Contract.

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 equipment 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 equipment, apparatus or materials of the same kind, type or classification which are intended to be used for identical types of service, shall be made by the same manufacturer.

1.6 SUBMITTALS:

A. CONTRACTOR'S ELECTRICAL DRAWINGS AND SAMPLES FOR APPROVAL:

1. The Contractor shall submit to the Commissioner for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, complete dimensional drawings of all equipment, wiring diagrams, motor test data, details of control, installation layouts showing all details and locations and including all schedules, and descriptions and supplementary data to comprise complete working drawings and instructions for the performance of the work. A description of the operation of the equipment and controls shall be included. A letter, in triplicate, shall accompany each submittal.

2. The Contractor shall submit in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, duplicate samples of such materials and appliances as may be requested by the Commissioner for approval. These samples shall be properly tagged for identification and submitted for examination and test. After the samples are approved, one (1) sample will be returned to the Contractor and the other sample will be filed in the office of the Commissioner's representative for inspection use. After the Contract is completed, the second set of samples will be returned to the Contractor.

B. TIMELINESS: All material shall be submitted in accordance with the submittal schedule in sufficient time for the progress of construction. Failure to promptly submit acceptable samples and dimensional drawings of equipment will not be accepted as grounds for an extension of time. The Commissioner may decline to consider submittals unless all related items are submitted at the same time.

C. CONTRACTOR'S STATEMENT WITH SUBMITTALS: Contractor shall submit statement in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.

D. BULLETINS AND INSTRUCTIONS: The Contractor shall furnish and deliver to the Commissioner in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS and Section 01 77 00, CLOSEOUT PROCEDURES, after acceptance of the work, four (4) complete sets of instructions, technical bulletins and any other printed matter (diagrams, prints, or drawings) required to provide complete information for the proper operation, maintenance and repair of the equipment and the ordering of spare parts.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 ELECTRICAL INSTALLATION PROCEDURES:

This Sub-Section sets forth the General Installation Procedure that shall apply to all electrical work and electrical equipment appearing in the Contract.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

A. INTENT OF CONTRACT DOCUMENTS: The Drawings and Specifications are to be interpreted as a means of conveying the scope and intent of the work without giving every minor electrical detail. It is intended, nevertheless, that the Contractor shall provide whatever labor and materials are found necessary, within the scope of the Contract, for the successful operation of the installation. Specific details of individual installations are to be finally decided upon when the Contractor submits Working or Shop Drawings for approval to DDC. Whenever there are two (2) or more methods to complete project work within the Contract scope, the Commissioner reserves the right to choose that method which, in the Commissioner's opinion, will afford the most satisfactory performance, lasting qualities, and accessibility for repairs, even though this selection is the most costly.

B. SCHEMATIC PLANS – APPROXIMATE LOCATIONS: Conduits and wiring are shown on the plans for diagrammatic purposes only. Therefore, conduit layouts may not necessarily give the actual physical route of the conduits. The Contractor who installs a conduit system will also be required, as part of the work, to furnish and install all hangers and pull-boxes, including any special pull-boxes found necessary to overcome interferences, and to facilitate the pulling of electrical cables. Similarly, the locations of equipment, appliances, outlets and other items shown on Contract Drawings are only approximate and are to be definitively established when equipment Shop Drawings are submitted and approved by DDC during construction.

C. SLEEVES: required for conduits passing through walls or floors, shall be furnished and set by the Contractor installing the conduits. Sleeves in waterproofed floors shall be provided with flashing extending 12 inches in all directions from sleeve and secured to waterproofing. Flashing shall be turned down into space between pipe and sleeve and caulked watertight. Flashing shall be 20 oz. cold rolled copper. Sleeves shall be supplied with welded flanges similar to those supplied by the subcontractor for Plumbing Work and shall extend one (1) inch above finished floor.

D. COORDINATION: The 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. The Contractor is to consult all other Contract Drawings, as well as approved equipment Shop Drawings on file in the Resident Engineer's Field Office. This will aid in avoiding interferences, omissions and errors in the electrical installation.

E. RESTORATION: If drilling or cutting is done on finished surfaces of equipment or the structure, any marring of the surface shall be repaired or replaced by the Contractor. The 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. If any piercing of waterproofing occurs because of the installation of the work, the Contractor shall restore the waterproofing, at its own expense, to the satisfaction of the Commissioner.

F. ELECTRICAL WORK AT SITE: The Contractor furnishing 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, without additional cost to the City.

G. COOPERATION AMONG SUBCONTRACTORS: Whenever an electrically operated unit or system involves the combined work of several subcontractors for its installation and successful operation, the

Contractor shall require each subcontractor to exercise the utmost diligence in cooperating with others to produce a complete, harmonious installation.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2

3.2 ELECTRICAL CONDUIT SYSTEM INCLUDING BOXES (PULL, JUNCTION AND OUTLET):

This Sub-Section sets forth the requirements applying to the installation of electrical conduits, boxes or fittings. Rigid steel conduit shall be used throughout, unless otherwise directed by the Commissioner. Where the word 'conduit', without a modifier such as, rigid steel, EMT, etc., is specified to be used, it shall be interpreted to mean, rigid steel, heavy wall, threaded conduit.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

A. INSTALLATIONS AND APPLICATIONS:

1. Unless otherwise specified or indicated on the Contract Drawings, conduit runs shall be installed concealed in finished spaces.
2. CONDUIT SIZES: The sizes of conduit shall be as indicated on the Contract Drawings. Wherever conduit sizes are not indicated, the conduit shall meet the requirements of the New York City Electrical Code to accommodate the conductors to be installed therein.
3. Conduits shall be reamed smooth after cutting. No running threads will be permitted. Universal type couplings shall be used where required. Conduit joints shall be screwed up to butt. Empty conduits after installation shall have all open ends temporarily plugged to prevent the entrance of water or other foreign matter.
4. Conduits being installed in concrete or masonry shall be securely held in place 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: When installing underground conduits, duct banks or manholes the Contractor shall perform the work of cutting pavement, excavation shoring, keeping trenches or holes pumped dry, backfilling, restoration of surfaces to original condition and removal of excess earth and rubbish from premises. During the work, the Contractor shall provide adequate crossovers, protective barriers, lamps, flags, etc., to safeguard traffic and the public. When the work is in a public highway or street, the Contractor shall secure and pay for all necessary permits and inspection fees and pay the cost of repaving.
7. EXPOSED CONDUIT SUPPORTS: Exposed conduit shall be supported by Galvanized hangers with necessary inserts, beam clamps of approved design or attached to walls or ceilings by expansion bolts. Exposed conduits shall be supported or fastened at intervals not more than five (5) feet.
8. Exposed conduit shall be installed parallel or at right angles to ceiling, walls and partitions. Where direction changes of exposed conduit cannot be made with neat bends, such as required around beams or columns, conduit type fitting shall be used.

9. The conduit shall be installed with an approved expansion joint:

   a. Wherever the conduit crosses a building expansion joint the Contractor will be held responsible for determining where the building expansion joints are located.

   b. Every 200 feet, when in straight runs of 200 feet or longer.

10. Conduit may only enter and leave a floating slab in the vertical direction, and then only in an approved manner. Horizontal entries into floating slabs are not permitted.

11. Conduit installed in pipe shafts shall be properly supported to carry the total weight of the raceway system complete with cable. In addition at least one (1) horizontal brace per 10 ft. section shall be provided to assure stability of the raceway system.

12. BUSHINGS AND LOCKNUTS: Approved bushings and locknuts shall be used wherever conduits enter outlet boxes, switch boxes, pull boxes, panel board cabinets, etc.

13. CONDUIT BENDS: shall be made without kinking conduit or appreciably reducing the internal diameter. All bends in conduit of two (2) inch in diameter or larger shall be made with an hydraulic or power pipe bender. The radius of the inner edge of any bend shall not be less than six (6) times the internal diameter of the conduit where rubber covered conductors are to be installed, and not less than 10 times the internal diameter of the conduit where lead covered conductors are to be used. Long gradual sweeps will be required, rather than sharp bends, when changes of direction are necessary.

14. EMPTY CONDUITS

   a. TESTS: All conduits and ducts required to be installed and left empty shall be tested for clear bore and correct installation by the Contractor using a ball mandrel and a brush and snake before the installation will be accepted. The ball shall be turned to approximately 85% of the internal diameter of the raceway to be tested. Two (2) short wire brushes shall be included in the mandrel assembly. Snaking of conduits, ducts, etc., shall be performed by the Contractor in the presence of the Resident Engineer. Any conduits or ducts which reject the mandrel shall be cleared at once with the Contractor bearing all costs, such as chopping concrete, to replace the defective conduit and restore the surface to its original condition.

   b. TAGS: Numbers or letters shall be assigned to the various conduit runs, and as they test clear they shall be identified by a fiber tag not less than 1-¼ inch width, attached by means of a nylon cord. All conduit terminations in panel, splice or pull boxes as well as those out of the floor or ceiling shall be tagged.

   c. TEST RECORDS: As the conduit runs clear, a record shall be kept under the heading of "Empty Conduit Tested, Left Clear, Tagged and Capped" showing conduit designation, diameter, location, date tested and by whom. When complete, this record shall be signed by the Resident Engineer and submitted in triplicate for approval. This record shall be entered on the Contract Record Drawings under Section 01 78 39, CONTRACT RECORD DOCUMENTS.

   d. CAPPING: All empty conduit and duct openings, after test, shall be capped or plugged by the Contractor as directed.

   e. DRAG LINES: A drag line shall be left in all empty conduit.

B. 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 Galvanized coated and shall be built of No. 12 USSG steel reinforced at corners by substantial angle irons and riveted or welded to plates. Bottom or side

of pull boxes shall be removable and held in place by corrosion resistant machine screws. Pull boxes in damp locations shall have threaded hubs and gaskets and be NEMA 4X. All pull boxes shall be suspended from ceiling or walls in the most substantial manner.

2. In centering outlets, the Contractor is cautioned to allow for overhead pipes, ducts and other obstructions, and for variations in arrangement and thickness of fireproofing, soundproofing and plastering. Precaution should be exercised regarding the location of window and door trims, paneling, etc. Mistakes resulting from failure to exercise precaution must be corrected by the Contractor at no additional cost to the City. Outlets in hung ceilings shall be supported from the black iron or structure.

3. The exact location of all outlets in finished rooms shall be as directed. When the interior finish has been applied, the Contractor shall make any necessary adjustment of its work to properly center the outlets. All outlet boxes for local switches near doors shall be located at the strike side of doors as finally hung, whether so indicated on the drawings or not.

4. Exposed wall outlet boxes shall be erected neatly and tight against the walls and securely anchored to same.

5. All wall outlets of each type shall be set accurately at the same level on each floor, except where otherwise specified or directed. Where special conditions occur, outlets shall be located as directed.

6. MOUNTING HEIGHTS: The following heights are standard heights and are subject to correction due to coordination with Contract Drawings. All such changes must be approved by the Resident Engineer. Heights given are from finished floor to center line of outlet or device on wall or partition, unless otherwise indicated.

a.	General Convenience Outlets (mount vertical)	1'-6"
b.	Clock Outlets	8'-6"or 1'-6" below ceiling
c.	Wall Lighting Switches	4'-0"
d.	Motor Controllers	5'-0"
e.	Motor Push-button	4'-2"
f.	Telephone Outlets	As Directed
g.	Fire Alarm Bells	8'-6"or 1'-6" below ceiling
h.	Fire Alarm Stations	4'-0"
i.	Intercom Outlet	1'-6"
j.	Cooking and Refrigerator Unit	As Directed

7. Outlet boxes shall be of approved design and construction; of form and dimensions suited and adapted to its specific location; the kind of fixture to be used and the number and arrangements of conduits, etc., connecting therewith. All ferrous outlet boxes shall meet the requirements for zinc coating as specified under Electrical Conduit Systems.

8. There shall be knockouts opened only for the insertion of conduit. Any outlet boxes with more openings than are necessary for conduit insertion shall be sealed by the Contractor without additional charge.

9. All outlet boxes and junction boxes for exposed work shall be galvanized cast iron or cast aluminum with threaded openings. Outlet boxes for exposed inside work in damp locations shall be galvanized cast iron or cast aluminum with threaded hubs and neoprene gaskets.

10. Junction boxes shall not be less than 4 11/16" square and shall be equipped with zinc coated plates. Where plates are exposed they shall be finished to match the room decor.

11. FIXTURE SUPPORTS: Outlet boxes supporting lighting fixtures shall be equipped with fixture studs held by approved galvanized stove bolts or integral with the box. Cast iron or malleable boxes shall have four (4) tapped holes for mounting required cover or fixtures.

12. Outlet boxes exposed to the weather or indicated W.P. shall be cast iron or cast aluminum and the covers made watertight with neoprene gaskets. The boxes shall have external lugs for mounting. Drilling of the body of the fitting for mounting will not be permitted. The cover screws shall be appropriate in size, non-corrodible and not less than four (4) in number for each box opening.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3

3.3 ELECTRICAL WIRING DEVICES:

A. WALL SWITCHES shall be of the best specification grade, quiet type, and shall have a rating of 20 Amperes at 277 volts, as manufactured by Bryant, Hubbell or approved equal. The mechanism shall be equipped with arc snuffers. They shall be of the tumbler type, single pole. Switches of the 3-way type shall have a similar rating.

B. RECEPTACLES:

1. CONVENIENCE OUTLETS: shall be of the best specification grade, duplex, two-pole, 3-wire, 20 Amperes at 125 volts. It shall have a grounding pole that shall be grounded to the conduit system. Receptacles shall be capable of both back and side wiring and shall have only one (1) grounding screw. Receptacles shall be Hubbell Cat. #5262 or approved equal.

2. HEAVY DUTY RECEPTACLE OUTLETS: shall have the Ampere rating and the number of poles specified on the Contract Drawings and shall be Hubbell, Russell-Stoll, Bryant, AH & H or approved equal. Each outlet shall have a grounding pole, which shall be grounded to the conduit system.

3. FLOOR RECEPTACLES: shall be Russell & Stoll #3040 or approved equal, to fit into floor box previously specified.

4. NAMEPLATES: are required for all receptacles other than 120V.

C. CLOCK HANGERS: Clock outlets for surface type clocks shall be equipped with a supporting hook and recessed faceplate to conceal the electrical cord.

D. WATERTIGHT DEVICES: For installations exposed to weather or in damp locations, the devices shall be in a gasketed, cast iron enclosure.

E. PLATES:

1. Every convenience outlet and switch outlet shall be covered by means of a stainless steel No. 302 - 0.4" antimagnetic plate with an approved finish, unless provided otherwise in the detailed Specifications.

2. Where two (2) or three (3) switches are grouped together, a single faceplate shall be used. Where more than three (3) switches are located at one (1) point, the faceplates may be made up in multiple units.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4

3.4 ELECTRICAL CONDUCTORS AND TERMINATIONS:

A. CONDUCTORS FOR LIGHT AND POWER - All wire and cable shall be of annealed copper of 98% conductivity. Aluminum wire or cable will not be permitted. The insulation shall be flame retardant, moisture and heat resistant, thermoplastic, type THW or THWN rated for 600 volts at 75 degrees C. for

both wet and dry locations. Wires No. 8 or larger shall be stranded. Wires and cables shall also be subject to the requirements of the NYCEC. Cables for incoming service or wire in conduits contiguous with the earth or in concrete or other damp or wet locations shall be synthetic rubber insulated with neoprene jacket, heat and moisture resistant and shall be equal to UL Type USE and rated for 600 volts at 75 degrees C. for both wet and dry locations.

B. FIXTURE WIRE: Lighting fixtures shall be wired with No. 14 gauge wire designated as AWM and rated at 105 degrees C.

C. OTHER TYPES: Cables and wires for interior communication systems are described in applicable detailed Specifications.

D. MINIMUM SIZE: Conductors smaller than No. 12 AWG shall not be used for light or power.

E. COLOR CODE: Wires shall have a phase color code, and multiple conductor cables shall be color coded.

F. CABLE DATA: The Contractor shall submit for approval the following information for each size and type of cable to be furnished.

1. Manufacture of Cable - Location of Plant.
2. Minimum insulation resistance at standard test temperature.
3. Days required for delivery to site of work after order to proceed with manufacture.

G. ORIGINAL REELS: Cable and wire shall be delivered to the site of the work on original sealed factory reels.

H. WIRE INSTALLATION:

1. INSTALL WIRES AFTER PLASTERING - Feeder and branch circuits wiring shall not be installed in conduit before the rough plastering work is completed. No conductors shall be pulled into floor conduits before floor is poured.
2. CONDUIT SECURED IN PLACE - No conductor shall be pulled into any conduit run before all joints are made up tightly and the entire run rigidly secured in place.
3. WIRE ENDS - All wires shall be left with sufficiently long ends for proper connection and stowing.
4. PULLING COMPOUNDS - When required to ease the pulling-in of wires into conduit, only approved compounds as recommended by cable manufacturers shall be used.
5. PRESSURE CONNECTORS - for wires shall be of the cast copper or forged copper pressure plate type. Connectors shall be O.Z., Burndy, National Electric Products or approved equal.
6. Splices and feeder taps in the gutters of panel boxes shall be made by means of pressure plate type connectors encased in composition covers as manufactured by O.Z., Burndy, National Electric Products or approved equal.
7. Splices in branch wiring for sound systems and fire systems, shall be first made mechanically secure, then soldered and taped.
8. In lieu of soldered splices (except for sound and Fire Systems, which must have soldered splices) the following alternates are acceptable for operating temperatures up to 105 degrees C., for fluorescent fixtures and for the splicing of branch circuit wiring up to No. 8 AWG wire:

a. Mechanical splices made with mechanical connectors as manufactured by the Minnesota Manufacturing Company "Scotchlock" or approved equal. Mechanical connectors requiring a special tool (pressure connectors, insulators and locking rings) by Buchanan or approved equal. The tool used for connector application shall be as approved by the connector manufacturer.

b. For wire and cable No. 6 AWG and larger for branch circuit wiring the seamless tubular connector will only be accepted. Application of this connector shall be with a tool recommended by the connector manufacturer.

9. TAGS: All feeders and risers shall be tagged at both ends, and in all pull and junction boxes and gutter spaces through which they pass. Such tags shall be of fiber and have the feeder designation and size stamped thereon.

10. BRANCH CIRCUIT WIRING:

a. The Contractor installing branch circuit wiring shall test the work for correct connections and leave all loop splices in the fixture outlet boxes properly spliced and taped. The Contractor shall provide wire ends long enough for convenient connection to device.

b. NEUTRALS: No common neutrals shall be used except for lighting branch circuits. Each neutral wire shall be terminated separately on a neutral busbar in the panelboard. No common neutrals will be permitted for convenience receptacle branch circuits.

I. TERMINATIONS

1. LUGS: All lugs for all devices and all cable terminations shall be copper. AL/CU rated lugs will not be permitted. The only exception to this requirement is when the particular device is not manufactured with copper lugs by any manufacturer. Lugs for No. 6 AWG cable and larger shall be cast copper or forged copper pressure plate type. Lugs for 1/0 and larger shall be fastened with two (2) bolts.

2. All lugs shall be of the proper size to accept the cable connected to them. Any subcontractor furnishing a device containing lugs is to coordinate with the Contractor 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.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.5

3.5 CIRCUIT PROTECTIVE DEVICES:

This Section sets forth the circuit protective devices such as circuit breakers and safety switches, used in connection with Motor Control Equipment, Distribution Centers, Panel boards and Service Entrance.

A. CIRCUIT BREAKERS:

1. CIRCUIT BREAKERS: shall be operable in any position and shall be of the quick-make, quick-break type on manual operation. The handle shall be trip free, preventing contacts from being held in closed position against abnormal overloads or short circuits. Positive visual indication of automatic tripped position of breaker shall be provided, in addition to the "On" and "Off" indication. All circuit breakers shall be of the bolted type.

2. TRIP RATING: Circuit breakers shall be provided with the required number of trip elements, calibrated at 40 degrees C., ambient temperature, in accordance with wire sizes or motor currents as shown on Contract Drawings or indicated in the Specifications.

3. POLE BARRIER: Multipole pole breakers shall be designed to break all poles simultaneously. They shall be provided with barriers between poles and arc suppressing devices.

4. ELEMENTS: Multipole circuit breakers shall have frames of not less than a 100 Ampere rating. Multipole circuit breakers for 480 volts AC operation shall have an NEMA interrupting rating of 18,000 Amperes, unless a higher rating is specified in the Specific Requirements or indicated on the Contract Drawings.

5. For circuit breakers with frame size up to and including 225 Amperes, the breakers may be provided with non-interchangeable trip elements. For frame ratings above 225 Amperes, the breakers shall be provided with interchangeable trip elements, which can be replaced readily.

6. Single pole circuit breakers for branch circuits shall have a frame size of no less than 100 Amperes, and shall be rated at 125 volt A.C. with a NEMA interrupting rating of 10,000 Amperes, unless a higher rating is specified in the Specifications or indicated on the Contract Drawings.

7. INVERSE TIME ACTION: The circuit breakers shall be dual element type, one (1) element with time limit characteristics, so that tripping will be prevented on momentary overloads, but will occur before dangerous values are reached and the other with instantaneous trip action. Inverse time delay action shall be effective between a minimum tripping point of 125% of rating of breaker and an instantaneous tripping point between 600% and 700% of rated current.

8. CONSTANCY OF CALIBRATION: The tripping elements shall insure constant calibration and be capable of withstanding excessive short circuit conditions without injury.

9. CONTACTS: shall be non-welding under operating conditions and of the silver to silver type.

10. TEMPERATURE RISE: Current carrying parts, except thermal elements, shall not rise in temperature in excess of 30 degrees C. while carrying rated current at rated frequency.

11. NUMBERING: Each circuit breaker shall be distinctly numbered when installed in a group with other breakers. The calibration of trip element shall be indicated on each breaker.

B. SAFETY SWITCHES:

NEMA TYPE HD: When safety switches are permitted to be used for service entrance, motor disconnecting means or to control other types of electrical equipment, they shall be of the type HD of a rating not less than 30 Amperes. Enclosures shall be provided with means for locking. For ratings above 60 Amperes terminals shall have double studs.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.6

3.6 DISTRIBUTION CENTERS:

This Section sets forth the construction and installation procedure for Switchboards, Panel boards and Cabinets.

A. PANELBOARDS-GENERAL TYPE: The panel boards shall be of the automatic circuit breaker type with individual breakers for each circuit, removable without disturbing the other units. Circuit breakers shall be in accordance with the requirements outlined under "Circuit Protective Devices."

B. NUMBER AND RATING OF CIRCUIT BREAKERS: The Contract Drawings show a layout of each panel, giving the number, frame, size and trip setting of circuit breakers and number of branch circuits and spare breakers. Each branch circuit shall be distinctly numbered.

C. BUS-BAR CONSTRUCTION AND SUPPORT: Panel Boards shall be of the dead front type and shall have bus bars and branch circuits designed to suit the system and voltage. Current carrying parts, exclusive of circuit breakers shall be copper and based on a maximum density of 1,000 Amperes per square inch. Bus bars for the main switchboard shall be designed for the frame rating of the Service Breaker. Bus bars shall run up the center of the panel, unless otherwise indicated, and shall have connected thereto the various branch circuits. Unless otherwise specified, bus bars for each panel board shall be equipped with main lugs only and capacity as required on Contract Drawings. Where main protection is required, automatic circuit breakers shall be used. A neutral bus of at least the same capacity as a live bus bar shall be provided for the connection of all neutral conductors. Each terminal shall be identified. All current carrying parts, exclusive of circuit breakers, shall be of copper with a minimum number of joints. The bus bar structure shall be a self-supporting unit, firmly fastened to a ½

inch plastic board, extending the full length and width of assembly which shall serve to insulate the bus structure from the back of panel box. Other methods affording equally effective bus structure support and insulation will be given consideration. An insulating barrier shall separate neutral bus from other parts of panel.

D. CIRCUIT BREAKER ASSEMBLY: The entire circuit breaker and bus bar assembly shall be mounted on an adjustable metal base or pan and secured to the back of panel box. The panel shall have edges flanged for rigidity.

E. PANEL MOUNTING: The panel shall be centered in the panel box to line up with door openings and set level and plumb so that no live parts are exposed with the door open.

F. PANEL CABINET:

1. PANEL CABINET INSTALLATION: When installed surface mounted in panel closets they shall be mounted on Kindorf channel.

2. Where cabinets cannot be set entirely flush due to shallow walls or partitions or where cabinet is extra deep, the protruding sides of cabinet shall be trimmed with a metal or hardwood return molding of approved design and fastened to cabinet so as to conceal the intersection between the wall and cabinet.

G. NAMEPLATES: Nameplates where required, shall be made of engraved Lamicoid sheet, or approved equal. Letters and numbers shall be engraved white on a black background (except for Firehouse projects which shall have white letters on a red background). The Contractor shall submit an engraved sample for approval as to design and style of lettering before proceeding with the manufacture of the nameplate. Nameplates shall be of suitable size and shall also be provided at the top of the switchboard or section thereof and on the trim at the top of all lighting and power panels. Similar nameplates shall also be provided for each distribution circuit breaker giving the breaker number, the number of the feeder, and the name of the equipment fed.

H. SHOP DRAWINGS: showing all details of boxes, panels, etc., shall be submitted for approval.

I. DIRECTORIES: A directory shall be fastened with brass screws and consist of a noncorrosive metal frame with dimensions not less than five (5) inches x eight (8) inches and a transparent window of Plasticile, Plexiglass, Lucite, Polycarbonate or approved equal that is not less than 1/16 inch thick over cardboard or heavy paper. The directory shall be typewritten and show the number of each circuit, the name of circuit and lighting or equipment supplied. The size of riser feeder shall be as indicated on directory. The dimensions of directory shall be submitted for approval for each size of panel.

J. CONSTRUCTION

1. FINISH: Panel boxes, doors and trim for installation in dry locations, shall be zinc coated after fabrication by the hot-dip galvanizing or electroplate process on inside and outside surfaces. In damp locations, panel boards shall be enclosed and gasketed NEMA 3R type. Panel boards located outdoors or exposed to the weather shall be NEMA 3X type.

2. PAINTING: Panel boxes, doors and trim shall receive a coat of approved priming paint and a second coat of approved paint in the field after installation. Paint shall be applied to the inside and outside of boxes and on both sides of trim. Panel trims and doors shall receive a third or finishing coat on the outside after installation. Approval as to texture and color must be obtained before the final coat is applied.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.7

3.7 MOTORS:

This Section sets forth the general design, construction and performance requirements, which shall apply to all motors furnished in the Contract.

A. MOTOR DESIGN: All motors shall be designed to comply with the New York State Energy Conservation Construction Code and the New York City Energy Conservation Code. In the event of any conflict or inconsistency between such codes, the New York City Energy Conservation Code shall prevail. Motors shall have standard NEMA frames and shall have nameplate ratings adequate to meet the specified conditions of operation. Motor performance under variable conditions of voltage and frequency shall be within the limits set in NEMA standards, unless modified in the Specifications. Motors shall be expressly designed for the hazard duty load, voltage and frequency as specified in the Contract. All motor windings shall be copper. All motors intended to operate on a 208 volt system shall be designed and rated for 200 volts.

B. STANDARDS OF COMPARISON: In the absence of specific motor specifications, in general, the best standard products of the leading motor manufacturers shall be considered as a standard for comparison. The requirements of the NEMA standards for motors and generators shall be deemed to contain the minimum requirements of performance and design.

C. OBJECTIONABLE NOISES: Objectionable noises will not be tolerated and exceptionally quiet motors may be required for certain specified locations. Noise control tests as per the New York City Construction Codes may be performed as directed by the Commissioner. Such motors shall bear a nameplate lettered "Quiet Motor." Springs and slip rings shall be of approved non-ferrous material.

D. BEARINGS:

1. Bearings, unless specified otherwise, shall be of the ball or roller type. Motors one (1) horsepower and larger that are equipped with ball roller bearings shall also have lubrication of the pressure-relief greasing type. The Contractor furnishing four (4) or more such motors shall also furnish, as part of the Contract, a pressure grease gun of rugged design, of approximately 10 ounce capacity, complete with necessary adapters. The Contractor shall also provide 10 pounds of approved gun grease.

2. For any particular unit where sleeve bearings are deemed desirable, permission for their use may be granted by the Commissioner. Motors one (1) horsepower and larger that are equipped with sleeve type bearings shall in addition to having protected accessible fittings for oiling be provided with visible means for determining normal oil level. Lubrication shall be positive, automatic and continuous.

E. MOTOR TERMINALS AND BOXES: Each motor shall be furnished with flexible leads of sufficient length to extend for a distance of not less than three (3) inches beyond the face of the conduit terminal box. This box shall be furnished of ample size to make and house motor connections. These requirements shall be met irrespective of any other standards or practices. Size of cable terminals and conduit terminal box holes shall be subject to approval. For motors five (5) horsepower. or larger, each terminal shall come with two (2) cast or forged copper pressure type connectors with bolts, nuts and washers. For motors of smaller ratings, connectors of other acceptable types may be furnished. For installations exposed to the weather or moist locations, terminal boxes shall be of cast iron with threaded hubs and gasketed covers. Cover screws shall be of non-corrosive material.

F. MOTOR TEMPERATURE RISES: The motor nameplate temperature rises for the various types of motor enclosures shall be as listed below:

1.	Open Frame	40 degrees C.
2.	Totally enclosed and enclosed fan cooled	55 degrees C.

3.	Explosion proof and submersible	55 degrees C.
4.	Partially enclosed and drip proof	40 degrees C.

The temperature of the various parts of a motor shall meet the requirements of NEMA standards for the size and type of the motors. Tests for heating shall be made by loading the motor to its rated horsepower and keeping it so loaded for the rated time interval or until the temperature becomes constant.

G. SPECIAL CODE INSTALLATIONS: Electrical installations covered by special publications of NBFU and by special City rulings and regulations shall comply in design and safety features with such applicable codes, regulations and rulings, and shall be furnished and installed complete with all accessories and safety devices as therein specified.

H. MOTORS ON LIGHTING PANELS: The largest A.C. motor permitted on branch circuits of lighting panels shall not exceed 1/4 horsepower.

I. MOTORS RATED: ½ horsepower and larger shall be polyphase.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8

3.8 MOTOR CONTROL EQUIPMENT:

This Section sets forth the requirements for motor controllers and associated devices. Such requirements are applicable to all motor control equipment furnished or installed.

A. MANUFACTURER: All control equipment furnished under the Contract shall be the product of a single manufacturer. Exceptions to this rule may be granted in the case of controllers for fractional horsepower motors driving special equipment, the various units of which have been engineered to obtain specific performance.

B. CONTROL ITEMS REQUIRED: The Contractor furnishing motors 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 shall furnish an approved disconnecting means to be mounted near motor.

C. TYPES OF STARTERS:

1. SQUIRREL CAGE: A.C. motors of the squirrel cage type, rated from one (1) to 30 horsepower, shall have magnetic across the line starters; motors rated above 30 horsepower shall be furnished with reduced voltage (autotransformer type) starter or part winding start with time delay to reduce inrush current. Size of starters shall be based on 200V operation.

2. SLIP RING: A.C. Motors of the slip-ring type shall be furnished with primary across the line starters interlocked with secondary starting and regulating equipment. The interlocking feature shall prevent starting of the motor when the secondary controller is off the initial starting point.

3. MAGNETIC: For fractional horsepower motors, magnetic type starters are not required unless the particular method of controlling the driven equipment makes them necessary. Where individual single phase fractional horsepower motors or the sum of fractional horsepower motors controlled by an automatic device are ½ horsepower or more, magnetic starters and circuit breakers shall be used. Single phase A.C. motors smaller than ½ horsepower or three-phase A.C. motors smaller than one (1) horsepower where manual control is specified may be furnished with starters of toggle

switch or push button type with inbuilt thermal protection. No additional disconnecting means is required to be furnished with this type of starter. This type of starter may also be used in series with automatic control devices such as thermostats, float and pressure switches, provided the individual motor or the sum of fractional horsepower motors is less than ½ horsepower. Means for manual operation shall be provided.

D. DISCONNECTING BREAKER: All motor starters, unless otherwise specified, shall be provided with a disconnecting means in the form of a circuit breaker of the type specified under Article 3.5 CIRCUIT PROTECTIVE DEVICES. 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 Contractor's subcontractor(s) who furnish electrically operated equipment shall give to the Contractor and the Contractor's electrical subcontractor full information relative to sizes and locations of apparatus furnished by them which require electrical connections.

I. SPARE PARTS:

1. FURNISH: The Contractor shall furnish the following spare parts pertaining to equipment furnished by each subcontractor.

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.

END OF SECTION 01 35 06

No Text

SECTION 01 35 26
SAFETY REQUIREMENTS PROCEDURES

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

B. The Contractor shall comply with the requirements of "
This document is included in the Information for Bidders

1.2 SUMMARY:

A. This Section includes administrative and general procedural requirements for Safety and Health Requirements, including:

1. Definitions
2. Required Safety Meeting
3. Compliance with Regulations
4. Submittals
5. Personnel Protective Equipment
6. Hazardous Materials
7. Emergency Suspension of Work
8. Protection of Personnel
9. Environmental Protection

1.3 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 REQUIRED SAFETY MEETINGS:

A. Prior to commencing construction, the Resident Engineer will schedule and hold a preconstruction kick-off meeting either at DDC's main office or at the Project site with representatives of the Contractor, including the principal on-site project representative and one or more safety representatives, Commissioner's designated representatives and other concerned parties for the purpose of reviewing the Contract Safety requirements. The Contractor's safety requirements shall be reviewed, and implementation of safety provisions pertinent to the Work shall be discussed.

B. The Contractor is responsible for conducting weekly documented jobsite safety meetings, given to all jobsite personnel including all subcontractors on the project, with the purpose of discussing safety topics and job specific requirements at the DDC worksite.

1.5 COMPLIANCE WITH REGULATIONS:

A. The Work, including contact with or handling of hazardous materials, disturbance or dismantling of structures containing hazardous materials, and disposal of hazardous materials, shall comply with the applicable requirement for CFR Parts 1910 and 1926, and 40 CFR, Parts 61, 261, 761 and 763.

B. Work involving disturbance or dismantling of asbestos or asbestos containing materials, demolition of structures containing asbestos and removal of asbestos, shall comply with 40 CFR Part 61, Subparts A and M, and 40 CFR Part 763, as applicable.

C. Work shall additionally comply with all applicable federal, state and local safety and health regulations.

D. In case of a conflict between applicable regulations, the more stringent requirements shall apply.

E. All workers working on the DDC project site are required by NYC Local Law 41 to complete the OSHA 10 –hour training course.

1.6 SUBMITTALS:

A. The Contractor shall submit, to the Resident Engineer, copies of the Safety Program, Site Safety Plan and other required documentation in accordance with the *"New York City Department of Design and Construction Safety Requirements."*

B. Permits: If hazardous materials are disposed of off-site submit copies of shipping manifests and permits from applicable federal, state or local authorities and disposal facilities, and submit certificates that the material has been disposed of in accordance with regulations to the Resident Engineer.

C. Accident Reporting: Submit a copy of each accident report to the Resident Engineer in accordance with the *"New York City Department of Design and Construction Safety Requirements."*

D. All Asbestos and Lead project regulatory notifications are to be submitted to DDC's Bureau of Environmental and Geotechnical Services (BEGS) through the Resident Engineer.

E. Request for Subcontractor Approval: Any subcontractor performing environmental work shall submit required documentation for approval to perform such work as required by DDC's BEGS.

PART II – PRODUCTS

2.1 PERSONNEL PROTECTIVE EQUIPMENT:

Special facilities, devices, equipment and similar items used by the Contractor in execution of the Work shall comply with 29 CFR Part 1910, subpart I, Part 1926, subpart E and other applicable regulations.

2.2 HAZARDOUS MATERIALS:

A. The Contractor shall bring to the attention of the Commissioner, any material encountered during execution of the Work that the Contractor suspects to be hazardous.

B. The Commissioner shall determine whether the Contractor shall perform tests to determine if the material is hazardous. A change to the Contract price may be provided, subject to the applicable provisions of the Contract.

C. If the material is found to be hazardous, the Commissioner may direct the Contractor to remediate the hazard and a change to the Contract price may be provided, subject to the applicable provisions of the Contract.

PART III – EXECUTION

3.1 EMERGENCY SUSPENSION OF WORK:

A. When the Contractor is notified by the Commissioner of noncompliance with the safety provisions of the Contract, the Contractor shall immediately, unless otherwise instructed, correct the unsafe condition, at no additional cost to the City.

B. If the Contractor fails to comply promptly, all or part of the Work may be stopped by notice from the Commissioner.

C. When, in the opinion of the Commissioner, the Contractor has taken satisfactory corrective action, the Commissioner shall provide written notice to the Contractor that work may resume.

D. The Contractor shall not be allowed any extension of time or compensation for damages in connection with a work stoppage for an unsafe condition.

3.2 PROTECTION OF PERSONNEL:

A. The Contractor shall take all necessary precautions to prevent injury to the public, occupants, or damage to property of others. The public and occupants includes all persons not employed by the Contractor or a subcontractor.

B. Whenever practical, the work area shall be fenced, barricaded or otherwise blocked off from the Public or occupants to prevent unauthorized entry into the work area, in compliance with the requirements of Section 01 50 00, TEMPORARY FACILITIES, SERVICES AND CONTROLS, and including, without limitation, the following:

1. Provide traffic barricades and traffic control signage where construction activities occur in vehicular areas.
2. Corridors, aisles, stairways, doors and exit ways shall not be obstructed or used in a manner to encroach upon routes of ingress or egress utilized by the public or occupants, or to present an unsafe condition to the public or occupants.
3. Store, position and use equipment, tools, materials, scraps and trash in a manner that does not present a hazard to the public or occupant by accidental shifting, ignition or other hazardous activity.
4. Store and transport refuse and debris in a manner to prevent unsafe and unhealthy conditions for the public and occupants. Cover refuse containers, and remove refuse on a frequent regular basis acceptable to the Resident Engineer. Use tarpaulins or other means to prevent loose transported materials from dropping from trucks or other vehicles.

3.3 ENVIRONMENTAL PROTECTION:

A. Dispose of solid, liquid and gaseous contaminants in accordance with local codes, laws, ordinances and regulations.

B. Comply with applicable federal, state and local noise control laws, ordinances and regulations, including but not limited to 29 CFR 1910.95, 29 CFR 1926.52 and NYC Administrative Code Chapter 28 of Title 15.

END OF SECTION 01 35 26

No Text

SECTION 01 35 91
HISTORIC TREATMENT PROCEDURES

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 91

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes administrative and procedural requirements for the treatment of Landmark Structures and Landmark Quality Structures, as identified in the Addendum. Specific requirements are indicated in other sections of the Specifications.

B. This Section includes, without limitation, the following:

1. Storage and protection of existing historic materials.
2. Temporary protection of historic materials during construction.
3. General Protection
4. Protection during use of heat-generating equipment.
5. Photographic Documentation
6. NYC Landmarks Preservation Commission Final Approval signoffs.

1.3 RELATED SECTIONS: include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 32 33	PHOTOGRAPHIC DOCUMENTATION
C.	Section 01 33 00	SUBMITTAL PROCEDURES
D.	Section 01 77 00	CLOSEOUT PROCEDURES
E.	Section 01 78 39	CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

C. Landmark Structure or Site: Any building or site which has been designated as a landmark, or any building or site within a landmark district, as designated by the New York City Preservation Commission or the New York State Historic Preservation Office.

D. Landmark Quality Structure: Any building which has been determined by the City to be of landmark quality and/or historical significance

E. Preservation: To apply measures necessary to sustain the existing form, integrity, and materials of a historic property. Work may include preliminary measures to protect and stabilize the property.

F. Rehabilitation: To make possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.

G. Restoration: To accurately depict the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and the reconstruction of missing features from the restoration period.

H. Reconstruction: To reproduce in the exact form and detail a building, structure, or artifact as it appeared at a specific period in time.

I. Stabilize: To apply measures designed to reestablish a weather-resistant enclosure and the structural reinforcement of an item or portion of the building while maintaining the essential form as it exists at present.

J. Protect and Maintain: To remove deteriorating corrosion, reapply protective coatings, and install protective measures such as temporary guards; to provide the least degree of intervention.

K. Repair: To stabilize, consolidate, or conserve; to retain existing materials and features while employing as little new material as possible. Repair includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials. Within restoration, repair also includes limited replacement in kind, rehabilitation, and reconstruction, with compatible substitute materials for deteriorated or missing parts of features when there are surviving prototypes.

L. Replace: To duplicate and replace entire features with new material in kind. Replacement includes the following conditions:
   1. Duplication: Includes replacing elements damaged beyond repair or missing. Original material is indicated as the pattern for creating new duplicated elements.
   2. Replacement with New Materials: Includes replacement with new material when original material is not available as patterns for creating new duplicated elements.
   3. Replacement with Substitute Materials: Includes replacement with compatible substitute materials. Substitute materials are not allowed, unless otherwise indicated.

M. Remove: To detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

N. Remove and Salvage: To detach items from existing construction and deliver them to the City ready for reuse.

O. Remove and Reinstall: To detach items from existing construction, repair and clean them for reuse, and reinstall them where indicated.

P. Existing to Remain or Retain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.

Q. Material in Kind: Material that matches existing materials, as much as possible, in species, cut, color, grain, and finish.

1.5 SUBMITTALS:

A. Historic Treatment Program: Submit a written plan for each phase or process, including protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work.

B. Alternative Methods and Materials: If alternative methods and materials to those indicated are proposed for any phase of work, submit for Commissioner's approval a written description including evidence of successful use on other comparable projects, and program of testing to demonstrate effectiveness for use on this Project.

C. Qualification Data: For historic treatment specialists as specified and required by individual sections of the project specifications.

D. Photographs for Designated Landmark Structures: Submit photographs in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION and as described in this section.

E. Record Documents: Include modifications to manufacturer's written instructions and procedures, as documented in the historic treatment preconstruction conference and as the Work progresses.

1.6 QUALITY ASSURANCE:

A. Special Experience Requirements: Special Experience Requirements may apply to the firm that will provide Historic Treatment Services. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.

B. Historic Treatment Preconstruction Conference: The Resident Engineer will schedule and hold a preconstruction meeting at the site in accordance with Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION.

1. Review manufacturer's written instructions for precautions and effects of products and procedures on building materials, components, and vegetation.

a. Record procedures established as a result of the review and distribute to affected parties.

1.7 STORAGE AND PROTECTION OF HISTORIC MATERIALS:

A. Removed and Salvaged Historic Materials: As specified and required by individual sections of the project specifications.

B. Removed and Reinstalled Historic Materials: As specified and required by individual sections of the project specifications.

C. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling during historic treatment. When permitted by the Commissioner, items may be removed to a suitable, protected storage location during historic treatment and reinstalled in their original locations after historic treatment operations are complete.

D. Storage and Protection: When removed from their existing location, store historic materials, at a location acceptable to the Commissioner, within a weather tight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature variations. Secure stored materials to protect from theft.

1. Identify removed items with an inconspicuous mark indicating their original location.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 PROTECTION, GENERAL:

A. Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation.

B. Ensure that supervisory personnel are present when work begins and during its progress.

C. Temporary Protection of Historic Materials during Construction:

1. Protect existing materials during installation of temporary protections and construction. Do not deface or remove existing materials.
2. Attachments of temporary protection to existing construction shall be approved by the Commissioner prior to installation.

D. Protect landscape work adjacent to or within work areas as follows:

1. Provide barriers to protect tree trunks.
2. Bind spreading shrubs.
3. Use coverings that allow plants to breathe and remove coverings at the end of each day. Do not cover plant material with a waterproof membrane for more than 8 hours at a time.
4. Set scaffolding and ladder legs away from plants.

E. Existing Drains: Prior to the start of work or any cleaning operations, test drains and other water removal systems to ensure that drains and systems are functioning properly. Notify Commissioner immediately of drains or systems that are stopped or blocked. Do not begin Work of this Section until the drains are in working order.

1. Provide a method to prevent solids, including stone or mortar residue, from entering the drains or drain lines. Clean out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this Contract.
2. Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.2 PROTECTION DURING USE OF HEAT-GENERATING EQUIPMENT:

A. No roofing work requiring the use of an open flame shall be permitted on any Landmark Structure or any Landmark Quality Structure, whose roof or wall structure is made of wood or primarily of wood.

B. Comply with the following procedures while performing work with heat-generating equipment, including welding, cutting, soldering, brazing, paint removal with heat, and other operations where open flames or implements utilizing heat are used:

1. Obtain Commissioner's approval for operations involving use of open-flame or welding equipment. Notification shall be given for each occurrence and location of work with heat-generating equipment.
2. As far as practical, use heat-generating equipment in shop areas or outside the building.
3. Before work with heat-generating equipment commences, furnish personnel to serve as a fire watch (or watches) for location(s) where work is to be performed.

4. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.

5. Remove and keep the area free of combustibles, including, rubbish, paper, waste, etc., within area of operations.

6. If combustible material cannot be removed, provide fireproof blankets to cover such materials.

7. Where possible, furnish and use baffles of metal or gypsum board to prevent the spraying of sparks or hot slag into surrounding combustible material.

8. Prevent the extension of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.

9. Inspect each location of the day's work not sooner than 30 minutes after completion of operations to detect hidden or smoldering fires and to ensure that proper housekeeping is maintained.

C. Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to automatic sprinkler heads, shield the individual heads temporarily with guards.

3.3 PHOTOGRAPHIC DOCUMENTATION:

Photographs for Designated Landmark Structures: Show existing conditions prior to any historic treatments, including one overall photograph and two close-up photographs of all areas of work affected. Show one overall photograph and two close-up photographs of all areas of work after the successful execution of all historical treatments.

3.4 NEW YORK CITY LANDMARKS PRESERVATION COMMISSION FINAL APPROVALS SIGNOFF:

For all projects involving a Landmark Structure or Site, the Contractor, at the completion of the work, shall submit to the Commissioner, in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS, all documentation concerning the successful execution of all historic treatments. This shall include, but not be limited to, copies of all before and after photographs of historic treatments, one copy of the Contractor's as-built drawings, copies of testing and analysis results, including cleaning, mortar analysis, pointing mortars and all other information pertaining to work performed under the New York City Landmarks Preservation Commission jurisdiction.

END OF SECTION 01 35 91

No Text

SECTION 01 40 00
QUALITY REQUIREMENTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes the following:
   a. Definitions
   b. Conflicting Requirements
   c. Quality Assurance
   d. Quality Control
   e. Approval of Materials
   f. Special Inspections (Controlled Inspection)
   g. Inspections by Other City Agencies
   h. Certificates of Approval
   i. Acceptance Tests
   j. Repair and Protection

B. This Section includes administrative and procedural requirements for quality control to assure compliance with quality requirements specified in the Contract Documents.

C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

D. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.

E. Provisions of this Section do not limit requirements for the Contractor to provide quality-assurance and -control services required by the Commissioner or authorities having jurisdiction.

F. Specific test and inspection requirements are specified in the individual sections of the Specifications.

G. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."

H. COMMISSIONING: Refer to the Addendum to identify whether this project will be Commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

1.3 RELATED SECTIONS: Include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 31 00	PROJECT MANAGEMENT AND COORDINATION
C.	Section 01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
D.	Section 01 33 00	SUBMITTAL PROCEDURES
E.	Section 01 77 00	CLOSEOUT PROCEDURES
F.	Section 01 78 39	CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

C. Commissioning: A Total Quality Assurance process that includes checking the design and installation of equipment, as well as performing functional testing of the same to confirm that the installed equipment is operating and in conformance with the Contract Documents and the City's requirements.

1.5 CONFLICTING REQUIREMENTS:

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, the Contractor shall comply with the most stringent requirement as determined by the Commissioner. The Contractor shall refer any uncertainties and/or conflicting requirements to the Commissioner for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. The Contractor shall refer any uncertainties to the Commissioner for a decision before proceeding.

1.6 QUALITY ASSURANCE:

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required. Individual Specification Sections specify additional requirements.

B. Installer Qualifications: Special Experience Requirements may apply to the firm that will install, erect or assemble specified work required for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.

C. Manufacturer Qualifications: Special Experience Requirements may apply to the firm that will manufacture equipment, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.

D. Fabricator Qualifications: Special Experience Requirements may apply to the firm that will fabricate material, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum

E. Professional Engineer Qualifications: A professional engineer who is licensed to practice in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

F. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

G. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by the Resident Engineer.
2. Notify Resident Engineer seven (7) days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Design Consultant's approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise directed or indicated.

1.7 QUALITY CONTROL:

A. City's Responsibilities: Where quality-control services are indicated as the City's responsibility in the Specifications, the City will engage a qualified testing agency to perform these services.

1. COST OF TESTS BORNE BY THE CITY: Where the City directs tests to be performed to determine compliance with the Specifications regarding materials or equipment, and where such compliance is ascertained as a result thereof, the City will bear the cost of such tests.
2. The City will furnish the Contractor with names, addresses, and telephone numbers of testing entities engaged and a description of the types of testing and inspecting they are engaged to perform.
3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.

B. Contractor's Responsibility: Tests and inspections not explicitly assigned to the City are the Contractor's responsibility. Unless otherwise indicated, the Contractor shall provide quality-control services as set forth in the Specifications and those required by Authorities having jurisdiction. The Contractor shall provide quality-control services required by Authorities having jurisdiction, whether specified or not.

1. COST OF TESTS BORNE BY CONTRACTOR – In the case of tests which are specifically called for in the Specifications to be provided by the Contractor or tests which are required by any Authority having jurisdiction, but are not indicated as the responsibility of the City, the cost thereof shall be borne by the Contractor and shall be deemed to be included in the Contract price. The Contractor shall reimburse the City for expenditures incurred in providing tests on materials and equipment submitted by the Contractor as the equivalent of that specifically named in the Specifications and rejected for non-compliance.
2. Where services are indicated as Contractor's responsibility, the Contractor shall engage a qualified testing agency to perform these quality-control services. Any testing agency engaged by the Contractor to perform quality control services is subject to prior approval by the Commissioner.

3. The Contractor shall not employ same entity engaged by the City, unless agreed to in writing by the Commissioner.
4. The Contractor shall notify testing agencies and the Resident Engineer at least 72 hours in advance of the date and time for the performance of Work that requires testing or inspecting.
5. Where quality-control services are indicated as Contractor's responsibility, the Contractor shall submit a certified written report, in triplicate to the Commissioner, of each quality-control service.
6. Testing and inspecting requested by the Contractor and not required by the Contract Documents are Contractor's responsibility.
7. The Contractor shall submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, the Contractor shall engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Results shall be submitted in writing as specified in Section 01 33 00 SUBMITTAL PROCEDURES.

D. Retesting/Re-inspecting: Regardless of whether the original tests or inspections were the Contractor's responsibility, the Contractor shall provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Associated Services: The Contractor shall cooperate with entities performing required tests, inspections, and similar quality-control services, and shall provide reasonable auxiliary services as requested. The Contractor shall notify the testing agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist testing entity in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing entities.
6. Design mix proposed for use for material mixes that require control by the testing entity.
7. Security and protection for samples and for testing and inspecting equipment at the Project site.

F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

2. Coordinate and cooperate with the Commissioning Authority/Agent as applicable for start-up, inspection and functional testing in the implementation of the Commissioning Plan.

G. Manufacturer's Directions: Where the Specifications provide that the manufacturer's directions are to be used, such printed directions shall be submitted to the Commissioner.

H. Inspection of Material: In the event that the Specifications require the Contractor to engage the services of an entity to witness and inspect any material especially manufactured or prepared for use in or part of the permanent construction, such entity shall be subject to prior written approval by the Commissioner.

1. NOTICE - The Contractor shall give notice in writing to the Commissioner sufficiently in advance of its intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Commissioner will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials, or the Commissioner will notify the Contractor that the inspection will be made at a point

other than the point of manufacture, or the Commissioner will notify the Contractor that inspection will be waived.

I. No Shipping Before Inspection: The Contractor shall comply with the foregoing before shipping any material.

J. Certificate of Manufacture: When the Commissioner so requires, the Contractor shall furnish to the Commissioner authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the work have been manufactured and tested in conformity with the Specifications. These certificates shall include copies of the results of physical tests and chemical analyses where necessary, that have been made directly on the product, or on similar products being fabricated by the manufacturer. This may include such approvals as B.S.A., M.E.A., B.E.C. Advisory Board, etc.

K. Acceptance: When materials or manufactured products shall comprise such quantity that it is not practical to make physical tests or chemical analyses directly on the product furnished, a certificate stating the results of such tests or analyses of similar materials which were concurrently produced may, at the discretion of the Commissioner, be considered as the basis for the acceptance of such material or manufactured product.

L. Testing Compliance: The testing personnel shall make the necessary inspections and tests, and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Specifications, indicating thereon all analyses and/or test data and interpreted results thereof.

M. Reports: Six (6) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the Commissioner as a prerequisite for the acceptance of any material or equipment.

N. Rejections: If, in making any test, it is ascertained by the Commissioner that the material or equipment does not comply with the Specifications, the Contractor will be notified thereof, and will be directed to refrain from delivering said materials or equipment, or to promptly remove it from the site or from the work and replace it with acceptable material at no additional cost to the City.

O. Furnish Designated Materials: Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Specifications, the Contractor shall immediately proceed to furnish the designated material or equipment.

1.8 APPROVAL OF MATERIALS:

A. Local Laws: All materials, appliances and types or methods of construction shall be in accordance with the Specifications and shall in no event be less than that necessary to conform to the requirements of the New York City Construction Codes, Administrative Code and Charter of the City of New York.

B. Approval of Manufacturer: The names of proposed manufacturers, material suppliers, and dealers who are to furnish materials, fixtures, equipment, appliances or other fittings shall be submitted to the Commissioner for approval, as early as possible, to afford proper review and analysis. No manufacturer will be approved for any materials to be furnished under the Contract unless it shall have a plant of ample capacity and shall have successfully produced similar products. All approvals of materials or equipment that are legally required by the New York City Construction Codes and other governing Authorities must be obtained prior to installation.

C. All Materials: Fixtures, fittings, supplies and equipment furnished under the Contract shall be new and unused, except as approved by the Commissioner, and of standard first-grade quality and of the best workmanship and design. The City of New York encourages the use of recycled products where practical.

D. INFORMATION TO SUPPLIERS - In asking for prices on materials under any item of the Contract, the Contractor shall provide the manufacturer or dealer with such complete information from the

Specifications and Contract Drawings as may in any case be necessary, and in every case the Contractor shall inform the manufacturer or dealer of all the General Conditions and requirements herein contained.

1.9 SPECIAL INSPECTIONS:

A. SPECIAL INSPECTIONS:

1. Inspection of selected materials, equipment, installation, fabrication, erection or placement of components and connections made during the progress of the Work to ensure compliance with the Contract Documents and provisions of the New York City Construction Codes, shall be made by a Special Inspector. The City of New York will retain the services of the Special Inspector and bear the costs for the performance of Special Inspections in compliance with NYC Construction Codes requirements or as additionally may be called for in the project specifications, except as noted below for Form TR-3: Technical Report for Concrete Design Mix. The Special Inspector shall be an entity compliant with the requirements of the New York City Construction Codes. The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the commencement of any work requiring special inspection.
2. Form TR3: Technical Report Concrete Design Mix: The contractor shall be responsible for, and bear all costs associated with the filing and securing of approvals, if any, for Form TR3: Technical Report Concrete Design Mix, including, but not limited to, engaging the services of a New York City licensed Concrete Testing Lab for the review and approval of concrete design mix, testing, signatures and professional seals, etc., compliant with NYC Department of Buildings requirements, for each concrete design mix.
3. The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the commencement of any work requiring Special Inspection. The contractor shall be responsible for, and bear related costs to assure that all construction or work shall remain accessible and exposed for inspection purposes until the required inspection is completed.
4. Inspections and tests performed under "Special Inspection" shall not relieve the Contractor of the responsibility to comply with the Contract Documents, and that there is no warranty given to the Contractor by the City of New York in connection with such inspection and tests or certifications made under "Special Inspections".
5. The contractor must coordinate with the Resident Engineer or DDC Project Manager to provide access and schedule the work for inspection by the Special Inspector.

1.10 INSPECTIONS BY OTHER CITY AGENCIES:

A. Letter of Completion: Just prior to substantial completion of this Project, the Commissioner will file with the Department of Buildings, an application for a Letter of Completion or a Certificate of Occupancy for the structure.

B. Final Inspections: In connection with the above mentioned application for a Letter of Completion or a Certificate of Occupancy and before certificates of final payments are issued, the Contractor will be required to arrange for all final inspections by the inspection staff of the Department of Buildings, Fire Department or other Governmental Agencies having jurisdiction, and secure all reports, sign offs, certificates, etc., by such inspection staff or other governmental agencies, in order that a Letter of Completion or Certificate of Occupancy can be issued promptly.

1.11 CERTIFICATES OF APPROVAL:

A. Responsibility: The Contractor shall be responsible for and shall obtain all final approvals for the work installed under the Contract in the form of such certificates that are required by all governmental agencies having jurisdiction over the work of the Contract.

B. Transmittal: All such certificates shall be forwarded to the Commissioner through the Resident Engineer.

1.12 ACCEPTANCE TESTS:

A. Government Agencies: All equipment and appliances furnished and installed under the Contract shall conform to the requirements of the Specifications, and shall in no event be less than that necessary to comply with the minimum requirements of the law and all of the governmental agencies having jurisdiction.

B. Notice of Tests: Whenever the Specifications and/or any governmental agency having jurisdiction requires the acceptance test, the Contractor shall give written notice to all concerned of the time when these tests will be conducted.

C. Energy: The City will furnish all energy, fuel, water and light required for tests.

D. Labor and Materials: The Contractor shall furnish labor and all other material and instruments necessary to conduct the acceptance tests at no additional cost to the City.

E. Certificates: The final acceptance by the Commissioner shall be contingent upon the Contractor delivering to the Commissioner all necessary certificates evidencing compliance in every respect with the requirements of the regulatory agencies having jurisdiction.

F. Results: If the results of tests and Special Inspections indicate that the material or procedures do not meet requirements as set forth on the Contract Drawings or in the Specifications or are otherwise unsatisfactory, the Contractor shall only proceed as directed by the Resident Engineer. Additional costs resulting from retesting, re-inspecting, replacing of material and/or damage to the work and any delay caused to the schedule shall be borne by the Contractor.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, the Contractor shall repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

END OF SECTION 01 40 00

No Text

SECTION 01 42 00
REFERENCES

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DEFINITIONS:

REFER TO THE ADDENDUM, Article IX, FOR ADDITIONAL DEFINITIONS AND REVISIONS TO THE CONTRACT AND SPECIFICATIONS

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. "APPROVED," ETC. - "Approved," "acceptable," "satisfactory," and words of similar import shall mean and intend approved, acceptable or satisfactory to the Commissioner.

C. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

D. "DIRECTED," "REQUIRED," ETC.- Wherever reference is made in the Contract to the work or its performance, the terms "directed," "required," "permitted," "ordered," "designated," "prescribed," "determined," and words of similar import shall, unless expressed otherwise, imply the direction, requirements, permission, order, designation or prescription of the Commissioner.

E. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings.

1.3 CODES, AGENCIES AND REGULATIONS:

A.D.A.A.G.	Americans with Disabilities Act (ADA) – Architectural Barriers Act (ABA)
B.G. & E.	Bureau of Gas and Electricity of the City of New York
B.S. & A.	New York City Board of Standards and Appeals
DOE	Department of Energy
E.C.C.C.N.Y.S.	Energy Conservation Construction Code of New York State
EPA	Environmental Protection Administration
N.Y.C.C.C.	New York City Construction Codes – includes:
	New York City Plumbing Code
	New York City Building Code
	New York City Mechanical Code
	New York City Fuel Gas Code
N.Y.S.D.O.L	New York State Department of Labor
N.Y.C.D.E.P	New York City Department of Environmental Protection
N.Y.C.E.C.	New York City Electrical Code
N.Y.C.E.C.C	New York City Energy Conservation Code
N.Y.C.F.C	New York City Fire Code
N.Y.S...D.E.C.	New York State Department of Environmental Conservation
O.S.H.A.	Occupational Safety & Health Administration

1.4 INDUSTRY STANDARDS:

A. STANDARD REFERENCES – Unless otherwise specifically indicated in the Contract Documents, whenever reference is made to the furnishing of materials or testing thereof that conforms to the standards of any technical society, organization or body, it shall be construed to mean the latest standard, code, specification adopted and published by that technical society, organization or body, as of the date of the bid opening, unless the provisions of the New York City Construction Codes adopt a different or earlier dated version of such standard.

B. APPLICABILITY OF STANDARDS: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect, to the extent referenced, as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.

C. CONFLICTING REQUIREMENTS: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantity or quality, comply with the most stringent requirements. Immediately refer uncertainties, and requirements that are different but apparently equal, to the Commissioner in writing for a decision before proceeding.

D. STANDARD SPECIFICATIONS - When no reference is made to a code, standard or specification, the Standard Specifications of the ASTM or the AIEE, as the case may be, shall govern.

E. REFERENCES - Reference to a technical society, organization or body may be made in the Specifications by abbreviations. Abbreviations and acronyms used in the Specifications and other Contract Documents mean the associated name. The following names are subject to change and are

believed, but are not assured, to be accurate and up-to-date as of the Issue Date of the Contract Documents.

AA	Aluminum Association, Inc. (The)
AAADM	American Association of Automatic Door Manufacturers
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists (The)
ABAA	Air Barrier Association of America
ABMA	American Bearing Manufacturers Association
ACI	ACI International (American Concrete Institute)
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies, Inc. (The)
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AGC	Associated General Contractors of America (The)
AGMA	American Gear Manufacturer Association
AHA	American Hardboard Association (Now part of CPA)
AHAM	Association of Home Appliance Manufacturers
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALCA	Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network)

ALSc	American Lumber Standard Committee, Incorporated
ALI	Automotive Lift Institute
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts, Inc.
APA	APA - The Engineered Wood Association
APA	Architectural Precast Association
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASA	American Standards Association
ASAE	American Society of Agricultural Engineers
ASCE/SEI	American Society of Civil Engineers, Structural Engineering Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International (American Society for Testing and Materials International)
AWCI	AWCI International (Association of the Wall and Ceiling Industry International)
AWCMA	American Window Covering Manufacturers Association (Now WCSC)
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWSC	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)

BICSI	BICSI
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
BISSC	Baking Industry Sanitation Standards Committee
CIBSE	Charted Institute of Building Services Engineers
CCC	Carpet Cushion Council
CDA	Copper Development Association
CEA	Canadian Electricity Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CGSB	Canadian General Standards Board
CIMA	Cellulose Insulation Manufacturers Association
CIPRA	Cast Iron Pipe Research Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CPPA	Corrugated Polyethylene Pipe Association
CPSC	Consumer Product Safety Commission
CRI	Carpet & Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSA	Canadian Standards Association
CSI	Cast Stone Institute
CSI	Construction Specifications Institute (The)
CSSB	Cedar Shake & Shingle Bureau
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)

DASMA	Door and Access Systems Manufacturer's Association International
DHI	Door and Hardware Institute
DOC	U.S. Department of Commerce – National Institute of Standards and Technology
EIA	Electronic Industries Alliance
DOJ	U.S. department of Justice
EIMA	EIFS Industry Members Association
DOL	U.S. Department of labor
EJCDC	Engineers Joint Contract Documents Committee
DOTn	U.S. Department of Transportation
EN	European Committee of Standards
EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association
EVO	Efficiency Valuation Organization
FEME	Federal Emergency Management Agency
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation)
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation)
FMG	FM Global (Formerly: FM - Factory Mutual System)
FMRC	Factory Mutual Research (Now FMG)
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
FSA	Fluid Sealing Association
FSC	Forest Stewardship Council
GA	Gypsum Association
GANA	Glass Association of North America
GRI	(Now GSI)
GS	Green Seal
GSI	Geosynthetic Institute

HI	Hydraulic Institute
HI	Hydronics Institute
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)
HPVA	Hardwood Plywood & Veneer Association
HPW	H. P. White Laboratory, Inc.
HUD	U.S. Department of Housing and Urban Development
IAPMO	International Association of Plumbing and Mechanical Officials
IAS	International Approval Services (Now CSA International)
IBF	International Badminton Federation
ICC	International Code Council, Inc.
ICEA	Insulated Cable Engineers Association, Inc.
ICRI	International Concrete Repair Institute, Inc.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
IESNA	Illuminating Engineering Society of North America
IEST	Institute of Environmental Sciences and Technology
IGCC	Insulating Glass Certification Council
IGMA	Insulating Glass Manufacturers Alliance
ILI	Indiana Limestone Institute of America, Inc.
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association
ITS	Intertek
ITU	International Telecommunication Union
KCMA	Kitchen Cabinet Manufacturers Association
LMA	Laminating Materials Association (Now part of CPA)
LPI	Lightning Protection Institute
MBMA	Metal Building Manufacturers Association

MFMA	Maple Flooring Manufacturers Association, Inc.
MFMA	Metal Framing Manufacturers Association
MH	Material Handling (Now MHIA)
MHIA	Material Handling Industry of America
MIA	Marble Institute of America
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International (National Association of Corrosion Engineers International)
NADCA	National Air Duct Cleaners Association
NAGWS	National Association for Girls and Women in Sport
NAIMA	North American Insulation Manufacturers Association
NBGQA	National Building Granite Quarries Association, Inc.
NCAA	National Collegiate Athletic Association (The)
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFHS	National Federation of State High School Associations
NFPA	NFPA (National Fire Protection Association)
NFRC	National Fenestration Rating Council

NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NIS	National Institute of Standards and Technology
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association)
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation International)
NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc. (The)
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)
NWWDA	National Wood Window and Door Association (Now WDMA)
OPL	Omega Point Laboratories, Inc. (Acquired by ITS - Intertek)
PCI	Precast / Pre-stressed Concrete Institute
PDCA	Painting & Decorating Contractors of America
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PLANET	Professional Landcare Network (Formerly: ACLA - Associated Landscape Contractors of America)
PPS	Power Piping Society
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
RMI	Rack Manufacturers Institute
RTI	(Formerly: NTRMA - National Tile Roofing Manufacturers Association) (Now TRI)

SAE	SAE International
SCAQMD	South Coast Air Quality Management District
SCS	Scientific Certification System
SDI	Steel Deck Institute
SDI	Steel Door Institute
SEFA	Scientific Equipment and Furniture Association
SGCC	Safety Glazing Certification Council
SHBI	Steel Heating Boiler Institute
SIA	Security Industry Association
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPTE	Society of Motion Picture and Television Engineers
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPRI	Single Ply Roofing Industry
SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
SWI	Steel Window Institute
SWRI	Sealant, Waterproofing, & Restoration Institute
TCA	Tile Council of America, Inc.
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance
TMS	The Masonry Society

TPI	Truss Plate Institute, Inc.
TPI	Turfgrass Producers International
TRI	Tile Roofing Institute (Formerly: RTI - Roof Tile Institute)
UL	Underwriters Laboratories Inc.
ULC	Underwriters Laboratories of Canada
UNI	Uni-Bell PVC Pipe Association
USAV	USA Volleyball
USC	United States Code
USGBC	U.S. Green Building Council
USITT	United States Institute for Theatre Technology, Inc.
WASTEC	Waste Equipment Technology Association
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association (Now WCSC)
WCSC	Window Covering Safety **Council** (Formerly: WCMA - Window Covering Manufacturers Association)
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California)
WIC	Woodwork Institute of California (Now WI)
WMMPA	Wood Moulding & Millwork Producers Association
WRI	Wire Reinforcement Institute, Inc.
USEPA	United States Environmental Protection Agency
WSRCA	Western States Roofing Contractors Association
WWPA	Western Wood Products Association

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 42 00

No Text

SECTION 01 50 00
TEMPORARY FACILITIES, SERVICES AND CONTROLS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This section includes the following:
   a. Temporary Water System
   b. Temporary Sanitary Facilities
   c. Temporary Electric Power, Temporary Lighting System, And Site Security Lighting
   d. Temporary Heat
   e. Dewatering Facilities And Drains
   f. Temporary Field Office for Contractor
   g. Resident Engineer's Office
   h. Material Sheds
   i. Temporary Enclosures
   j. Temporary Partitions
   k. Temporary Fire Protection
   l. Work Fence Enclosure
   m. Rodent and Insect Control
   n. Plant Pest Control Requirements
   o. Project Identification Signage
   p. Security Guards/Fire Guards on Site
   q. Project Sign and Rendering
   r. Safety

1.3 RELATED SECTIONS: include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 42 00	REFERENCES
C.	Section 01 54 11	TEMPORARY ELEVATORS AND HOISTS
D.	Section 01 54 23	TEMPORARY SCAFFOLDS AND SWING STAGING
E.	Section 01 77 00	CLOSE OUT PROCEDURES

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Permanent Enclosure: As determined by Commissioner, permanent or temporary roofing that is complete, insulated, and weather tight; exterior walls which are insulated and weather tight; and all openings that are closed with permanent construction or substantial temporary closures.

C. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Reports: Submit reports of tests, inspections, meter readings and similar procedures for temporary use.

1.6 PROJECT CONDITIONS:

A. Temporary Use of Permanent Facilities and Services: The Contractor shall be responsible for the operation, maintenance, and protection of each permanently installed facility and service while in use during construction before Final Acceptance by the City, regardless of previously assigned responsibilities.

B. Install, operate, maintain and protect temporary facilities, services and controls.
1. Keep temporary services and facilities clean and neat in appearance.
2. Operate temporary services in a safe and efficient manner.
3. Relocate temporary services and facilities as needed as Work progresses.
4. Do not overload temporary services and facilities or permit them to interfere with progress.
5. Provide necessary fire prevention measures.
6. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on-site

1.7 NON-REGULAR WORK HOURS (OVERTIME):

A. The Contractor shall provide the temporary services, facilities and controls set forth in this Section during other than regular working hours if the Drawings and/or the Specifications indicate that the Work, or specific components thereof, must be performed during other than regular working hours. In such case, all costs for the provision of temporary services, facilities and controls during other than regular working hours shall be deemed included in the total Contract Price.

B. The Contractor shall provide the temporary services, facilities and controls set forth in this Section during other than regular working hours if a change order is issued directing the Contractor to perform the Work, or specific components thereof, during other than regular working hours. In such case, compensation for the provision of temporary services, facilities and controls during other than regular working hours shall be provided through the change order.

1.8 SERVICES BEYOND COMPLETION DATE:

A. The Contractor shall provide the temporary services, facilities and controls set forth in this Section until the date on which it completes all required work at the site, including all punch list work, as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. The Contractor shall provide such temporary services, facilities and controls even if completion of all required work at the site occurs after the time fixed for such completion in Schedule A.

PART II – PRODUCTS

2.1 MATERIALS:

A. Provide undamaged materials in serviceable condition and suitable for use intended.
B. Tarpaulins: Waterproof, fire-resistant UL labeled with flame spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
C. Water: Potable and in compliance with requirements of the Department of Environmental Protection.

2.2 EQUIPMENT:

A. Provide undamaged equipment in serviceable condition and suitable for use intended.
B. Water Hoses: Heavy-duty abrasive-resistant flexible rubber hoses, 100 feet (30 m) long with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
C. Electric Power Cords: Grounded extension cords.
   1. Provide hard-service cords where exposed to abrasion or traffic.
   2. Provide waterproof connectors to connect separate lengths of electric cords where single lengths will not reach areas of construction activity.
   3. Do not exceed safe length-voltage ratio.
D. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART III –EXECUTION:

3.1 INSTALLATION, GENERAL:

A. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities as approved by the Resident Engineer.

3.2 TEMPORARY WATER SYSTEM:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 A

A. TEMPORARY WATER SYSTEM - NEW FACILITIES: During construction, the Contractor shall furnish a Temporary Water System as set forth below.
   1. Immediately after the Commissioner has issued an order to start work, the Contractor shall file an application with the Dept. of Environmental Protection for the schedule of charges for water use during construction. The Contractor will be responsible for payment of water charges.
   2. Immediately after the Commissioner has issued an order to start work, the Contractor shall file an application with the Department of Environmental Protection's Bureau of Water Supply and obtain a permit to install the temporary water supply system. The system shall be installed and maintained for the use of the Contractor and its subcontractors. A copy of the above mentioned permit shall be filed with the Commissioner. The Contractor shall provide temporary water main, risers and waste stacks as directed and install on each floor, outlets with two (2) 3/4" hose valve connections over a barrel installed on a steel pan. The Contractor shall provide drains from the pans to the stack and house sewer and hose bibs to drain the water supply

risers and mains. During winter months, the Contractor shall take the necessary precautions to prevent the temporary water system from freezing. The Contractor shall provide repairs to the temporary water supply system for the duration of the project until said temporary system is dismantled and removed.

3. Disposition of Temporary Water System: The Contractor shall be responsible for dismantling the temporary water system when no longer required for the construction operations, or when replaced by the permanent water system installed for the project, or as otherwise directed by the Resident Engineer. All repair work resulting from the dismantling of the temporary water system shall be the responsibility of the Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 B

B. TEMPORARY WATER SYSTEM – PROJECTS IN EXISTING FACILITIES:
   1. When approved by the Commissioner, use of existing water system will be permitted for temporary water service during construction, as long as the system is cleaned and maintained in a condition acceptable to the Commissioner. At Substantial Completion, the Contractor shall restore the existing water system to conditions existing before initial use.
   2. The Contractor shall be responsible for all repairs to the existing water system permitted to be used for temporary water service during construction. The Contractor shall be responsible to maintain the existing system in a clean condition on a daily basis, acceptable to the Commissioner.
   3. The Contractor will be responsible for payment of water charges as directed by the Commissioner. Billing will be in accordance with the Department of Environmental Protection schedule of charges for Building Purposes.

C. WASH FACILITIES: The Contractor shall install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition.
   1. Dispose of drainage properly.
   2. Supply cleaning compounds appropriate for each condition.
   3. Include safety showers, eyewash fountains and similar facilities for the convenience, safety and sanitation of personnel.

D. DRINKING WATER FACILITIES: The Contractor shall provide drinking water fountains or containerized tap-dispenser bottled-drinking water units, complete with paper cup supplies. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg. F (7 to 13 deg. C).

3.3 TEMPORARY SANITARY FACILITIES:

A. The Contractor shall provide toilets, wash facilities and drinking water fixtures in compliance with regulations and health codes for type, number, location, operation and maintenance of fixtures and facilities. Provide toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility, and provide covered waste containers for used materials.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3 B

B. SELF-CONTAINED TOILET UNITS:
   1. The Contractor shall provide temporary single-occupant toilet units of the chemical, aerated re-circulation, or combustion type for use by all construction personnel. Units shall be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Quantity of toilet units shall comply with the latest OSHA regulations.
   2. Toilets: Install separate self-contained toilet units for male and female personnel. Shield toilets to ensure privacy.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3 C

C. EXISTING TOILETS:

1. TOILET FACILITIES: When approved by the Commissioner, the Contractor shall arrange for the use of existing toilet facilities by all personnel during the execution of the work. The Contractor shall be responsible to clean and maintain facilities in a condition acceptable to the Resident Engineer and, at completion of construction, to restore facilities to their condition at the time of initial use.
2. MAINTENANCE - The Contractor shall maintain the temporary toilet facilities in a clean and sanitary manner and make all necessary repairs.
3. NUISANCES - The Contractors shall not cause any sanitary nuisance to be committed by its employees or the employees of its subcontractors in or about the work, and shall enforce all sanitary regulations of the City and State Health Authorities.

3.4 TEMPORARY ELECTRIC POWER, TEMPORARY LIGHTING SYSTEM, AND SITE SECURITY LIGHTING:

A. SCOPE: This Section sets forth the General Conditions and procedures relating to Temporary Electric Power, Temporary Lighting System and Site Security Lighting during the construction period.

B. TEMPORARY ELECTRIC POWER:
The Contractor shall provide and maintain a Temporary Electric Power service and distribution system of sufficient size, capacity and power characteristics required for construction operations for all required work by the Contractor and its subcontractors, including but not limited to power for the Temporary Lighting System, Site Security Lighting, construction equipment, hoists, temporary elevators and all field offices. Temporary Electric Power shall be provided as follows:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (1)

1. CONNECTION TO UTILITY LINES:
   a. Temporary Electric Power Service for use during construction shall be provided as follows: The Contractor shall make all necessary arrangements with the Public Utility Company and pay all charges for the Temporary Electric Power system. The Contractor shall include in its total Contract Price any charges for Temporary Electric Power, including charges that may be made by the Public Utility Company for extending its electrical facilities, and for making final connections. The Contractor shall make payment directly to the Public Utility Company.
   b. APPLICATIONS FOR METER: The Contractor shall make application to the Public Utility Company and sign all documents necessary for, and pay all charges incidental to, the installation of a watt hour meter or meters for Temporary Electric Power. The Contractor shall pay to the Public Utility Company, all bills for Temporary Electric energy used throughout the work, as they become due.
   c. SERVICE AND METERING EQUIPMENT - The Contractor shall furnish and install, at a suitable location on the site, approved service and metering equipment for the Temporary Electric Power System, ready for the installation of the Public Utility Company's metering devices. The temporary service mains to and from the metering location shall be not less than 100 Amperes, 3-phase, 4-wire and shall be of sufficient capacity to take care of all demands for all construction operations and shall meet all requirements of the NYCEC.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (2)

2. CONNECTION TO EXISTING ELECTRICAL POWER SERVICE:
   a. When approved by the Commissioner, electrical power service for the Temporary Lighting System and for the operation of small tools and equipment less than ¼ horsepower may be taken from the existing electric distribution system if the existing system is of adequate capacity for the temporary power load. The Contractor shall cooperate and coordinate with the facility custodian, so as not to interfere with the normal operation of the facility.
   b. There will be no charge to the Contractor for the electrical energy consumed.
   c. The Contractor shall provide, maintain and pay all costs for separate temporary electric power for any temporary power for equipment larger than 1/4 horsepower. When directed by the Commissioner, the Contractor shall remove its own temporary power system.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (3)

3. ELECTRICAL GENERATOR POWER SERVICE:
   a. When connection to Utility Lines or existing facility electric service is not available or is not adequate to supply the electric power need for construction operations, the Contractor shall provide self-contained generators to provide power beyond that available.
   b. Pay for all energy consumed in the progress of the Work, exclusive of that available from the existing facility or Utility Company.
   c. Provide for control of noise from the generators.
   d. Comply with the Ultra Low Sulfur Fuel in Non-Road Vehicles requirements as set forth in Article 5.4 of the Contract.

C. USE OF COMPLETED PORTIONS OF THE ELECTRICAL WORK:
   1. USE OF MAIN DISTRIBUTION PANEL: As soon as the permanent electric service feeders and equipment, metering equipment and main distribution panel are installed and ready for operation, the Contractor shall have the temporary lighting and power system changed over from the temporary service points to the main distribution panel.
   2. COST OF CHANGE OVER - The Contractor shall be responsible for all costs due to this change over of service and it shall also make application to the Public Utility Company for a watt hour meter to be set on the permanent meter equipment.
   3. The requirements for temporary electric power service specified herein shall be adhered to after change over of service until final acceptance of the project.
   4. NO EXTRA COST - The operation of the service and switchboard equipment shall be under the supervision of the Contractor, but this shall in no way be interpreted to mean the acceptance of such part of the installation or relieve the Contractor from its responsibility for the complete work or any part thereof. There shall be no additional charge for supervision by the Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 D

D. TEMPORARY LIGHTING SYSTEM:
   1. The Contractor shall provide adequate service for the temporary lighting system, or a minimum of 100 Amperes, 3-phase, 4-wire service for the temporary lighting system, whichever is

greater, and make all necessary arrangements with the Public Utility Company and pay all charges by them for the Temporary Lighting System

2. The Contractor shall furnish and connect to the metered service point, a Temporary Lighting System to illuminate the entire area where work is being performed and points adjacent to the work, with separately fused circuits for stairways and bridges. Control switches for stairway circuits shall be located near entrance on ground floor.
3. ITEMS: The Temporary Lighting System provided by the Contractor shall consist of wiring, fixtures, left-hand double sockets, (one (1) double socket for every 400 square feet, with one (1) lamp and one (1) three-prong outlet) lamps, fuses, locked type guards, pigtails and any other incidental material. Additional details may be outlined in the detailed Specifications for the Electrical Work. Changes may be made, provided the full equivalent of those requirements is maintained.
4. The Temporary Lighting System shall be progressively installed as required for the advancement of the work under the Contract.
5. RELOCATION: The cost for the relocation or extension of the original Temporary Lighting System, required by the Contractor or its subcontractors, that is not required due to the normal advancement of the work, as determined by the Resident Engineer, shall be borne by the Contractor.
6. PIGTAILS: shall be furnished with left-hand sockets with locked type guards and 40 feet of rubber covered cable. The Contractor shall furnish and distribute a minimum of three (3) complete pigtails to each subcontractor. See the detailed Electrical Specifications for possible additional pigtails required.
7. LAMPS: The Contractor shall furnish and install one (1) complete set of lamps, including those for the trailers. Broken and burned out lamps in the temporary lighting system, DDC field office and construction trailers, shall be replaced by the Contractor. All lamps shall be compact fluorescent
8. CIRCUIT PROTECTION: The Contractor shall furnish and install GFI protection for the Temporary Lighting and Site Security Lighting Systems.
9. MAINTENANCE OF TEMPORARY LIGHTING SYSTEM:
   a. The Contractor shall maintain the Temporary Lighting System in good working order during the scheduled hours established.
   b. The Contractor shall include in its total Contract Price all costs in connection with the Temporary Lighting System, including all costs for installation, maintenance and electric power.
10. REMOVAL OF TEMPORARY LIGHTING SYSTEM: The temporary lighting system shall be removed by the Contractor when authorized by the Commissioner.
11. HAND TOOLS: The temporary lighting system shall not be used for power purposes, except that light hand tools not larger than 1/4 horsepower may be operated from such system by the Contractor and its subcontractors.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 E

E. SITE SECURITY LIGHTING (FOR NEW CONSTRUCTION ONLY):

1. The Contractor shall furnish, install and maintain a system of site security lighting, as herein specified, to illuminate the construction site of the project, and it shall be connected to and energized from the Temporary Lighting System. All costs in connection with site security lighting shall be deemed included in the total Contract Price.
2. It is essential that the site security lighting system be completely installed and operating, at the earliest possible date. The Contractor shall direct its subcontractors to cooperate, coordinate and exert every effort to accomplish an early complete installation of the site security lighting system. After the system is installed and in operation, if a part of the system interferes with the work of any trade, the Contractor shall be completely responsible for the expense of removing,

relocating and replacing all equipment necessary to reinstate the system to proper operating conditions.

3. The system shall consist of flood lighting by pole mounted guarded sealed-beam units. Floodlight units shall be mounted 16 feet above grade. Floodlights shall be spaced around the perimeter of the site to produce an illumination level of no less than one (1) foot candle around the perimeter of the site, as well as in any potentially hazardous area or any other area within the site that might be deemed by the Resident Engineer to require security illumination. The system shall be installed in a manner acceptable to the Resident Engineer. The first lighting unit in each circuit shall be provided with a photoelectric cell for automatic control. The photoelectric cell shall be installed as per manufacturer's recommendations.
4. All necessary poles shall be furnished and installed by the Contractor.
5. The site security lighting shall be kept illuminated at all times during the hours of darkness. The Contractor shall, at its own expense, shall keep the system in operation, and shall furnish and install all material necessary to replace all damaged or burned out parts.
6. The Contractor shall be on telephone call alert for maintaining the system during the operating period stated above.
7. All materials and equipment furnished under this section shall remain the property of the Contractor and shall be removed and disposed of by the Contractor when authorized in writing by the Resident Engineer.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.5

3.5 TEMPORARY HEAT:

A. GENERAL:

1. Definition: The provision of Temporary Heat shall mean the provision of heat in order to permit construction to be performed in accordance with the Progress Schedule during all seasons of the year and to protect the work from the harmful effects of low temperature. In the event the building, or any portion thereof, is occupied during construction, the provision of Temporary Heat shall include the provision of heat to permit normal operations in such occupied areas.
   a. The provision of Temporary Heat shall be in accordance with the temperature requirements set forth in 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 Fire Watch as required by NYC Fire Department regulations. Operating labor may be required seven (7) days per week and during other than normal working hours, for the period of time required by seasonal weather conditions.
   c. In the event the building, or any portion thereof, is occupied and the Project involves the replacement, modification and/or shut down of the permanent heating system, or any key component thereof; and such system is a combined system which furnishes domestic hot water for the building occupants, the provision of Temporary Heat shall include the provision of domestic hot water at the same temperature as the system which is being replaced. Domestic hot water shall be provided in accordance with the phasing requirements set forth in the Contract Documents.
2. Responsibility: The Contractor's responsibility for the provision of Temporary Heat, including all expenses in connection therewith, shall be as set forth below:
   a. Projects Involving Enclosure of the Building:

1) Prior to Enclosure - Until the Commissioner determines that the building has been enclosed, as set forth in Sub-Section 3.5 B; the Contractor shall be responsible for the provision of Temporary Heat.
2) Post Enclosure - Once the Commissioner determines that the building, or any portion thereof, has been enclosed, as set forth in Sub-Section 3.5 B, the Contractor shall be responsible for the provision of Temporary Heat by one or more of the following means: 1) by an existing heating system (if any), 2) by a permanent heating system which is being installed as part of the Project, or 3) by a temporary heating system(s).
3) The Contractor shall, within two (2) weeks of the kick-off meeting, submit to DDC for review its proposed plan to provide Temporary Heat. Such plan is subject to approval by the Resident Engineer. The Contractor shall provide Temporary Heat in accordance with the approved plan until written acceptance by the Commissioner of the work of all Contractors, including punch list work, unless directed otherwise in writing by the Commissioner. The responsibility of the Contractor provided for herein is subject to the exception set forth in Sub-Section 3.5 A.2 (b) herein.

b. Projects not involving Enclosure of the Building:
1) If the Project involves the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof, the Contractor shall be responsible for the provision of Temporary Heat, except as otherwise provided in Sub-Section 3.5 H.3(b).2 herein.
2) If the Project does not involve the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof; there is no Contractor responsibility of the provision of Temporary Heat, unless otherwise specified in the Contract Documents. However, if the Commissioner, pursuant to Sub-Section 3.5 H.3 (b).1 herein, determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the Contractor shall be responsible for the provision of Temporary Heat and shall be paid for the same in accordance with Sub-Section 3.5 H.3 (b).1 herein.

B. ENCLOSURE OF STRUCTURES:
1. Notification: The Contractor shall notify all its subcontractors and the Resident Engineer at least 30 days prior to the anticipated date that the building(s) will be enclosed.
2. Commissioner Determination: The Commissioner shall determine whether the building, or any portion thereof, has been enclosed. As indicated in Sub-Section 3.5 A.2 above, once the building has been enclosed, the Contractor shall be responsible for the provision of Temporary Heat. The Commissioner's determination with respect to building enclosure shall be based upon all relevant facts and circumstances, including without limitation, 1) whether the building meets the criteria set forth in Paragraph 3 below, and 2) whether the openings in the building, such as doorways and windows, have been sufficiently covered so as to provide reasonable heat retention and protection from the elements
3. Criteria for enclosure:
a. Roof Area:
1) A building shall be considered to be roofed when the area to be roofed is covered by a permanent structure and all openings through the permanent structure are covered and protected by temporary covers as described 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) minimum10 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 and such work shall be deemed included in the Contract price.

C. TEMPERATURE REQUIREMENTS:

1. Unoccupied Buildings: The temperature requirement for the provision of Temporary Heat in unoccupied buildings shall be the GREATER of the following: 1)50 degrees Fahrenheit, or 2) the temperature requirement for the particular type of work set forth in the Contract Documents.

2. Occupied Buildings: The temperature requirement for the provision of Temporary Heat in occupied buildings, or portions thereof, shall be the GREATER of the following: 68 degrees Fahrenheit or the temperature requirement for the particular type of work set forth in the Contract Documents.

D. DURATION:

1. The Contractor shall be required to provide Temporary Heat until the date on which it completes all required work at the site, including all punch list work, as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. The Contractor shall be responsible for the provision of Temporary Heat for the time specified herein, regardless of any delays in completion of the Project, including delays that result in the commencement of the provision of Temporary Heat during a season that is later than that which may have been originally anticipated. The Contractor shall include in its Total Contract Price all expenses in connection with the provision of Temporary Heat in accordance with the requirements specified herein.

2. The total Contract duration is set forth in consecutive calendar days in Schedule A of the Addendum. The Table set forth below indicates the number of full heating seasons that are deemed included in various contract durations, which are specified in consecutive calendar days (ccd)s. At a minimum, a full heating season shall extend from October 15th to April 15th.

Contract Duration	Full Heating Seasons Required
up to 360 ccds	1 full heating season
360 to 720 ccds	2 full heating seasons
more than 720 ccds	3 full heating seasons

E. METHOD OF TEMPORARY HEAT:

1. The method of temporary heat shall be in conformance with the New York City Fire Code and with all applicable laws, rules and regulations. Prior to implementation, such method shall be subject to the written approval of the Commissioner.

2. The method of temporary heat shall:

a. Not cause the deposition of dirt or smudges upon any finished work or cause any defacement or discoloration to the finished work.

b. Not be injurious or harmful to people or materials.

c. Portable fueled heating devises or equipment SHALL NOT BE ALLOWED for use as temporary heat other than construction-related curing or drying in conformance with the NYC Fire Code.

3. No open fires will be permitted.

F. TEMPORARY HEATING SYSTEM:

1. The temporary system for the provision of Temporary Heat provided by the Contractor following enclosure of the building shall be complete including, subject to provisions of paragraph E above, boilers pumps, radiators, space heaters, water and heating piping, insulation and controls. The temporary system for the provision of Temporary Heat shall be capable of maintaining the minimum temperature requirements set forth in Paragraph C above.

G. COORDINATION:

1. The Contractor, in the provision of Temporary Heat, shall coordinate its operations in order to insure sufficient and timely performance of all required work, including work performed by trade subcontractors. The Contractor shall supply and pay for all water required and used in the building for the operation of the heating system(s) for the purpose of Temporary Heat. The Contractor shall include all expenses in connection with the supply of water for Temporary Heat in its Total Contract Price. During the period in which Temporary Heat in an enclosed building is being furnished and maintained, the Contractor shall provide proper ventilating and drying, open and close the windows and other openings when necessary for the proper execution of the work and also when directed by DDC. The Contractor shall maintain all permanent or temporary enclosures at its own expense.

H. USE OF PERMANENT HEATING SYSTEMS:

1. Use of Permanent Heating System for Temporary Heat after Building Enclosure
   a. The Contractor shall provide all labor and materials to promptly furnish and set all required equipment and convectors and/or radiators, piping, valves, fitting, etc., in ample time for their use for the provision of Temporary Heat after enclosure of the building.
   b. New portions of the permanent heating system that are used for furnishing Temporary Heat shall be left in near perfect condition when delivered to the City for operation. Any repairs required, other than for ordinary wear and tear on the equipment, shall be made by the Contractor at his/her expense. The starting date for the warranty or guarantee period for such equipment shall be the date of Substantial Completion acceptance.
   c. In the event that the Contractor does not advance the installation of the permanent heating system in sufficient time to permit its use for Temporary Heat as determined by DDC, the Contractor shall furnish and install a separate system for the provision of Temporary Heat as required to maintain the minimum temperature requirements set forth in Paragraph C above.

2. All equipment for the system for the provision of Temporary Heat shall be placed so as to comply with the requirements specified hereinbefore, and shall be connected, disconnected and suitably supported and located so as to permit construction work, including finish work such as wall plastering and painting, to proceed. The installation of the system for the provision of Temporary Heat by the Contractor, including the placing of ancillary system equipment, shall be coordinated with the operations of all trade subcontractors so as to insure sufficient and timely performance of the work. Once the permanent heating system is operating properly, the Contractor shall remove all portions of the system for Temporary Heat not part of the permanent heating system.

3. Temporary Heat Allowance for Special Conditions or and/or Unforeseen Circumstances.
   a. The City may establish an allowance in the Contract for payment of costs and expenses in connection with the provision of Temporary Heat as set forth herein. If established, the City will include an amount for such allowance on the Bid Form, and the Contractor shall

include such allowance amount in its Total Contract Price. The Contractor shall only be entitled to payment from this allowance under the conditions and in accordance with the requirements set forth below. In the event this allowance or any portion thereof remains unexpended at the conclusion of the Contract, such allowance shall remain the sole property of the City. Should the amount of the allowance be insufficient to provide payment for the expenses specified below, the City will increase the amount of the allowance.

b. The allowance set forth herein may be utilized only under the conditions set forth below.
   1. In the event the Project does not involve the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof, and the Commissioner determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the Contractor shall be responsible for the provision of Temporary Heat, as directed by the Commissioner. The City shall pay such Contractor for all costs for labor, material, and equipment necessary and required for the same. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.
   2. In the event the Commissioner determines that there is a need for maintenance of the permanent heating system by the Contractor after written acceptance by the Commissioner of the work, and that the need for such maintenance is not the fault of the Contractor, the Contractor shall provide the required maintenance of the permanent heating system for the period of time directed by the Commissioner. The City shall pay the Contractor for the cost of direct labor and fuel necessary and required in connection with such maintenance, excluding the cost of any foremen or other supervision. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.

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 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 must present original invoices for the same. DDC reserves the right to furnish the required fuel.

I. RELATED ELECTRICAL WORK:

1. The Contractor shall be responsible for providing the items set forth below and shall include all expenses in connection with such items in its Total Contract Price. The Contractor shall provide such items promptly when required and shall in all respects coordinate its work with the work performed by trade subcontractors in order to facilitate the provision of Temporary Heat.
   a. The Contractor shall provide all labor, materials, equipment and power necessary and required to furnish and maintain any temporary or permanent electrical connections to all equipment specified to be connected as part of the work of his Contract.
   b. The Contractor shall supply and pay for all power necessary and required for the operation of the system for the provision of Temporary Heat and/or the permanent heating system used for Temporary Heat. Such power shall be provided by the Contractor for Electrical Work for the duration the Contractor is required to provide Temporary Heat, as set forth in Paragraph D above.
2. In providing the items set forth in Paragraph 1 above, the Contractor is advised that labor may be required seven (7) days a week and/or during other than normal working hours for the period of time required by seasonal weather conditions.

J. RELATED PLUMBING WORK:
1. The Contractor shall be responsible for providing all labor, materials and equipment necessary and required to furnish and maintain all temporary or permanent connections to all equipment or plumbing outlets specified to be provided as part of the work of this Contract. The Contractor shall include all expenses in connection with such items of work in its Total Contract Price. The Contractor shall provide such items of work promptly when required and shall in all respects coordinate its work with the work performed by trade subcontractors in order to facilitate the provision of Temporary Heat.
2. In the event portions of the permanent plumbing equipment furnished by the Contractor as part of the work of this Contract are used for the provision of Temporary Heat either during construction or prior to acceptance by the City of the complete plumbing system, the Contractor shall be responsible to provide such plumbing equipment to the City in near perfect condition and shall make any repairs required, other than for ordinary wear and tear on the equipment, at 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 shall promptly perform all required filings and coordination with the Utility Companies in order to expedite the installation, testing, and approval of the gas service and associated meter(s).

3.6 STORM WATER CONTROL, DEWATERING FACILITIES AND DRAINS:

A. PUMPING:
1. Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rainfall.
2. Contractor shall furnish and install all necessary automatically operated pumps of adequate capacity with all required piping to run-off agencies, so as to maintain the excavation, cellar floor, pits and exterior depressions and excavations free from accumulated water during the entire period of construction and up to the date of final acceptance of work of the Contract.
3. All pumps shall be maintained at all times in proper working order.
4. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
5. Remove snow and ice as required to minimize accumulations.

3.7 TEMPORARY FIELD OFFICE FOR CONTRACTOR:

A. 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 the office there shall be a responsible and competent representative of the Contractor, duly authorized to receive orders and directions and to put them into effect.
D. Arrangements shall be made by the Contractor whereby its representative may be readily accessible by telephone.
E. All temporary structures shall be of substantial construction and neat appearance, and shall be painted a uniform gray unless otherwise directed by the Commissioner.
F. CONTRACTOR'S SIGN - 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.

G. ADVERTISING PRIVILEGES - The City reserves the right to all advertising privileges. The Contractor shall not cause any signs of any kind to be displayed at the site unless specifically required herein or authorized by the Commissioner.

3.8 DDC FIELD OFFICE:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8 A

A. OFFICE SPACE IN EXISTING BUILDING:

1. The Resident Engineer will arrange for office space for sole use in the building where work is in progress. The Contractor shall provide and install a lockset for the door to secure the equipment in the room. The Contractor shall provide two (2) keys to the Resident Engineer. After completion of the project the Contractor shall replace the original lockset on the door and ensure its proper operation.
2. In addition to equipment specified in Sub-Section 3.8 D, the Contractor shall provide, for exclusive use of the DDC Field Office, the following:
   a. Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two metal (2) lockers, single units, 15" x 18" x 78" overall including 6" legs. Lockers to have flat key locks with two (2) keys each, General Steel products or approved equal. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks, approximately 52"H x 28 ½"D x 18"W.
   b. One (1) 9000 B.T.U air conditioner or as directed by Commissioner. Wiring for the air conditioner shall be minimum No. 12 AWG fed from individual circuits in the fuse box.
   c. One (1) folding conference table, 96" x 30" and ten (10) folding chairs.
   d. Two (2) metal wastebaskets.
   e. One (1) fire extinguisher, one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
   f. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the project as required.
3. The Contractor shall provide one (1) telephone, where directed and shall pay all costs for telephone service for calls within the New York City limits for the duration of the project.
4. All furniture and equipment, except computer equipment specified in Sub-Section 3.8 D.3, shall remain the property of the Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SEECTION 3.8 B

B. DDC FIELD OFFICE TRAILER:

1. GENERAL: The Contractor shall, for the time frame specified herein, provide and maintain at its own cost and expense a DDC Construction Field Office and all related items as specified herein [hereinafter collectively referred to as the "DDC Field Office"] for the exclusive use of the Resident Engineer. The DDC Field Office shall be located at the Project site and shall be solely dedicated to the Project. Provision of the DDC Field Office shall commence within THIRTY (30) days from Notice to proceed and shall continue through forty-five (45) days after Substantial Completion of the required construction at the Project site. The Contractor shall remove the DDC Field Office forty-five (45) days after Substantial Completion of the required construction, or as otherwise directed in writing by the Commissioner.
2. TRAILER: The Contractor shall provide at its own cost and expense a mobile office trailer for use as the DDC Field Office. The Contractor shall install and connect all utility services to the trailer within thirty (30) days from Notice to Proceed. The trailer shall have equipment in compliance with the minimum requirements hereinafter specified. Any permits and fees

required for the installation and use of said trailer shall be borne by the Contractor. The trailer including furniture and equipment therein, except computer equipment specified in Sub-Section 3.8D.3 herein, shall remain the property of the Contractor.

3. Trailer shall be an office type trailer of the size specified herein, with exterior stairs at entrance. Trailer construction shall be minimum 2 x 4 wall construction fully insulated with paneled interior walls, pre-finished gypsum board ceilings and vinyl tile floors.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8.B.3a or SUB-SECTION 3.8.B.3b.

a. DDC Managed Project Trailer: DDC Field Office Trailer Size, Layout and Computer Workstation:
   1) Overall length: 32 Feet
      Overall width: 10 Feet
   2) Interior Layout:
      Provide one (1) general office/conference room area and one (1) private office at one end of the trailer. Provide equipment and amenities as specified in Sub-Section 3.8.B herein.
   3) Computer Workstation: Provide one (1) complete computer workstation, as specified in Sub-Section 3.8.D herein, in the private office area as directed by the Resident Engineer.

b. CM Managed Project Trailer: DDC Field Office Trailer Size, Layout and Computer Workstation:
   1) Overall length: 50 Feet
      Overall width: 10 Feet
   2) Interior Layout:
      Provide one (1) large general office/conference room in the center of the trailer and two (2) private offices, one (1) each at either end of the trailer. Provide equipment and amenities as specified in Sub-Section 3.8.B herein.
   3) Computer Workstation:
      Provide three (3) complete computer workstations as specified in Sub-Section 3.8.D herein. Provide one (1) each complete computer workstation in each private office and one (1) complete computer workstation at the secretarial position as directed by the Resident Engineer.

4. The exterior of the trailer shall be lettered with black block lettering of the following heights with white borders:

CITY OF NEW YORK	2-1/2"
DEPARTMENT OF DESIGN AND CONSTRUCTION	3-3/4"
DIVISION OF PUBLIC BUILDINGS	3-1/2"
DDC FEILD OFFICE	2-1/2"

NOTE: In lieu of painting letters on trailer the Contractor may substitute a sign constructed of a good quality weatherproof material with the same type and size of lettering above.

5. All windows and doors shall have aluminum insect screens. Provide wire mesh protective guards at all windows.
6. The interior shall be divided by partitions into general and private office areas as specified herein. Provide a washroom located adjacent to the private office and a built-in wardrobe closet opposite the washroom. Provide a built-in desk in the private office(s) with fixed overhead shelf and clearance below for two (2) file cabinets.
7. Provide a built-in drafting or reference table, located in the general office/conference room, at least 60 inches long by 36 inches wide with cabinet below and wall type plan rack at least 42

inches wide.

8. The washroom shall be equipped with a flush toilet, wash basin with two (2) faucets, medicine cabinet, complete with supplies and a toilet roll tissue holder. Plumbing and fixtures shall be approved house type, with each appliance trapped and vented and a single discharge connection. Five (5) gallon capacity automatic electric heater for domestic hot water shall be furnished.
9. HVAC: The trailer shall be equipped with central heating and cooling adequate to maintain a temperature of 72 degrees during the heating season and 75 degrees during the cooling season when the outside temperature is 5 degrees F. winter and 89 degrees F. summer.
10. Lighting shall be provided via ceiling mounted fluorescent lighting fixtures to a minimum level of 50 foot candles in the open and private office(s) along with sufficient lighting in the washroom. Broken and burned out lamps shall be replaced by the Contractor. A minimum of four (4) duplex convenience outlets shall be provided in the open office and two (2) each in the private office(s). These outlets shall be in addition to special outlet requirements for computer stations, copiers, HVAC unit, etc.
11. Electrical service switch and panel shall be adequately sized for the entire trailer load. Provide dedicated circuits for HVAC units, hot water heater, copiers and other equipment as required. All wiring and installation shall conform to the New York City Electrical Code.
12. The following movable equipment shall be furnished:
    a. Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks and two (2) full ball bearing two (2) drawer vertical legal filing cabinets in each private office located below built-in desk.
    b. One (1) folding conference table, 96" x 30" and ten (10) folding chairs.
    c. Three (3) metal wastebaskets.
    d. One (1) fire extinguisher one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
    e. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the Contract as required.
13. TRAILER TEMPORARY SERVICE: Plumbing and electrical work required for the trailer will be furnished and maintained as below.

    a. PLUMBING WORK: The Contractor shall provide temporary water and drainage service connections to the DDC Field Office trailer for a complete installation. Provide all necessary soil, waste, vent and drainage piping.

       Contractor to frost-proof all water pipes to prevent freezing.
       1) REPAIRS, MAINTENANCE: The Contractor shall provide repairs for the duration of the project until the trailer is removed from the site.
       2) DISPOSITION OF PLUMBING WORK: At the expiration of the time limit set forth in Article 3.8 A.14(c).4 herein, the temporary water and drainage connections and piping to the DDC Field Office trailer shall be removed by the Contractor 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.

    b. ELECTRICAL WORK:
       1) The Contractor shall furnish, install and maintain a temporary electric feeder to the DDC Field Office trailer immediately after it is placed at the job site.
       2) The temporary electrical feeder and service switch/fuse shall be adequately sized based on the trailer load and installed per the New York City Electrical Code and complying with utility requirements.
       3) Make all arrangements and pay all costs to provide electric service.
       4) The Contractor shall pay all costs for current consumed and for maintenance of the

system in operating condition, including the furnishing of the necessary bulb replacements lamps, etc., for the duration of the project and for a period of forty-five (45) days after the date of Substantial Completion.

5) Disposition of Electric Work: At the expiration of the time limit set forth, the temporary feeder, safety switch, etc., shall be removed and disposed of as directed.

6) All repair work due to these removals shall be the responsibility of the Contractor.

c. MAINTENANCE

1) The Contractor shall provide and pay all costs for regular weekly janitor service and furnish toilet paper, sanitary seat covers, cloth towels and soap and maintain the DDC Field Office in first-class condition, including all repairs, until the trailer is removed from the site.

2) Supplies: The Contractor shall be responsible for providing (a) all office supplies, including without limitation, pens, pencils, stationery, filtered drinking water and sanitary supplies, and (b) all supplies in connection with required computers and printers, including without limitation, an adequate supply of blank CD's/DVD's, storage boxes for blank CDs/DVDs, and paper and toner cartridges for the printer.

3) Risk of Loss: The entire risk of loss with respect to the DDC Field Office and equipment shall remain solely and completely with the Contractor. The Contractor shall be responsible for the cost of any insurance coverage determined by the Contractor to be necessary for the Field Office.

4) At forty-five (45) days after the date of Substantial Completion, or sooner as directed by the Commissioner, the Contractors shall have all services disconnected and capped to the satisfaction of the Commissioner. All repair work due to these removals shall be the responsibility of the Contractor.

d. TELEPHONE SERVICE: The Contractor shall provide and pay all costs for the following telephone services for the DDC Field Office trailer:

1) Separate telephone lines for one (1) desk phone in each private office.

2) One (1) wall phone (with six (6) foot extension cord) at plan table.

3) Separate telephone lines for the fax machine and internet access in each private office. Telephone service shall include voice mail.

4) A remote bell located on outside of trailer

5) The telephone service shall continue until the trailer is removed from the site.

e. PERMITS: The Contractor shall make the necessary arrangements and obtain all permits and pay all fees required for this work.

C. RENTED SPACE: The Contractor has the option of providing, at its cost and expense, rented office or store space in lieu of trailer. Said space shall be in the immediate area of the Project and have adequate plumbing, heating and electrical facilities. Space chosen by the Contractor for the DDC Field Office must be approved by the Commissioner before the area is rented. All insurance, maintenance and equipment, including computer workstations specified in Sub-Section 3.8 herein, required for the DDC Field Office trailer shall also apply to rented spaces.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8 D

D. ADDITIONAL EQUIPMENT FOR THE DDC FIELD OFFICE:

1. The Contractor shall provide a high volume copy machine (50 copies per minute) for paper sizes 8½ x 11, 8½ x 14 & 11 x 17. Copier shall remain at job site until the DDC Field office trailer is removed from the site.

2. The Contractor shall furnish a fax machine and a telephone answering machine at commencement of the project for the exclusive use of the DDC Field Office. All materials shall

be new, sealed in manufacturer's original packaging and shall have manufacturers' warrantees. All items shall remain the property of the City of New York at the completion of the project.

3. COMPUTER WORKSTATION: The Contractor shall provide one complete computer workstation, in quantities specified in Sub-Section 3.8.B.4, as specified herein:

a. Hardware/Software Specification:

1) Computer Equipment - Computers shall be provided for all contracts that have a Total Consecutive Calendar Days for construction duration as set forth in Schedule "A" of 180 CCD's or greater. Contracts of lesser duration shall not require computers.

2) Computers furnished by the Contractor for use by City Personnel, for the duration of the contract, shall be in accordance with Specific Requirements, contained herein, shall remain the property of the City of New York at the completion of the project and shall meet the following minimum requirements:

3) Personal Computer(s) – Each Workstation Configuration.

a)	Make and Model:	Dell; HP; Gateway; Acer; or, an approved equivalent. (Note: an approved equivalent requires written approval of the Assistant Commissioner of ITS.)
b)	Processor:	i5-2400 (6MB Cache, 3.1GHz) or faster computer - Single Processor.
c)	System RAM:	Minimum of 4GB (Gigabytes) Dual Channel DDR3 SDRAM at 1333MHz – 2 DIMMSs
d)	Hard Disk Drive(s):	500 GB (Gigabytes) Serial ATA (7200RPM) w/DataBurst Cache, or larger.
e)	CD-RW:	Internal CD-RW, 48x Speed or faster.
f)	16xDVD+/-RW	DVD Burner (with double layer write capability) 16x Speed or faster
g)	I/O Ports:	Must have at least one (1) Serial Port, one (1) Parallel Port, and three (3) USB Ports.
h)	Video Display Card:	HD Graphics (VGA, HDMI) with a minimum of 64 MB of RAM.
i)	Monitor:	22" W, 23.0 Inch VIS, Widescreen, VGA/DVI LCD Monitor.
j)	Available Exp. Slots:	System as configured above shall have at least two (2) full size PCI Slots available.
k)	Network Interface:	Integrated 10/100/1000 Ethernet card.
l)	Other Peripherals:	Optical scroll Mouse, 101 Key Keyboard, Mouse Pad and all necessary cables.
m)	Software Requirement:	Microsoft Windows 7 Professional SP1, 32 bit; Microsoft Office Professional 2010 or 2013; Microsoft Project 2010; Adobe Acrobat reader; Anti-Virus software package with 2 year updates subscription; and, either Auto Cad LT or Microsoft Visio Standard Edition, as directed by the Resident Engineer.

4) DDC Field Office Specs: DDC Field Offices requiring computers shall be provided with the following:
   a) One (1) broad-band internet service account. Wideband Internet connectivity at a minimum throughput of 15 Mbps download and 5 Mbps upload is required at each field office location with 1-5 staffers. For larger field offices see table below for minimum required upload speeds. Telephone service should be bundled together with Internet connectivity. Because of throughput requirements Verizon FIOS is the preferred connectivity provider where available.

Office Personnel #	Upload Speeds ( )
1 – 5	5 Mbps
6 – 10	10 Mbps
11 – 15	15 Mbps
16 – 20 ...	20 Mbps

   This account will be active for the life of the project. The e-mail name for the account shall be the DDC Field Office/project Id (e.g. FLD K HWK666 McGuinness@earthlink.com).
   b) One (1) 600 DPI HP Laser Jet Printer (twelve (12) pages per minute or faster) with one (1) Extra Paper (Legal Size)
   c) All necessary cabling for equipment specified herein.
   d) Storage Boxes for Blank CD's
   e) Printer Table
   f) UPS/Surge Suppressor combo

5) All computers required for use in the Engineer's Field Office shall be delivered, installed, and setup in the Field Office by the Contractor.

6) All Computer Hardware shall come with a three (3) year warranty for on-site repair or replacement. Additionally, and notwithstanding any terms of the warranty to the contrary, the Contractor is responsible for rectifying all computer problems or equipment failures within one (1) business day.

7) An adequate supply of blank CDs/DVDs, and paper and toner cartridges for the printer shall be provided by the Contractor, and shall be replenished by the Contractor as required by the Resident Engineer.

8) 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.

9) Broadband connectivity is preferred at each field office location. Please take into consideration that an extra phone line dedicated to the modem must be ordered as part of the contract unless Internet broadband connectivity, via Cable or DSL, is available at the planned field office location. Any questions regarding this policy should be directed to the Assistant Commissioner of Information Technology Services at 718-391-1761.

10) Ownership: The equipment specified above shall, unless otherwise directed by the Commissioner, be the sole property of the City of New York upon delivery to the DDC Field Office. The Contractor shall prepare and maintain an accurate inventory of all equipment which it purchases for the DDC Field Office. Such inventory shall be provided to the City of New York. Upon completion of the required services, as directed by the Commissioner, the Contractor shall turn such equipment over to the City of New York.

E. HEAD PROTECTION (HARD HATS):
1. The Contractor shall provide a minimum of 10 standard protective helmets for the exclusive use of Department of Design and Construction personnel and their visitors. Helmets shall be turned over to the Resident Engineer and kept in the DDC Field Office.
2. Upon completion of the project, the helmets shall become the property of the Contractor.

3.9 MATERIAL SHEDS:

A. 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.

B. Store combustible materials apart from the facility.

3.10 TEMPORARY ENCLOSURES:

A. Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.

B. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

3.11 TEMPORARY PARTITIONS:

A. Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate occupied tenant areas from fumes and noise.
1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
2. Construct dustproof partitions with 2 layers of 3-mil (0.07-mm) polyethylene sheet on each side. Cover floor with 2 layers of 3-mil (0.07-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
   a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain water-dampened foot mats in vestibule.
3. Insulate partitions to provide noise protection to occupied areas.
4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
5. Protect air-handling equipment.
6. Weather strip openings.
7. Provide walk-off mats at each entrance through temporary partition.

3.12 TEMPORARY FIRE PROTECTION:

A. Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

B. Prohibit smoking in all areas.

C. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

D. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

E. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.13

3.13 WORK FENCE ENCLOSURE:

A. The Contractor shall furnish, erect and maintain a wood construction or chain-link fence to the extent shown on the drawings or required by the work enclosing the entire project on all sides. All materials used shall be new. Any permit required for the installation and use of said fence and costs shall be borne by the Contractor.

B. WOOD FENCE shall be 7'-0" high with framing construction of yellow pine, using 4" x 4" approved preservative-treated posts on not more than 6'-0" centers, with three (3) rails of at least 2" x 4" size to which shall be secured minimum 1/2 inch thick exterior grade plywood. Posts shall be firmly fixed in the ground at least 30" and thoroughly braced. Top edge of fence shall be trimmed with a rabbeted edge mould. Provide on the street traffic sides of fence, observation openings as directed.

1. GATES - Provide an adequate number of double gates, complete with hardware, located as approved by the Resident Engineer. Double gates shall have a total clear opening of 14'-0" with two (2) 7'-0" hinged swinging sections. Hanging posts shall be 6" x 6" and shall extend high enough to receive and be provided with tension or sag rods for the swinging sections.
2. PAINTING - The fence and gates shall be entirely painted on the street and public sides with one (1) coat of exterior primer and one (1) top coat of exterior grade acrylic-latex emulsion paint. Black stenciled signs reading "POST NO BILLS" shall be painted on fence with three (3) inch high letters on 25 foot spacing for the entire length of fence on street traffic sides. Signs shall be stenciled five (5) feet above the sidewalk.

C. CHAIN-LINK FENCING shall be minimum 2-inch thick, galvanized steel, chain-link fabric fencing; 8 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Fence shall be accurately aligned and plumb, adequately braced and complete with gates, locks and hardware as required. Under no condition shall fencing be attached or anchored to existing construction or trees.

D. 1. It shall be the obligation of the Contractor to remove all posters, advertising signs, and markings, etc., immediately.
2. Should the fencing be required to be relocated during the course of the Contract, it shall be done by the Contractor at no additional cost to the City.
3. Where sidewalks are used for "drive over" purposes for Contractor vehicles, a suitable wood mat or pad shall be provided for protection of sidewalks and curbs.
4. Where required, make provision for fire hydrants, lampposts, etc.
5. REMOVAL - When directed by the Resident Engineer, the fence shall be removed.

3.14 RODENT AND INSECT CONTROL:

A. DESCRIPTION: The Contractor shall provide all labor, materials, plant and equipment, and incidentals required to survey and monitor rodent activity and to control any infestation or outbreak of rodents, rats, mice, water beetles, roaches and fleas within the project area. Special attention should be paid to the following conditions or areas:

1 Wet areas within the project area, including all temporary structures.
2 All exterior and interior temporary toilet structures within the project area.
3 All Field Offices and shanties within the project area of all subcontractors and DDC.
4 Wherever there is evidence of food waste and/or discarded food or drink containers, in quantity,

that would cause breeding of rodents or the insects herein specified.

5 Any other portion of the premises requiring such special attention.

B. MATERIALS:

1 All materials shall be approved by the New York State Department of Environmental Conservation and comply with the New York City Health Code, OSHA and the laws, ordinances and regulations of State and Federal agencies pertaining to such chemical and/or materials.

C. PERSONNEL:

1 All pest control personnel must be supervised by an exterminator licensed in categories 7A and 8.

D. METHODS:

1. Application and dosage of all materials shall be done in strict compliance with the manufacturer's recommendations.
2. Any unsanitary conditions, such as uncollected garbage or debris, resulting from all Contractor's activities, which will provide food and shelter to the resident rodent population shall be corrected by the Contractor immediately after notification of such condition by the Resident Engineer.

E. RODENT CONTROL WORK:

1 In wetlands, woodlands and areas adjacent to a stream, special precautions must be taken to protect water quality and to ensure the safety of other wildlife. To prevent poisoned bait from entering streams, no poisoned bait shall be used in areas within seventy-five (75) feet of all stream banks. Live traps must be used in these seventy-five (75) foot buffer zone areas and within wetland and woodland areas.

2 In areas outside the seventy-five (75) foot zone of protection adjacent to streams, and in areas outside wetlands and woodlands, tamper proof bait stations with poisoned bait shall be placed during the period of construction and any consumed or decomposed bait shall be replenished as directed.

3 At least one month prior to initiation of the construction work, and periodically thereafter, live traps and/or rodenticide bait in tamper proof bait stations, as directed above, shall be placed at locations that are inaccessible to pets, human beings, children and other non-target species, particularly wildlife (for example-birds) in the project area.

4 The Contractor shall be responsible for collecting and disposing of all trapped and poisoned rodents found in live traps and tamper proof bait stations. The Contractor shall also be responsible for posting and maintaining signs announcing the baiting of each particular location.

The Contractor shall be responsible for the immediate collection and disposal of any visible rodent remains found on streets or sidewalks within the project area.

5 It is anticipated that public complaints will be addressed to the Commissioner. The Contractor, where directed by the Commissioner, shall take appropriate actions, like baiting, trapping, proofing, etc., to remedy the source of complaint within the next six (6) hours of normal working time which is defined herein for the purposes of this section as 7 A.M. to 6 P.M. on Mondays through Saturdays.

6 Emergency service during the regular workday hours (Monday through Friday) shall be rendered within 24 hours, if requested by the Commissioner, at no additional cost to the City.

F. EDUCATION & NOTICES:

1 The 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

Contractor shall provide and distribute literature pertaining to IPM techniques of rodent control to affected businesses and superintendents of nearby residential buildings to ensure their participation in maintaining their establishments free of unsanitary conditions, harborage removal and rodent proofing.

2 Prior to application of any chemicals, the Contractor shall furnish to the Commissioner copies or sample labels for each pesticide, antidote information, and Material Data Safety Sheets (MSDS) for each chemical used.

G. RECORDS

1. The Contractor shall keep a record of all rodent and waterbug infestation surveys conducted by him/her and make available, upon request, to the Commissioner. The findings of each survey shall include, but not be limited to, recommended Integrated Pest Management (IPM) techniques, like baiting, trapping, proofing, etc., proposed for rodent and waterbug pest control.
2. The Contractor shall maintain records of all locations baited along with the type and quantity of rodenticide and insecticide bait used.

3.15 PLANT PEST CONTROL REQUIREMENTS and TREE PROTECTION REQUIREMENTS:

A. Plant Pest Control Requirements: The 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.

1. All tree work performed within the quarantine areas must be performed by New York State Department of Agriculture and Markets (NYSDAM) certified entities. Transportation of all host material, living, dead, cut or fallen, inclusive of nursery stock, logs, green lumber, stumps, roots, branches and debris of a half inch or more in diameter from the quarantine areas is prohibited unless the 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.

2. Any host material that is infested with the Asian Longhorned Beetle must be immediately reported to NYSDAM for inspection and subsequent removal by either State or City contracts, at no cost to the Contractor.

3. 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.

4. Quarantine areas, for the purpose of this contract shall be defined as all five boroughs of the City of New York. In addition, prior to the start of any tree work, the 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.

B. 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.

1. Surveys and Reports: The Certified Arborist shall, at the times indicated below, conduct a survey and prepare a plant material assessment report which includes: (1) identification, by species and pertinent measurements, of all plant material located on the project site, or in proximity to the project site, as described below, including all trees, significant shrubs and/or planting masses; (2) identification and plan for the containment of plant pests and pathogens, including the ALB, as described in paragraph A above; (3) evaluation of the general health and condition of any infected plant material.

2. Frequency of Reports: The Certified Arborist shall conduct a survey and provide a plant material assessment report at two (2) points in time: (1) prior to the commencement of construction work; and (2) at the time of substantial completion. In addition, for projects exceeding 24 months in duration, the Certified Arborist shall conduct a survey and prepare a report at the midpoint of construction. Copies of each plant material assessment report shall be submitted to the Resident Engineer within two (2) weeks of the survey.

3. Proximity to Project Site: Off-site trees, significant shrubs and/or planting masses shall be considered to be located in proximity to the project site under the circumstances described below.

   a. The tree trunk, significant shrub, or primary cluster of stems in a planting mass is within 50 (fifty) feet of the project's Contract Limit Lines (CLLs) or Property Lines (PLs).
   b. Any part of the tree or shrub stands within 50 (fifty) feet of: (a) a path for site access for vehicles and/or construction equipment; or (b) scaffolding to be erected for construction activity, including façade remediation projects.
   c. The Certified Arborist determines that the critical root zone (CRZ) of an off-site tree, significant shrub, or primary cluster of stems in a planting mass extends into the project site, whether or not that plant material is located within the 50-foot inclusionary perimeter as outlined above.

4. Tree Protection Plan: The Certified Arborist shall prepare, and the 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.

C. No Separate Payment. No separate payment shall be made for compliance with Plant Pest Control Requirements or Tree Protection Requirements. The cost of compliance with Plant Pest Control Requirements and Tree Protection Requirements shall be deemed included in the Contractor's bid for the Project.

3.16 PROJECT IDENTIFICATION SIGNAGE:

A. The Contractor shall provide, install and maintain Project identification and other signs where indicated to inform public and individuals seeking entrance to the Project.

B. In order to properly convey notice to persons entering upon a City construction site, the Contractor shall furnish and install a sign at the entrance (gates) as follows:

NO TRESPASSING

AUTHORIZED PERSONNEL ONLY

C. If no construction fence exists at the site, this notice shall be conveyed by incorporating the above language into safety materials (barriers, tape, and signs).

D. Provide temporary, directional signs for construction personnel and visitors.

E. Maintain and touch up signs so that they are legible at all times.

3.17 PROJECT CONSTRUCTION SIGN AND RENDERING:

A. PROJECT SIGN:

1 Responsibility: The Contractor shall produce and install one (1) project sign which shall be posted and maintained upon the site of the project at a place and in a position directed by the Commissioner. The Contractor shall protect the sign from damage during the continuance of work under the Contract and shall do all patching of lettering, painting and bracing thereof necessary to maintain the sign in first class condition and in proper position. Prior to fabrication, the Contractor shall submit an 8-1/2" x 11" color match print proof from the sign manufacturer of the completed sign for approval by the Commissioner.

2 Sign Quality: The 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 pre-finished both sides with a glossy white baked-on enamel finish and be flush with edge of 2" x 2" wood frame. Samples must be submitted for approval.

d. Fastening: Fasten sign panel to wood frame using cadmium plated no. 8 sheet metal screws at ½" below edge of panel and 8" on center. The U-shaped aluminum channel shall be applied over the wood frame edge and fastened with cadmium plated no. 8 sheet metal screws at 12" on center around the entire perimeter.

6 Sign Graphics:

a. A digital file of the project sign will be provided to the Contractor by the Commissioner's representative for printing. The Commissioner's representative shall insert the project name and names and titles of personnel (3 or more) and any other required information associated with the project. All signs may include a second panel for a project rendering as described in Sub-Section 3.17.B herein.

b. The digital file shall be reproduced at the Sign Panel size of 4' x 8' on 3M High Performance Vinyl or approved equal. The 3M High Performance Vinyl or equivalent shall be guaranteed for nine (9) years. Guarantee must cover fading, peeling, chipping or cracking. The sign manufacturer is required to maintain all specified Pantone Matching System (PMS) type and other composition elements represented in the digital file of the project sign.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SETION 3.17 B

B. PROJECT RENDERING:

1. Responsibility: In addition to the Project Sign, the Contractor shall furnish and install one (1) sign showing a rendering of the project. A digital file of the project rendering will be provided to the Contractor by the Commissioner's representative. From an approved image file provided by DDC, the Project Rendering is to be sized, printed, and mounted in an identical manner as described in Sub-Section 3.17.A above for the Project Sign. A color match print proof from the sign manufacturer of the Rendering Sign printed from the supplied file is to be submitted to DDC for approval before fabrication. The Rendering Sign is to be posted at the same height as the Project Sign. Where possible, the Rendering Sign shall be mounted with a perfect match of the short sides of the rectangle so that the Rendering Sign and the Project Sign together will create one long rectangle.

2. Removal: At the completion of all work under the Contract, the Contractor shall remove and dispose of the project rendering away from the site.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.18

3.18 SECURITY GUARDS/FIRE GUARDS ON SITE:

A. SECURITY GUARDS (WATCHMEN):

1. The Contractor shall provide competent Security Guard Service on the site, beginning on the date on which the Contractor commences actual construction work, or on such earlier date on which there is activity at the site related to the work, including without limitation, delivery of materials or construction set-up. The Contractor shall continue to provide such Security Guard Service until the date on which it completes all required work at the site, including all punch list work, as certified in writing by the Resident Engineer, or earlier if so directed in writing by the

Commissioner. Throughout the specified time period, 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 trade subcontractors. 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.

2. Every Security Guard shall be required to hold a "Certificate of Fitness" issued by the Fire Department. Every Security Guard shall, during his/her tour of duty, perform the duties of Fire Guard in addition to his/her security obligations.
3. Should the Commissioner find that any Security Guard is unsatisfactory; such guard shall be replaced by the Contractor upon the written demand of the Commissioner.
4. Each Security Guard furnished by the Contractor shall be instructed by the Contractor to include in his/her duties the entire construction site including the Field Office, temporary structures, and equipment, materials, etc.
5. Should the Contractor or any other subcontractor consider the security requirements outlined above inadequate, the Contractor shall provide such additional security as it thinks necessary, after obtaining the written consent of the Commissioner. The additional cost of such approved increased protection will be paid by the Contractor.
6. Nothing contained in this Sub-Section shall diminish in any way the responsibility of the Contractor and each subcontractor 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 shall employ Security Guards/Fire Guards throughout the specified time period, 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.

C. RESPONSIBILITY - The Contractor and its subcontractors will be responsible for safeguarding and protecting their own work, materials, tools and equipment.

3.19 SAFETY:

A. The Contractor, in compliance with requirements of Section 01 35 26, SAFETY REQUIREMENTS PROCEDURES, shall provide and maintain all necessary temporary closures, guard rails, and barricades to adequately protect all workers and the public from possible injury. Any removal of these items, during the progress of the work, shall be replaced by the Contractor at no additional cost to the City.

END OF SECTION 01 50 00

No Text

SECTION 01 54 11
TEMPORARY ELEVATORS AND HOISTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This section includes the following:
   1. Temporary Use, Operation and Maintenance of Elevators during Construction
      a. For New buildings up to 15 Stories
      b. For New buildings over 15 Stories
      c. For Existing Buildings
   2. Temporary Construction Hoists and Hoist ways (For Material and Personnel)

1.3 RELATED SECTIONS: include without limitation the following:

A. Section 01 10 00 SUMMARY
B. Section 01 42 00 REFERENCES
C. Section 01 50 00 TEMPORARY FACILITIES AND CONTROLS
D. Section 01 54 23 TEMPORARY SCAFFOLDS AND SWING STAGING
E. Section 01 77 00 CLOSE OUT PROCEDURES

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.1

3.1 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR NEW BUILDINGS UP TO AND INCLUDING 15 STORIES:

A. INSTALLATION: The Contractor shall install, complete, operate, and maintain in good working order, as indicated herein, one (1) selected main elevator for the transport of employees of the Contractor and/or its subcontractors, and representatives of the DDC and other Governmental Agencies having jurisdiction of work at the project. The Contractor shall furnish, install, and maintain such elevator in good working order, including all necessary hoisting ropes, governor cables, traveling conductor cables, operating devices, temporary hand reset target annunciators, temporary signal devices, and all other permanent or temporary parts. The installation, operation and maintenance of the temporary elevator and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use.

B. RESPONSIBILITY: The Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevator and all equipment and/or parts utilized in connection therewith.

C. COSTS: The Contractor shall be responsible for all costs in connection with the temporary elevator, including without limitation: (1) installing and operating the temporary elevator, (2) maintaining the temporary elevator in clean, proper operating condition, including the cost of lubricants and/or parts for such maintenance, (3) performing all work in pits, shaft ways and machine rooms necessary for the operation of the temporary elevator, (4) replacing the temporary elevator or any equipment or parts utilized in connection therewith, if required, due to damage, destruction or excessive wear or corrosion, except for the replacement of hoisting ropes as set forth below, (5) performing all required electrical work in connection with the temporary elevator, (6) providing all electric power required to operate the temporary elevator, (7) providing all necessary conduit and wiring connections for the proper operation and signaling of the temporary elevator, and (8) providing all labor for the operation and maintenance of the temporary elevator, including on an overtime basis if necessary. The total Contract Price shall include all costs in connection with the temporary elevator, including without limitation, the costs specified herein.

D. COMMENCEMENT OF SERVICE: The Contractor shall begin to provide temporary elevator service using the selected main passenger elevator no later than eight (8) weeks (40 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed. No later than three (3) weeks (15 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed the following work shall have been completed:

1. The shaft shall have been completely enclosed by either the permanent or a temporary enclosure meeting the requirements of the law.
2. The machine room shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
3. There shall have been installed on all floors at the shaft way entrances to the elevator, solid substantial frames and either sliding or swing doors with substantial hardware and door locks and any necessary approved wire mesh barricades for adjacent shaft ways.
4. There shall have been furnished and installed solid substantial enclosures at front, back, sides and top of car platform enclosure, with emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.

E. ELECTRICAL INSTALLATION: The Contractor, not later than 20 calendar days after the machine room roof slab or that portion of its surrounding the elevator has been placed, shall have furnished and installed temporary or permanent power and light feeders as required for the elevator used for temporary service and shall have connected such feeders to the terminals on the starter panels or controllers in the machine room to the low voltage transformers and car light outlets in the center of shaft way and for the car control and signal traveling cables. The Contractor shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.

F. REMOVAL: When elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the Contractor shall remove the temporary enclosures and all temporary elevator equipment and promptly proceed with the installation of the permanent equipment as required under the Contract.

G. INSPECTION: Before temporary elevator equipment is removed, a joint inspection of the equipment shall be made by the Contractor and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection deems it necessary, the Contractor shall furnish and install new governor and compensating ropes, new traveling cables and new controller parts, etc. The car and counterweight safeties shall be thoroughly cleaned of all dirt and all foreign matter, then properly lubricated and placed in good operating condition to the satisfaction of the Commissioner. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.

H. REPLACEMENT: The Contractor shall furnish and install new equipment or parts for any equipment or parts of the temporary elevator installation that have been damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators shall be thoroughly cleaned. Where lubricated rails are used they shall be washed down. If roller guides are used, all rust, dirt, etc., must be moved from the rails. The full cost of parts replacement, cleaning, etc., shall be borne by the Contractor except for the replacement of hoisting ropes.

I. LIMITATIONS ON USE: The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of the Contractor and/or its subcontractors, and representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the Contractor and/or its subcontractors 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. In the event of any damage to the temporary elevator, the Contractor shall notify the Resident Engineer within 24 hours after such damage has occurred. As indicated above, the Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.

J. LIQUIDATED DAMAGES: The Contractor will be charged at the rate of $100 per day for each day it fails to provide the temporary elevator service described in this section beginning with the 41st working day after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. This charge will be deducted from any amount due and owing to the Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2

3.2 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR NEW BUILDING OVER 15 STORIES:

A. INSTALLATION: The Contractor shall install, complete, operate, and maintain in good working order, as indicated herein, two (2) selected main elevators for the transport of employees of the Contractor and/or its subcontractors, and representatives of the DDC and other Governmental Agencies having jurisdiction of work at the project. The Contractor shall furnish, install, and maintain such elevators in good working order, including all necessary hoisting ropes, governor cables, traveling conductor cables, operating devices, temporary hand reset target annunciators, temporary signal devices, and all other permanent or temporary parts. The installation, operation and maintenance of the temporary elevators and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use. The two (2) elevators shall not be operated simultaneously.

B. RESPONSIBILITY: The Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevators and all equipment and/or parts utilized in connection therewith.

C. COSTS: The Contractor shall be responsible for all costs in connection with the temporary elevators, including without limitation: (1) installing and operating the temporary elevators, (2) maintaining the temporary elevators in clean, proper operating condition, including the cost of lubricants and/or parts for such maintenance, (3) performing all work in pits, shaft ways and machine rooms necessary for the operation of the temporary elevators, (4) replacing the temporary elevators or any equipment or parts utilized in connection therewith, if required due to damage, destruction or excessive wear or corrosion, except for the replacement of hoisting ropes as set forth below, (5) performing all required electrical work in connection with the temporary elevators, (6) providing all electric power required to operate the temporary elevators, (7) providing all necessary conduit and wiring connections for the proper operation and signaling of the temporary elevators, and (8) providing all labor for the operation and maintenance of the temporary elevators, including on an overtime basis if necessary. The total Contract Price shall

include all costs in connection with the temporary elevators, including without limitation, the costs specified herein.

D. LOW RISE ELEVATOR: The Contractor shall begin to provide temporary elevator service using one (1) selected main passenger elevator no later than six (6) weeks (30 working days) after the 12th Floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. No later than one (1) week, five (5) working days, after the 12th Floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped the following work shall have been completed:

1. The shaft shall have been completely enclosed up to the 12th Floor by either the permanent or a temporary enclosure meeting the requirements of the law.
2. A temporary machine room enclosure shall have been provided at the 11th Floor and shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary, shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
3. There shall have been installed on all floors up to and including the 9th Floor at the shaft entrances to the elevator, solid substantial wood frames and either sliding or swing doors with substantial hardware and door locks, also any necessary approved wire mesh barricades for adjacent shaft ways.
4. There shall have been furnished and installed solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.

E. ELECTRICAL INSTALLATION: The Contractor not later than 10 calendar days after the 12th Floor slab or that portion of it surrounding the elevator, has been poured and stripped, shall have furnished and installed temporary or permanent power and light feeders as required for the elevator used for temporary service and shall have connected such feeders to the terminals on the starter panels or controllers in the temporary machine room, to the low voltage transformers and car light outlets in the center of the shaftway and for the car control and signal traveling cables. The Contractor shall make all these required connections as soon as the Equipment is declared ready for such connections by the Resident Engineer.

F. HIGH RISE ELEVATOR: The Contractor shall begin to provide temporary elevator service to all floors, using a selected main passenger elevator, no later than eight (8) weeks (40 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed. No later than three (3) weeks (15 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed, the following work shall have been completed:

1. The shaft shall have been completely enclosed by either the permanent or temporary enclosure, meeting the requirements of the law.
2. The machine room shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
3. There shall have been installed on all floors at the shaft way 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 shaft ways.
4. There shall have been furnished and installed, solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.

G. ELECTRICAL INSTALLATION: The Contractor, not later than 20 calendar days after the machine room slab or that portion of it surrounding the elevator shaft has been placed, shall have furnished and installed temporary or permanent power and light feeders as required for the high rise elevator to be used for

temporary service and shall have connected such feeders to the terminals on the motor-generator starter panels or controllers in the machine room, to the signal circuits low voltage transformers for the annunciators and car light outlets in the center of shaft way. The Contractor shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.

H. When the high rise elevator is completed and ready for temporary operation, the low rise temporary elevator shall be shut down.

I. REMOVAL: When one (1) or more elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the Contractor shall remove the temporary enclosures and all temporary elevator equipment, and promptly proceed with the installation of the permanent equipment as required under the Contract.

J. INSPECTION: Before temporary elevator equipment is removed, a joint inspection of the equipment shall be made by the Contractor and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection determines it necessary, the Contractor shall furnish and install new governor and compensating ropes, new traveling cables, new controller parts, etc. The car and counterweight safeties shall be thoroughly cleaned of all dirt and all foreign matter, then properly lubricated and placed in good operating condition to the satisfaction of the Commissioner. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.

K. REPLACEMENT: The Contractor shall furnish and install new equipment or parts for any equipment or parts of the temporary elevator installations that have been damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and 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 except for the replacement of hoisting ropes.

L. LIMITATIONS ON USE: The temporary elevators shall not be used during their operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of the Contractor and/or its subcontractors, and representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the Contractor and/or its subcontractors 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. In the event of any damage to the temporary elevator, the Contractor shall notify the Resident Engineer within 24 hours after such damage has occurred. As indicated above, the Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.

M. LIQUIDATED DAMAGES: The Contractor will be charged at the rate of $100 per day for each day it fails to provide the temporary elevator service described in this Section beginning with the 31st working day after the 12th Floor slab, or that portion of the 12th Floor slab surrounding the elevator shaft, has been placed and stripped. This charge will be deducted from any amount due and owing to the Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3

3.3 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR EXISTING BUILDINGS:

A. The Contractor may use, at the Commissioner's discretion, one (1) selected elevator in the building for temporary operation by the Contractor for the transportation of employees of the Contractor and/or its subcontractors, and representatives of DDC and other Governmental Agencies having jurisdiction over the work at the Project. The operation of the temporary elevator and all equipment and/or parts utilized in

connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use.

B. RESPONSIBILITY: The Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevator and all equipment and/or parts utilized in connection therewith.

C. REPLACEMENT: The Contractor shall furnish and install new equipment or parts for any equipment or parts of the elevator for temporary operation that have been damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators shall be thoroughly cleaned 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 except for the replacement of hoisting ropes. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.

D. LIMITATIONS ON USE: The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of the Contractor and/or its subcontractors, and representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the Contractor and/or its subcontractors to hoist materials, which in the Resident Engineer's opinion will not overload or damage the elevator installation. In the event of any damage to the temporary elevator, the Contractor shall notify the Resident Engineer within 24 hours after such damage has occurred. As indicated above, the Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.

E. LIQUIDATED DAMAGES: The Contractor will be charged at the rate of $100 per day for each day it fails to provide elevator services described in this section beginning with 15 consecutive calendar days from Notice to Proceed. This charge will be deducted from any amount due and owing to the Contractor.

3.4 TEMPORARY HOISTS AND HOISTWAYS (FOR MATERIAL AND PERSONNEL):

A. RESPONSIBILITY: The Contractor shall provide adequate numbers of material hoists for the most expeditious performance of all parts of the work including the work of all its subcontractors. .

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 subcontractors. The hoists may be located at the exterior sides of the structure or in the courtyard and extend upward adjacent to the line of window openings. The hoists shall be located a sufficient distance from the exterior walls and be so protected as to prevent any of the permanent work from being damaged, stained or marred.

C. ELEVATOR SHAFT: Wherever possible, one or more of the permanent elevator shafts may be used as temporary hoist ways, providing such use complies with the requirements of the Building Code of the City of New York and has been approved by the Commissioner, and providing further it entails no interference with the progress of the work.

D. PROTECTION FOR INTERIOR HOISTS: All interior material hoist ways shall be enclosed on each floor and shall be adequately protected with appropriate safety guards. In no event shall the protection be less than that required by law.

END OF SECTION 01 54 11

SECTION 01 54 23
TEMPORARY SCAFFOLDING AND PLATFORMS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

B. Section 01 35 26: Safety Requirements Procedures.

C. The Contractor shall comply with the requirements of "*The City of New York Department of Design and Construction Safety Requirements*". This document is included in the Information for Bidders.

1.2 SUMMARY:

A. This Section includes administrative and general procedural requirements for Temporary Scaffolding and Platforms, including:

1. Conformance
2. Responsibility
3. Jobsite Documentation and Submittals
4. Inspections

B. This Section governs ALL scaffold used on DDC project sites including, but not limited to, Suspended Scaffold, Supported Scaffold and Sidewalk Sheds.

1.3 CONFORMANCE:

A. Unless otherwise indicated, the Contractor is responsible for providing, erecting, installing and maintaining all temporary scaffolding and platforms which shall comply with requirements of Chapter 33 (Safeguards During Construction or Demolition) of the NYC Building Code, NYC Local Law 52 of 2005, OSHA Construction Standard 1926 Subpart L, and furnishing the items and personnel set forth in this section.

1.4 RESPONSIBILITY:

A. Jobsite Safety Coordinator: The Contractor shall designate and employ a Jobsite Safety Coordinator, who shall be a competent person, who shall have a daily presence on the project site during scaffold use. This designee must possess and maintain a valid New York City Department of Buildings supported scaffold certificate of completion. An alternate shall also be designated, in the event that the Jobsite Safety Coordinator is absent. The Jobsite Safety Coordinator shall:

1. Verify completeness of documentation and submittals (as described below).
2. Verify that inspections are performed, including pull tests (see below), reports are filed and reported deficiencies are corrected.
3. Monitor trades using scaffold.
4. Limit access to scaffold areas that are tagged for non-use.
5. Inform trades of scaffold load limitations.
6. Monitor loading of decks.
7. Verify that any ties that are temporarily removed are properly restored in the same shift.
8. Verify that outriggers and planks that are moved are properly set up and secured.
9. Verify that all scaffold decks in use have proper access/egress.
10. Verify that all open sides of decks in excess of 14 inches have proper guardrails and toe-boards.

11. Notify appropriate parties, including but not limited to the Resident Engineer, site safety coordinator / monitor, site safety consultant, scaffold users, contractor and the scaffold engineer, of misuses, non-conformances, hazards and accidents.
12. Keep a log of significant actions and events connected with the scaffolding.

B. The Contractor shall be responsible for erecting, maintaining and dismantling the scaffolding and/or sidewalk shed in conformance with requirements of the New York City Building Code, OSHA and the Contract documents, including the specifications. The Contractor shall also be guided by generally accepted standards of scaffold industry practice as promulgated by the Scaffold Industry Association.

C. The Contractor shall require the subcontractor responsible for erecting the scaffolding to engage a Scaffold Engineer, licensed as a professional engineer by the State of New York. The Scaffold Engineer shall be responsible to ensure the following: (1) that the installation design is in compliance with requirements of the New York City Building Code and OSHA, (2) that the design comports with the capabilities of the components and the characteristics of the site, (3) that scaffold loads on the host building, including netting, have been properly considered, and (4) that the design documents provide accurate information for erectors and users.

D. Scaffold users are trade contractors assigned to work on the scaffold. Training certificates from a New York City Department of Buildings approved training provider are mandatory. These users have the duty to become familiar with the New York City Building Code and OSHA requirements germane to users, to obey the instructions of the Jobsite Safety Coordinator and to inform the Jobsite Safety Coordinator of known hazards, non-conformances or violations.

1.5 JOBSITE DOCUMENTATION AND SUBMITTALS:

The Contractor shall prepare, obtain and submit the following to the Resident Engineer:

A. NYC Department of Buildings permit(s) for scaffold and sidewalk sheds (as applicable) including filing applications signed and sealed by a Professional Engineer licensed in the State of New York;

B. Site logistics plan / site safety plan;

C. Installation drawing(s), design and product data to be provided for **all** scaffold(s) and shed(s) must include, at a minimum:

1. Plan(s);
2. Elevation(s);
3. Duty load designation; "standard" (150 psf live load) or "heavy duty" (300 psf live load).
4. Details including base support, anchors and ties;
5. Notes and specifications including load limits, number of planked levels, tie spacing, netting, and sequence of installation and removal.
6. Anchorage into sound material.
7. Load limits based on pull tests;
8. Specifications for pull test(s), method, proof load and the number of trials;
9. Elevations, levels or heights, where anchorage is made into masonry;
10. Specifications for frames, planks, screw jacks, anchors, and any other ancillary hardware;
11. Samples for anchors, ties and netting;
12. Sequence of operations for erection and demolition;
13. Location plan, heights, widths, "jumps" over doorways and driveways;
14. Specify size, maximum span and maximum spacing of headers and stringers;
15. Specify legs, girts, braces, nailing and connections;
16. All sidewalk sheds shall be designed, engineered, signed and sealed by a Professional Engineer licensed in the State of New York;
    a. Generic (not job specific) engineering drawings are satisfactory for standard sheds and arrangements.

b. Special engineering is required for custom sheds, site-specific problems or non-standard arrangements.

1.6 INSPECTIONS:

A. Signed inspection reports shall be issued for each inspection and pull-test below, and shall be logged and maintained on site by the Jobsite Safety Coordinator for the duration of the project.

B. Pull testing shall be required during design, and during or post erection, where anchorage is made into masonry. The Scaffold Engineer shall specify the test method, proof load and the number of trials.

C. Sidewalk sheds shall be inspected after initial installation, major modification, or damage and thence every three months. Inspections shall be by a Scaffold Engineer for custom sheds and by a Competent Person employed by the Contractor for standard sheds.

D. Scaffolds shall be inspected by the Scaffold Engineer during erection, post-erection and prior to use and thence every three months. The Scaffold Engineer shall repeat inspections after major alteration/modification, damage.

E. A Qualified Person assigned by the Contractor shall inspect the progress of erection and dismantling, and the condition and integrity of the sidewalk sheds after high winds, major storms and at least once per month during usage.

F. A Qualified Person assigned by the Contractor shall inspect the progress of erection and dismantling at least weekly, and the condition and integrity of the scaffold after high winds, major storms and at least once per month during usage.

G. Scaffolds and Sidewalk Sheds shall be inspected daily by the Jobsite Safety Coordinator or alternate prior to use by scaffold users. The inspection results must be recorded in the maintenance log, and be available on-site at all times.

H. At the completion of the project, submit all inspection documents as Miscellaneous Record Documents in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS.

1.7 LADDERS AND STAIRS:

A. The Contractor shall provide and maintain ladders or temporary stairs extending from the street to the first story, and to and from every floor and roof level of the project.

1.8 ACCESS AND EXITS:

A. The ladders or temporary stairs shall be of acceptable size, number and location, so that proper and convenient access may be had by those required to proceed to and from all parts of the project.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 54 23

No Text

SECTION 01 73 00
EXECUTION

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes general procedural requirements governing execution of the Work including without limitation the following:

a. Delivery of Materials
b. Contractor's Superintendent
c. Surveys
d. Borings
e. Examination
f. Environmental Assessment
g. Preparation
h. Deferred Construction
i. Installation
j. Permits
k. Transportation
l. Sleeves and Hangers
m. Sleeve and Hanger Drawings
n. Cutting and Patching
o. Location of Partitions
p. Furniture and Equipment
q. Removal of Rubbish and Surplus Material
r. Cleaning
s. Security And Protection of Work Site
t. Maintenance of Site and Adjoining Property
u. Maintenance of Project Site
v. Safety Precautions for Control Circuits
w. Obstructions in Drainage Lines

1.3 RELATED SECTIONS: Include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 31 00	PROJECT MANAGEMENT AND COORDINATION
C.	Section 01 33 00	SUBMITTAL PROCEDURES
D.	Section 01 74 19	CONSTRUCTION WASTE MANAGEMENT & DISPOSAL
E.	Section 01 77 00	CLOSEOUT PROCEDURES
F.	Section 01 78 39	CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 QUALITY ASSURANCE:

A. Land Surveyor Qualifications: A professional land surveyor who is licensed in the State of New York and who is experienced in providing land-surveying services of the kind indicated.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 DELIVERY OF MATERIALS:

A. Material Orders: 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. Deliveries: The Contractor shall coordinate deliveries in order to avoid delaying or impeding the progress of the work.

E. Handling: The Contractor shall provide equipment and personnel to handle products by methods to prevent soiling or damage.

1. Promptly inspect shipments to assure products comply with requirements, quantities are correct, and products are undamaged.
2. Promptly return damaged shipments or incorrect orders to manufacturer.
3. For materials or equipment to be reused or salvaged, use special care in removal, storage and reinstallation to insure proper function in completed work.

F. Storage: Store products in accordance with provisions of Article 3.1, and periodically inspect to assure that stored products are undamaged and are maintained under required conditions.

G. Stacking: All materials shall be properly stacked in convenient places adjacent to the site, or where directed, and protected in a satisfactory manner. Stacked materials shall be so arranged as to not interfere with visibility of traffic control devices.

H. Overloading: If authority is given to store materials in any part of the project area, they shall be so stored as to cause no overloading.

I. No Interference: If it becomes necessary to remove and restack materials to avoid impeding the progress of any part of the work or interfering with the work to be done by any trade subcontractor, the Contractor shall remove and restack such materials at no additional cost to the City.

3.2 CONTRACTOR'S CONSTRUCTION SUPERINTENDENT:

A. Contractor's Construction Superintendent: 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 Construction Superintendent. The Contractor's Construction Superintendent shall be registered with the New York City Department of Buildings in compliance with the Construction Superintendent Rule of the City of New York and shall be competent and capable of maintaining proper supervision and care of the work and shall be acceptable to the Commissioner. The Construction Superintendent shall, 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 Construction Superintendent on the job shall not be changed or removed without the consent of the Commissioner.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3

3.3 SURVEYS:

A. Line and Grade: The City will establish a baseline and bench mark near the site of the work for use of the 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: The 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 Markers: No work shall be performed near City monuments or marks so as to disturb them until the said monuments or marks have been referenced or reset or otherwise disposed of by the relevant Agency or party who installed them.

E. Foundations: The Contractor shall furnish certification from a licensed Surveyor that all portions of the foundation work are located in accordance with the Contract Drawings and at the elevations required thereby. This certification shall show the actual locations and the actual elevations of all the work in relation to the locations and elevations shown on the Contract Drawings, including but not restricted to the following:

1. The locations and elevations of all piles, if any.
2. Elevations of tops of all spread footings, tops of pile caps, and tops of all foundation walls, elevator pit walls and ramp walls.
3. Location of all footing centers and pier centers including those for exterior wall columns.
4. Location of all foundation walls including wall columns, elevator pit walls and ramp walls.

F. Wall Lines: After the first courses of masonry or stone have been laid, the Contractor shall establish the permanent lines of exterior walls. The 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 shall not proceed further with the erection of walls until the Surveyor's certification has been submitted and verified for correct location of wall lines.

G. Surveyor: The Surveyor selected for any of the purposes mentioned in Paragraph E and Paragraph F above, and Paragraph I below, shall be a land Surveyor licensed in the State of New York and shall be subject to the approval of the Commissioner. The Surveyor shall not be a regular employee of the 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 shall submit to DDC for submission to the Department of Buildings a final Survey by the licensed Surveyor showing the location of the new Structure, before completion of the Structure. This Survey shall show the location of the first tier of beams or of the first floor; the finish grades of the open spaces on the plot; the established curb level and the location of all other Structures on the plan, together with the location and boundaries of the lot or plot upon which the Structure is constructed, curb cuts, all yard dimensions, etc.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4

3.4 BORINGS:

A. The work of this article shall be the responsibility of the Contractor unless otherwise indicated.

B. Reference Drawings: The Boring Drawings as listed on the title sheet are for information to the bidder and are to be used under the conditions as follows:

1. Boring Logs: shown on the Boring Drawings, record information obtained under engineering supervision in the course of exploration carried out by or under the direction of forces of the Department of Design and Construction at the site.

2. Soils and Rock Samples: All inferences are drawn from the indications observed as made by engineering and scientific personnel. All such inferences and all records of the work including soil samples and rock cores, if any, are available to bidders for inspection.

3. Certification of Samples: The City certifies that the work was carried out as stated, and that the soil samples and rock cores, if any were referred to, were actually taken from the site at the times, places and in the manner indicated. The samples are available for inspection in the Department of Design and Construction Subsurface Exploration Section.

4. Bidder's Responsibility: The bidder, however, is responsible for any conclusions to be drawn from the work. If the bidder accepts those of the City, it must do so at its own risk. If the bidder prefers not to assume such risk, the bidder is under the obligation of employing its own experts to analyze the available information, and must be responsible for any consequences of acting on their conclusions.

5. Continuity Not Guarantee: The City does not guarantee continuity of conditions shown at actual boring locations over the entire site. Where possible, borings are located to avoid all obstructions and previous construction which can be found by inspection of the surface and the bidder is required to estimate the influence of such features from its own inspection of the site.

3.5 EXAMINATION:

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground utilities and other construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with the subcontractor responsible for installation or application present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.6 ENVIRONMENTAL ASSESSMENTS:

A. City Responsibilities: An Environmental Assessment and survey is performed by the NYC DDC and its findings are included in the Contract Documents. In accordance with the NYC Administrative Code Title 15 Chapter 1 an asbestos survey is required to be performed by an Asbestos Investigator certified by the NYC Department of Environmental Protection (DEP) to identify the presence of asbestos containing material (ACM) prior to any alteration, renovation or demolition activity. The findings of such survey are required for the submission of approvals and permits issued by the NYC Department of Buildings (DOB). When the findings indicate that asbestos containing material is present and will be disturbed during the alteration, renovation or demolition activity then abatement design specifications will be incorporated into the contract documents. The Contractor shall comply with all federal, state and local asbestos regulations affecting the work for this Contract.

B. Contractor Responsibility: The Contractor shall comply with all federal, state and local environmental regulations, including without limitation USEPA and OSHA regulations which require the Contractor to assess if lead based paint will be disturbed during the work in order to protect his/her workers and the building occupants from migration of lead dust into the air. The Contractor shall comply with all federal, state and local environmental waste disposal regulation which may be required during the work. The Contractor is required to hire licensed abatement and disposal companies for the requisite work.

3.7 PREPARATION:

A. Field Measurements: The Contractor shall verify all dimensions and conditions on the job so that all work will properly join the existing work.

B. The Contractor, before commencing work, shall examine all adjoining work on which its work is in any way dependent on good workmanship in accordance to the intent of the Specifications and the Contract

Drawings. The Contractor shall report to the Commissioner any condition that will prevent it from performing work that conforms to the required standard.

C. Existing Utility Information: Furnish information to the Commissioner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.8 DEFERRED CONSTRUCTION:

A. Where necessity for deferred construction is certified by the Commissioner, in order to permit the installation of any item or items of equipment required to be furnished and installed concurrent with the time allowed for doing and completing the work of the Contract, the Contractor shall defer construction work limited to adequate areas as approved by the Commissioner.

B. The Contractor shall confer with the affected trade subcontractors and ascertain arrangements, time and facilities necessary to be made by the Contractor in order to execute the provisions specified herein.

3.9 INSTALLATION:

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work and work of trade subcontractors to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the Design Consultant.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.10 PERMITS:

A. 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.

3.11 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.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.12

3.12 SLEEVES AND HANGERS:

A. Coordinate with Progress Schedule: The Contractor shall promptly furnish and install conduits, outlets, piping sleeves, boxes, inserts and all other materials and equipment that is to be built into the work in conformity with the requirements of the project.

B. Cooperation of Subcontractors: All subcontractors shall fully cooperate with each other in connection with the performance of the above work as "cutting in" new work is neither contemplated nor will it be tolerated.

C. Timeliness: In the event that timely delivery of sleeves and other materials cannot be made, and to avoid delay, the 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 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.

D. Inserts: The Contractor is to install strip inserts four (4) foot on center and perpendicular to beams in ceiling slabs of boiler, machine and mechanical equipment rooms. Inserts are to be installed for strippable concrete slabs only.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.13

3.13 SLEEVE AND PENETRATION DRAWINGS:

A. As soon as practicable after the commencement of work and when the order in which concrete for the first slabs, walls, etc. to be poured is determined, the Contractor shall submit to the DDC a sketch indicating the location and size of all penetrations for sleeves, ducts, etc. which will be required to accommodate the mechanical trades, in order to determine if such penetrations will materially weaken the project's structure. The sketch shall be stamped and returned if approved and/or comments will be transmitted. The Contractor shall continue to submit sketches as the pouring schedule and the concrete work progresses and, until approvals for the penetration sketches have been given. The Contractor shall not predicate its layout work on unapproved sketches.

3.14 CUTTING AND PATCHING:

A. Responsibility: The Contractor shall do all cutting, patching and restoration required by its work, unless otherwise particularly specified in the Specifications.

B. Restore Work: The Contractor shall restore any work damaged during the performance of the work.

C. Competent Workers: All restoration work shall be done to the satisfaction of the Commissioner by competent workers skilled in the trade required by such restoration. If, in the judgment of the Commissioner, workers engaged in restoration work are incompetent, they shall be replaced immediately by competent workers.

D. Structural Elements: Do not cut and patch structural elements without the prior approval, in writing, of the Resident Engineer.

E. Operational Elements: Do not cut and patch operating elements and related components.

F. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Commissioner's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

G. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

H. Removals: The Contractor must remove from the premises all demolished materials of every nature or description resulting from cutting, patching and restoration work, in accordance with the requirements hereinafter stipulated under Sub-Section 3.17 herein and as further required in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.15

3.15 LOCATION OF PARTITIONS:

A. Within three (3) weeks after the concrete slabs have been poured on each floor level, the Contractor shall immediately locate accurately all of the partitions, including the door openings, on the floor slabs in a manner approved by the Resident Engineer.

3.16 FURNITURE AND EQUIPMENT:

A. Responsibility: The Contractor is responsible for moving all loose furniture and/or equipment in all areas where the location of such furniture and/or equipment interferes with the proper performance of its work.

B. Protection: All such furniture and/or equipment must be adequately protected with dust cloths and returned to their original locations when directed to do so by the Resident Engineer.

3.17 REMOVAL OF RUBBISH AND SURPLUS MATERIALS:

A. Of the waste that is generated during demolition, as many of the waste materials as economically feasible, and as stated here, shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized. Comply with requirements of Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

B. Rubbish: Rubbish shall not be thrown from the windows or other parts of the project. Mason's rubbish, dirt and other dust-producing material shall be wetted down periodically.

C. Location: The Contractor shall clean Project site and work area daily and sweep up and deposit, at a location designated on each floor, all of its rubbish, debris and waste materials, as it accumulates and when directed by the Resident Engineer. Wood crating shall be broken up, neatly bundled, tied and stacked ready for removal and be deposited at a location designated on each floor.
   1. Comply with requirements in NYC Fire Department for removal of combustible waste materials and debris.
   2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 degrees F (27 degrees C).
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

D. Laborers: The Contractor 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 crating 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.

E. Surplus Materials: The Contractor shall remove from the site all surplus materials when there is no further use for same.

F. Tools And Materials: At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to the Contractor shall be promptly removed.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

3.18 CLEANING:

A. The Contractor shall thoroughly clean all equipment and materials furnished and installed and shall deliver such materials and equipment undamaged in a clean and new appearing condition up to date of Final Acceptance.

B. Site: Maintain Project site free of waste materials and debris.

C. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

D. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration up to date of Final Acceptance.

F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration up to date of Final Acceptance.

3.19 SECURITY AND PROTECTION OF WORK SITE:

A. Provide protection of installed work, including appropriate protective coverings and maintain conditions that ensure installed Work is without damage or deterioration up to date of Final Acceptance..

B. Comply with manufacturer's written instructions for temperature and relative humidity.

C. Secure and protect work and work site against damage, loss, injury, theft and/or vandalism.

D. Maintain daily sign-in sheets of workers and visitors and make the sheets available to the Commissioner

3.20 MAINTENANCE OF SITE AND ADJOINING PROPERTY:

A. The Contractor shall take over and maintain the Project site, after order to start work.

B. 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. until the date of Final Acceptance. The Contractor shall, at its own expense, except as otherwise specified, protect same and maintain them in at least as good a condition as that in which the Contractor finds them.

C. All pavements, sidewalks, roads and approaches to fire hydrants shall be kept clear at all times, maintained and repaired to serviceable condition with materials to match existing.

D. Provide and keep in good repair all bridging and decking necessary to maintain vehicular and pedestrian traffic.

E. The Contractor shall also remove all snow and ice as it accumulates on the sidewalks within the Contract Limits Lines.

3.21 MAINTENANCE OF PROJECT SITE:

A. The Contractor shall take over and maintain all project areas, after order to start work.

B. Until the date of Final Acceptance, 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.

C. All pavements, sidewalks, roads and approaches to fire hydrants shall be kept clear at all times, maintained, and if damaged, repaired to serviceable conditions with materials to match existing.

D. The Contractor shall keep the space for the Resident Engineer in a clean condition.

3.22 SAFETY PRECAUTIONS FOR CONTROL CIRCUITS:

A. Control circuits, the failure of which will cause a hazard to life and property, shall comply with the New York City Dept. of Buildings, Bureau of Electrical Control requirements.

3.23 OBSTRUCTIONS IN DRAINAGE LINES:

A. 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.

END OF SECTION 01 73 00

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This section includes administrative and procedural requirements for the management and disposal of construction waste and includes the following requirements:
   1. Waste Management Goals
   2. Waste Management Plan
   3. Progress Reports
   4. Progress Meetings
   5. Management Plan Implementation

B. This Section includes:
   1. Definitions
   2. Waste Management Performance Requirements
   3. Reference Resources
   4. Submittals
   5. Quality Assurance
   6. Waste Plan Implementation
   7. Additional Demolition and Salvage Requirements
   8. Disposal

1.3 RELATED SECTIONS: Include without limitation the following:

A. Section 01 10 00 SUMMARY
B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
D. Section 01 73 00 EXECUTION
E. Section 01 77 00 CLOSEOUT PROCEDURES
F. Section 01 78 39 CONSTRUCTION RECORD DOCUMENTS
G. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

C. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk or the like.

D. Construction and Demolition Waste: Solid wastes typically including building materials, trash debris and rubble resulting from remodeling, repair and demolition operations. Hazardous materials and land clearing waste are not included.

E. Diversion from Landfill: To remove, or have removed, from the site for recycling, reuse or salvage, material that might otherwise be sent to a landfill.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.

G. Recycle (recycling): To sort, separate, process, treat or reconstitute solid waste and other discarded materials for the purpose of redirecting such materials into the manufacture of useful products. Recycling does not include burning, incinerating or thermally destroying waste.

H. Return: To give back reusable items or unused products to vendors.

I. Reuse: To reuse excess or discarded construction material in some manner on the Project site.

J. Salvage: To remove a waste material from the Project site for resale or reuse.

K. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable and reusable material.

L. Waste Management Plan: A project-related plan for the collection, transportation and disposal of waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material becoming landfill.

1.5 WASTE MANAGEMENT PERFORMANCE REQUIREMENTS:

A. The City of New York has established that this project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, inaccurate planning, breakage, mishandling, contamination, or other factors shall be employed.

B. Of the waste that is generated during demolition, as many of the waste materials as economically feasible, and as stated here, shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.5 C

C. LEED CERTIFICATION: The City of New York will seek LEED (Leadership in Energy and Environmental Design) certification for this Project as indicated in the Addendum to the General Conditions from the U.S. Green Building Council. The documentation required here will be used for this purpose. LEED awards points for a variety of sustainable design measures on a project, one of which is the reuse and recycling of project waste.

D. DIVERSION REQUIREMENTS. A minimum of 75% of total Project demolition waste (by weight) shall be diverted from landfill. The following waste categories are likely candidates to be included in the diversion plan as applicable for this project:

1. Concrete
2. Bricks
3. Concrete masonry units (CMU)
4. Asphalt
5. Metals (e.g. banding, stud trim, ceiling grid, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, brass, bronze)

6. Clean dimensional wood
7. Carpet and pad
8. Drywall
9. Ceiling tiles
10. Cardboard, paper, and packaging
11. Reuse items indicated on the Drawings and/or elsewhere in the Specification

E. All fluorescent lamps, HID lamps and mercury-containing thermostats removed from the site shall be recycled.

F. Recycling on the job, subject to the Commissioner's approval, is encouraged on the site itself, such as the crushing and reuse of removed sound concrete and stone. Include these categories in the Waste Management Plan.

1.6 REFERENCES, RESOURCES:

A. DDC encourages its contractors to seek information from websites and experts in salvage or recycling in order to minimize disposal costs. There are numerous opportunities to sell, salvage, or to donate salvage and accrue tax benefits (which would accrue to the contractor); also there are outlets that will pick up, and in some cases buy recyclable materials. Examples of information resources are as follows:

1. DDC's Sustainable Design web site: http://www.nyc.gov/html/ddc/html/design/sustainable_home.shtml This includes a manual on Construction and Demolition Waste Reduction and Recycling, a Sample Waste Management Plan and sample C&D Waste Management log. Standard forms for a Waste Management Plan and a C&D Waste Management Log are included at the end of this section.
2. Web Resources

   (Information only; no warranty or endorsement is implied.)

   www.wastematch.org Site of New York Waste Match, a materials exchange database and service

   www.bignyc.org Site of Build It Green NYC, a non profit outlet for salvaged and surplus building materials

   www.usgbc.org Site of the United States Green Building Council, with a description of the LEED certification process and requirements for C&D waste recycling

   www.epa.gov/epawaste/index.htm Site of the U.S. Environmental Protection Agency that discusses construction and demolition waste issues, and links to other resources.

1.7 SUBMITTALS:

A. The Contractor shall be responsible for the development and implementation of a Waste Management Plan for the Project. The Contractor's subcontractors shall assist in the development of that Plan, and collect and deposit their waste and recyclable materials in accordance with the approved Plan.

B. DRAFT WASTE MANAGEMENT PLAN. Within fifteen (15) days after receipt of 'Notice to Proceed', or prior to any waste removal, whichever occurs sooner, the Contractor shall submit to the Commissioner a Draft Waste Management Plan. Include separate sections for demolition and construction waste. The Plan shall demonstrate how the performance goals will be met, and contain the following:

1. List of materials targeted for reuse, salvage, or recycling, and names, addresses, and phone numbers of receiving facilities/companies that will be purchasing or accepting each material.
2. Description of onsite and/or offsite sorting methods for all materials to be removed from site.
3. If mixed construction and demolition waste is to be sorted off-site, provide a letter from the processor stating the average percentage of mixed construction and demolition waste they recycle.
4. Landfill information: Names of landfills where non-recyclable/reusable/salvageable waste will be disposed, and list of applicable tipping fees.
5. Materials handling procedures: A description of the means by which any recyclable, salvaged, or reused materials will be protected from contamination, and collected in a manner that will meet the requirements for acceptance by the designated recycling processors.
6. Transportation: A description of the means of transportation and destination for recycled materials.
7. Meetings: Description of regular meetings to be held to address waste management.
8. Sample spreadsheet and description of how the implementation of the plan will be documented on a monthly basis.

C. FINAL WASTE MANAGEMENT PLAN. Within fifteen (15) days of Commissioner's approval of the Draft Plan, the Contractor shall submit a Final Waste Management Plan.

D. PROGRESS REPORTS. The Contractor shall submit monthly a Waste Management Progress Report, containing the following information:

1. Project title, name of company completing report, and dates of period covered by the report
2. Report on the disposal of all jobsite waste. A DDC C&D Waste Management Log form is available on the DDC Sustainable Design website and included at the end of this section. For each shipment of material removed from the site, provide the following:
   a. Date and ticket number of removal
   b. Identity of material hauler
   c. Material Category
   d. Total quantity of waste, in tones/cubic yards, by type
   e. Quantity of waste salvaged, recycled and/or reused, by type
   f. Total quantity of waste diverted from landfill (recycled, salvaged, reused) as a percentage of total waste
   g. Recipient of each material type
3. Provide monthly and cumulative project totals of waste, quantity diverted, and percentage diverted.
4. Note that the unit of measure may be either tons or cubic yards, but must be consistent for all shipments and all materials throughout the project. Reports with inconsistent or mixed units will not be reviewed and will be returned for re-submission.
5. Include legible copies of on-site logs, weight tickets and receipts. Receipts shall be from charitable organizations, recycling and/or disposal site operators who can legally accept the materials for the purpose of reuse, recycling or disposal. Contractor shall save such original documents for the life of the project plus seven (7) years.

E. LEED Submittal: For LEED designated projects submit LEED Letter Template for the applicable credit, signed by the Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.

F. Refrigerant Recovery. Submit Qualification data for Refrigerant recovery technician and statement of refrigerant recovery, signed by the refrigerant recovery technician responsible for recovering refrigerant

stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.8 QUALITY ASSURANCE:

A. The Contractor shall designate a Waste Management Coordinator, to ensure compliance with this section. Coordinator shall be present at Project site full time for the duration of the project.

B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Waste management plans, documentation and implementation shall be discussed at the following meetings:

1. Pre-demolition kick-off meeting
2. Pre-construction kick-off meeting
3. Regular job-site meetings
4. Contractor toolbox meetings

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 WASTE PLAN IMPLEMENTATION:

A. The Contractor shall implement the Waste Management Plan, coordinate the Plan with all affected trades, and designate one individual as the Construction Waste Management Representative, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation.

B. The Contractor shall be responsible for the provision of containers and the removal of all waste, non-returned surplus materials, and rubbish from the site in accordance with the approved Waste Management Plan. The Contractor shall oversee and document the results of the Plan. Monies received for salvaged materials shall remain with the Contractor, except the monies for those items specifically identified elsewhere in the specifications, or indicated on the drawings as belonging to others.

C. Responsibilities of Subcontractors: Each subcontractor shall be responsible for collecting its waste, non-returned surplus materials, and rubbish, in accordance with the Waste Management Plan.

D. Distribution. The Contractor shall distribute copies of the Waste Management Plan to each Subcontractor, Resident Engineer, Construction Manager, and Commissioner.

E. Training. The Contractor shall provide on-site instruction of proper waste management procedures to be used by all parties in appropriate stages of the Project.

F. Procedures. Conduct waste management operations to ensure minimum interference with site vegetation, roads, streets, walks and other adjacent occupied and used facilities.

1. Collect co-mingled waste and/or separate all recyclable waste in accordance with the Plan Specific areas on the Project site are to be designated, and appropriate containers and bins clearly marked with acceptable and unacceptable materials.
2. Inspect containers and bins for contamination and remove contaminated materials if found.

3. Comply with the General Conditions for controlling dust and dirt, environmental protection, and noise control.

3.2 ADDITIONAL DEMOLITION AND SALVAGE REQUIREMENTS:

A. Demolition and salvage of additional items indicated in other sections of the Project Specifications require special attention as part of the overall 75 % diversion from landfill. Specific requirements for special attention are designated in other sections of the Project Specifications.

3.3 DISPOSAL:

A. General. Except for items or material to be salvaged, recycled or otherwise reused, remove waste material from the Project site and legally dispose of them in a manner acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning. Do not burn waste materials

C. Disposal. Transport waste materials off Project Site and legally dispose of them.

END OF SECTION 01 74 19

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT LOG

Project Name: _____

Project I.D.: _____

For Month: _____

Contractor: _____

Prepared by: _____

Haul Date	Ticket #	Hauling Company	*Material Category[2]	Material Quantity (tons or cubic yards)[1]				*Material Recipient
				*Total Weight	Excluded Material[3]	*Diverted Material[4]	*Landfilled Material	
				*Total		*Diverted	*Landfilled	
			Monthly Totals					
			% Diverted this Month*					
			Cumulative Totals					
			% Diverted to Date					

Notes:

1. Volume (cubic yards) may be used instead of weight if used for ALL amounts and ALL materials.
2. Includes concrete; bricks; concrete masonry units (CMU); asphalt; metals; clean dimensional wood; carpet and pad; drywall; ceiling tiles; cardboard, paper, and packaging; and any other reuse items indicated on the Drawings and/or elsewhere in the Specification.
3. Excluded material includes soil or land clearing debris.
4. Diverted material includes recycled and reused material diverted from landfill. Recycled material is reprocessed into new products. Reused material is reclaimed, salvaged or otherwise used in its original form, either on-site or off-site.

* These items must be listed in order to receive LEED credit.

NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT LOG

No Text

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes administrative and general procedural requirements for Closeout Procedures, including without limitation the following:

1. Definitions
2. Substantial Completion
3. Final Acceptance
4. Warranties
5. Final Cleaning
6. Repair of the Work

B. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."

C. COMMISSIONING: Refer to the Addendum to identify whether this project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED- NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

1.3 RELATED SECTIONS: include without limitation the following:

A. Section 01 10 00 SUMMARY
B. Section 01 33 00 SUBMITTAL PROCEDURES
C. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL
D. Section 01 78 39 CONTRACT RECORD DOCUMENTS
E. Section 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or

combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

C. Substantial Completion: shall mean the written determination by the Commissioner that the Work required under the Contract is substantially, but not entirely, complete.

D. Final Acceptance: shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to the Contractor.

1.5 SUBSTANTIAL COMPLETION:

A. Preliminary Procedures: Before requesting inspection to determine the date of Substantial Completion, the Contractor shall complete and supply all items required by the contract specifications, General Conditions, Addendum to the General Conditions, change orders or other directives from the Commissioner's representatives. The required items will include all contract requirements for substantial completion, including but not limited to items related to releases, regulatory approvals, warranties and guarantees, record documents, testing, demonstration and orientation, final clean up and repairs, and all specific checklist of items by the Resident Engineer. (See Attachment "A" at the end of this section for sample requirements for Substantial Completion).

B. Prepare and submit a list to the Resident Engineer of incomplete items, the value of incomplete construction, and reasons the work is not complete.

C. Inspection: The Contractor shall submit to the Resident Engineer a written request for inspection for Substantial Completion. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities having involvement with the Work to assist in the inspection of the Work .If the Resident Engineer makes a determination that the work is substantially complete and approves the Final Punch List and the date for Final Acceptance, he/she will so advise the Commissioner and recommend issuance of the Certificate of Substantial Completion. If the Resident Engineer determines that the work is not substantially complete, he/she will notify the Contractor of those items that must be completed or corrected before the Certificate of Substantial Completion will be issued.

1 Re-inspection: Contractor shall request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2 Results of completed inspection will form the basis of requirements for Final Acceptance.

1.6 FINAL ACCEPTANCE:

A. Preliminary Procedures: Before requesting final inspection for Final Acceptance of the Work, the Contractor shall complete the following. (Note that the following are to be completed, submitted as appropriate, and approved by the Commissioner, as applicable, prior to the final inspection and are not to be submitted for approval or otherwise at the final inspection unless specifically indicated). List exceptions in the request.

1. Verify that all required submittals have been provided to the Commissioner including but not limited to the following:
   a. Manufacturer's cleaning instructions
   b. Posted instructions
   c. As-built Record Documents (Drawings, specifications, and product data) as described in Section 01 78 39, CONTRACT RECORD DOCUMENTS, incorporating any changes required by the Commissioner as a result of the review of the submission prior to the pre-final inspection.
   d. Operation and Maintenance Manuals, including Preventive Maintenance, Special Tools, Repair Requirements, Parts List, Spare Parts List, and Operating Instructions.

e. Completion of required Demonstration and Orientation, as applicable, of designated personnel in operation and maintenance of systems, sub-systems and equipment.
f. Applicable LEED Building submittals as described in Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.
g. Construction progress photographs as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.

2. Submit a certified copy of the final approved Punch List of items to be completed or corrected. The certified copy of the Punch List shall state that each item has been completed or otherwise resolved for acceptance, and shall be endorsed and dated by the Contractor.
3. Submit pest-control final inspection report and survey as required in Section 01 50 00, TEMPORARY FACILITIES AND CONTROLS.
4. Submit record documents and similar final record information.
5. Deliver tools, spare parts, extra stock and similar items.
6. Complete final clean-up requirements including touch-up painting of marred surfaces.
7. Submit final meter readings for utilities, as applicable, a measured record of stored fuel, and similar data as of the date when the City took possession of and assumed responsibility for corresponding elements of the work.

B. Final Inspection: The Contractor shall submit to the Resident Engineer a written request for inspection for Final Acceptance of the Work. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify the Contractor of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities having involvement with the Work to assist in the inspection of the Work. If the Resident Engineer finds that all items on the Final Approved Punch List are complete and no further work remains to be done, he/she will so advise the Commissioner and recommend the issuance of the determination of Final Acceptance. If the Resident Engineer determines that the work is not complete, he/she will notify the Contractor of those items that must be completed or corrected before the determination of Final Acceptance will be issued.

C. Final Acceptance: The Work will be accepted as final and complete as of the date of the Resident Engineer's inspection if, upon such inspection, the Resident Engineer finds that all items on the Punch List are complete and no further Work remains to be done. The Commissioner will then issue a written determination of Final Acceptance.

1.7 WARRANTIES:

A. The items of materials and/or equipment for which manufacturer warranties are required are listed in Schedule B of the Addendum. For each item of material and/or equipment listed in Schedule B, 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 in Schedule B and will be replaced or repaired within such specified period. The contractor shall deliver all required warranties to the Commissioner.

B. Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.

C. Submittal Time: Submit written Warranties on request of the Commissioner for designated portions of the Work where commencement of Warranties other than date of Substantial Completion is indicated.

D. Partial Occupancy: Submit properly executed Warranties to the Commissioner within 15 days of completion of designated portions of the Work that are completed and occupied or used by the City.

E. Organize the Warranty documents into an orderly sequence based on the Project Specification Divisions and Section Numbers.

1. Bind Warranties in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES;" name and location of Project; Capitol Budget Project Number (FMS ID); and Contractor's and applicable subcontractor's name and address.
3. Provide heavy paper dividers with plastic-covered tabs for each separate Warranty. Mark tab to identify the product or installation.
4. Provide a typed description of each product or installation being warranted, including the name of the product, and the name, address, and telephone number of the Installer.

F. When warranted materials and/or equipment require operation and maintenance manuals, provide additional copies of each required Warranty in each required manual. Refer to Section 01 78 39, CONTRACT RECORD DOCUMENTS, for requirements of Operation and Maintenance Manuals.

PART II – PRODUCTS

2.1 MATERIALS:

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART III – EXECUTION

3.1 FINAL CLEANING:

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations, as applicable, before requesting inspection for Final Acceptance of the Work for entire Project or for a portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
      d. Remove tools, construction equipment, machinery, and surplus material from Project site.
      e. Remove snow and ice to provide safe access to building.
      f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
      g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
      h. Sweep concrete floors broom clean in unoccupied spaces.
      i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.

o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

q. Clean ducts, blowers, and coils if units were operated without filters during construction.

r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

s. Leave Project clean and ready for occupancy.

t. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests, as required in Section 01 50 00, TEMPORARY FACILITIES,SERVICES AND CONTROLS. Prepare and submit a Pest Control report to the Commissioner.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on City's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

3.2 REPAIR OF THE WORK:

A. Subject to the terms of the Contract the Contractor shall complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Contractor shall repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
   a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00

SECTION 01 77 00

ATTACHMENT 'A'

The following list is a general sample of Substantial Completion requirements, including but not limited to:

1. Prepare and submit a list to the Resident Engineer, of incomplete items, the value of incomplete construction, and reasons the work is not complete.
2. Obtain and submit any necessary releases enabling the City unrestricted use of the project and access to services and utilities.
3. Regulatory Approvals: Submit all required documentation from applicable Governing Authorities, including, but not limited to, Department of Buildings (DoB); Department of Transportation (DoT); Department of Environmental Protection (DEP); Fire Department (FDNY); etc. Documentation to include, but not limited to, the following:
   a. Building Permits, Applications and Sign-offs.
   b. Permits and Sign-off for construction fences; sidewalk bridges; scaffolds, cranes and derricks; utilities; etc.
   c. Certificates of Inspections and Sign-offs.
   d. Required Certificates and Use Permits.
   e. Certificate of Occupancy (C.O.), Temporary Certificate of Occupancy (T.C.O.) or Letter of Completion as applicable.
4. Submit specific warranties required by the specifications, final certifications, and similar documents.
5. Prepare and submit Record Documents as described in Section 01 78 39, CONTRACT RECORD DOCUMENTS, including but not limited to; approved documentation from Governing Authorities; as-built record drawings and specifications; product data; operation and maintenance manuals; Final Completion construction photographs; damage or settlement surveys; final property surveys; and similar final record information. The Resident Engineer will review the submission and provide appropriate comments. If comments are significant the initial submission will be returned to the Contractor for correction and re-submission incorporating the comments prior to the Final Inspection.
6. Record Waste Management Progress Report: Submit C&D Waste Management logs, with legible copies of weight tickets and receipts required in accordance with Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
7. If applicable submit LEED Letter Template in accordance with the requirements of Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.
8. Schedule applicable Demonstration and Orientation required in other Sections of the Project Specifications and as described in Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.
9. Deliver tools, spare parts, extra materials, and similar items to location designated by Resident Engineer. Label with manufacturer's name and model number where applicable.
10. Make final changeover of permanent locks and deliver keys to the Resident Engineer. Advise Commissioner of changeover in security provisions.
11. Complete startup testing of systems as applicable.
12. Submit approved test/adjust/balance records.
13. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements as directed by the Resident Engineer.
14. If applicable complete Commissioning requirements as defined in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.
15. Complete final cleaning requirements, including touchup painting.
16. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

No Text

SECTION 01 78 39
CONTRACT RECORD DOCUMENTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes administrative and general procedural requirements for Contract Record Documents, including:
   1. As-built Contract Record Drawings.
   2. As-built marked-up copies of Record Specifications, addenda and Change Orders.
   3. As-built marked-up Product Data
   4. Record Samples
   5. Construction Record Photographs
   6. Operating and Maintenance Manuals
   7. Final Site Survey
   8. Guarantees and Warranties
   9. Waste Disposal Documentation
   10. LEED Materials and Matrix
   11. Miscellaneous Record Submittals

B. The Department of Design and Construction, at the start of construction (kick-off meeting), will furnish to the Contractor at no cost a complete set of Contract Drawings Mylars (reproducible) pertaining to the work to be performed under the Contract. It is the responsibility of the 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 (reproducible) drawings, if necessary, such as Addenda Drawings and Supplementary Drawings as may be necessary to indicate all work in detail as actually completed. All professional seals must be blocked out. Title box complete with project title and Design Consultants' names will remain.

C. Maintenance of Documents and Samples: The Contractor shall maintain, during the progress of the work, an accurate record of the work as actually installed, on Contract Record Drawings, on Mylar (reproducible), in ink. Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition. Make documents and samples available at all times for the Resident Engineer's inspections.

   The Contractor's attention is particularly directed to the necessity of keeping accurate records of all subsurface and concealed work, so that the Contract Record Drawings contain this information in exact detail and location. Contract Record Drawings shall also show all connections, valves, gates, switches, cut-outs and similar operating equipment.

   For projects designated to achieve a LEED rating the Contractor shall receive a copy of the project's LEED scorecard for the purpose of monitoring compliance with the target objectives and to facilitate coordination with the LEED Consultant. The Contractor shall receive periodic updates of this scorecard,

and is required to submit the final version of the Scorecard at Substantial Completion with other project Record Documents.

1.3 RELATED SECTIONS: include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
C.	Section 01 32 33	PHOTOGRAPHIC DOCUMENTATION
D.	Section 01 33 00	SUBMITTAL PROCEDURES
E.	Section 01 77 00	PROJECT CLOSEOUT PROCEDURES

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

A. As-Built Contract Record Drawings: Comply with the following:

1. Progress Submission: As directed by the Resident Engineer, submit progress As-Built Contract Record Drawings at the 50% Construction Completion stage.

2. Final Submission: Before substantial completion payment, the Contractor shall furnish to the Commissioner one (I) complete set of marked-up Mylar (reproducible) As-Built Contract Record Drawings, in ink indicating all of the work and locations as actually installed, plus one (1) set of paper prints which will be furnished to the sponsoring agency by DDC.

3. As-Built Contract Record Drawings shall be of the same size as that of the Contract Drawings, with a one (1) inch margin on three (3) sides and a two (2) inch margin on the left side for binding.

4. Each As-Built Contract Record Drawing shall bear the legend "AS-BUILT CONTRACT RECORD DRAWING" in heavy block lettering, one half (I/2) inch high, and contain the following data:

AS-BUILT CONTRACT RECORD DRAWING
Contractor's Name _____
Contractor's Address _____
Subcontractor's Name (where applicable) _____
Subcontractor'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: The Contractor shall prepare a title sheet, the same size as the Contract Record Drawings, which shall contain the following:

   a. Heading:
      The City of New York
      Department of Design and Construction
      Division of Public Buildings
   b. Capital Budget Project Number (FMS ID)
   c. Name and Location of Project
   d. Contractor's Name and Address
   e. Subcontractor's Name and Address (where applicable)
   f.. Record of changes (a caption description of work affected, and the date and number of Change Order or other authorization)
   g.. List of Record Drawings

B. Record Specifications, Addenda and Change Order: Submit to the Commissioner two (2) copies each of marked-up Record Specifications, Addenda and Change Orders.

C. Record Product Data: Submit to the Commissioner two (2) sets of Record Product Data.

D. Record Construction Photographs: Submit to the Commissioner final as-built construction photographs and negatives of the completed work as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.

E. Operating and Maintenance Manuals:

1. Submit three (3) copies each of preliminary manuals to the Resident Engineer for review and approval. The Contractor shall make such corrections, changes and/or additions to the manual until deemed satisfactory by the Resident Engineer. Deliver three (3) copies of the final approved manuals to the Resident Engineer for distribution.

2. Commissioning: Comply with the requirements of Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS, as well as the requirements set forth in sections of the Project Specifications, for projects designated for Commissioning. Submit four (4) copies each of data designated to be included in the Commissioning Operation and Maintenance Manual to the Resident Engineer. The Resident Engineer will forward such data to the Commissioning Authority/Agent (CxA) for review and comment. The Contractor shall make such corrections, changes and/or additions to the data until deemed satisfactory and deliver four (4) copies of the final data to the Resident Engineer for use by the Commissioning Authority/Agent (CxA) to prepare the Commissioning Operation and Maintenance Manual.

   a. Non-Commissioning Data: All remaining data not designated for Commissioning and required as part of Maintenance and Operation Manual shall be prepared and assembled in accordance with the requirements of this section for Operating and Maintenance Manuals.

F. Final Site Survey: Submit Final Site Survey as described in Section 01 73 00, EXECUTION, in quantities requested by the Commissioner, signed and sealed by a Land Surveyor licensed in the State of New York.

G. Guarantees and Warranties.

H. Waste Disposal Documents and Miscellaneous Record Documents.

PART II – PRODUCTS

2.1 CONTRACT RECORD DRAWINGS:

A. Record Prints: The Contractor shall maintain one set of blue- or black-line white prints as applicable of the Contract Drawings and Shop Drawings. If applicable, the Record Contract Drawings and Shop Drawings shall incorporate the arrangement of the work based on the accepted Master Coordination Drawing(s) as described in Section 01 33 00, SUBMITTAL PROCEDURES.

1. Preparation: The Contractor shall mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Change Orders: All changes from Contract Drawings shall be distinctly encircled and identified by Change Order number correlating to changes listed on the "Title Sheet." The Contractor shall show within the encircled areas the work as actually installed.

B. Content: Types of items requiring marking include, but are not limited to, the following:

1 Dimensional changes to Drawings.
2 Revisions to details shown on Drawings.
3 Depths of foundations below first floor.
4 Locations and depths of underground utilities.
5 Revisions to routing of piping and conduits.
6 Revisions to electrical circuitry.
7 Actual equipment locations.
8 Duct size and routing.
9 Locations of concealed internal utilities.
10 Changes made by Change Order
11 Changes made following Commissioner's written orders.
12 Details not on the original Contract Drawings.
13 Field records for variable and concealed conditions.
14 Record information on the Work that is shown only schematically.

C. Progress Record Mylar's (reproducible): As directed by the Resident Engineer at 50% construction completion, review marked-up Record Prints with the Resident Engineer and the Design Consulting. When directed by the Resident Engineer transfer progress mark-ups to a full set of Mylar's (reproducible) and submit one blue line or black line record copy to the Resident Engineer. The marked-up Mylar's (reproducible) shall be retained by the contractor for completion of mark-up and final submission.

D. Final Contract Record Mylar's (reproducible): Immediately before final inspection for Certificate of Substantial Completion, review marked-up Record Prints with the Resident Engineer and the Design Consulting. When authorized, complete mark-up of a full set of corrected Mylar's (reproducible) of the Contract Drawings.

1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
2. Refer instances of uncertainty to Resident Engineer for resolution.
3. Print the As-Built Contract Drawings and Shop Drawings for use as Record Transparencies as described in Sub-Section 1.5.

2.2 RECORD SPECIFICATIONS, ADDENDA AND CHANGE ORDERS:

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders and Record Drawings where applicable.
6. Upon completion of mark-up, submit two (2) complete copies of the marked-up Record Specifications to the Commissioner.

2.3 RECORD PRODUCT DATA:

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. If possible, a Change Order proposal should include resubmitting updated Product Data. This eliminates the need to mark up the previous submittal.
4. Note related Change Orders and Record Drawings where applicable.
5. Upon completion of mark-up submit to the Commissioner two (2) sets of the marked-up Record Product Data.
6. Where Record Product Data is required as part of Maintenance Manuals, submit marked-up Product Data as an insert in the manual instead of submittal as record Product Data.

2.4 RECORD SAMPLE SUBMITTAL:

A. Prior to the date of Substantial Completion, the Contractor shall meet with the Resident Engineer at the site to determine which of the Samples maintained during the construction period shall be transmitted to the Commissioner for record purposes.

B. Comply with the Resident Engineer's instructions for packaging, identification marking and delivery to DDC. Dispose of other samples as specified for disposal of surplus and waste material.

2.5 OPERATING AND MAINTENANCE MANUALS:

A. The Contractor shall provide preliminary and final versions of Operating and Maintenance Manuals required for those systems, equipment and materials listed in other Sections of the Project Specifications.

B. Format: Prepare and assemble Operation and Maintenance Manuals in heavy-duty, 3-ring, hardback loose leaf binders in the form of an instructional manual. All binders for each discipline shall be the same color. When multiple binders are used, correlate data into related consistent groupings. Binder front shall containing permanently attached labels displaying the following:

1. Heading:
   The City of New York
   Department of Design and Construction
   Division of Public Buildings
2. Capital Budget Project Number (FMS ID)
3. Name and Location of Project
4. Contractor's name and Address
5. Subcontractor's Name and Address (where applicable)
6. Dates of the work covered by the contents of the Project Manual.
7. Binder spine shall display Project Number (FMS ID) and date of completion.

C. Organization: Include a section in the directory for each of the following:

1. List of documents
2. List of systems
3. List of equipment
4. Table of contents

D. Arrange content by systems under Specification Section numbers and sequence of Table of Contents of the Project manual. Provide tabbed flyleaf for each separate product, equipment and/or system/subsystem with typed description of product and major component parts of equipment.

E. Safety warnings or cautions shall be visibly highlighted within each maintenance procedure. Use of such highlights shall be limited to only critical items and shall not be used in an excessive manner which would reduce their effectiveness.

F. For each product or system, list names, addresses and telephone numbers of Subcontractors and Suppliers, including local source of supplies and replacement parts. Vendors and Supplier listings are to include names, addresses and telephone numbers, including nearest field service telephone numbers.

G. Where contents of the manual include any manufacturer's catalog pages, clearly indicate the precise items and options included in the installation and delete all manufacturers' data regarding products not included in the installation.

H. All material within manuals shall be new. Copies used for prior submittals or used in construction shall not be used.

I. Submit preliminary and final manual editions to the Commissioner according to the approved progress schedule.

J. Manuals shall present all technical material to the greatest extent possible, with respect to text, tabular matter and illustrations. Illustrations shall preferably consist of line drawings. All applicable drawings shall be included. If available, color photograph prints may be included.

K. Preliminary manual editions shall be as technically complete as the final manual edition. All illustrations shall be in final forms.

L. Final manual editions shall be technically accurate and complete and shall represent all "as-built" systems, pieces of equipment, or materials, which have been accepted by the Commissioner. All illustrations, text and tabular material shall be in final form. All shop drawings shall be included as specified in individual Specification Sections.

M. Building products, applied materials, and finishes: Include product data, with catalog number, size, composition, and color texture designations. Where applicable, provide information for re-ordering custom manufactured products.

N. Instructions for care and maintenance: Include manufacturers' recommendations for cleaning agents and methods, and recommended schedule for cleaning and maintenance.

O. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical compositions, and details of installation. Provide recommendations for inspections, maintenance, and repair.

P. Additional Requirements: Specified in individual Specification Sections.

2.6 DEMONSTRATION AND ORIENTATION DVD:

A. Non-Commissioned Projects: The Contractor shall submit final version of applicable Demonstration and Training DVD recordings in compliance with Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.

2.7 GUARANTEES AND WARRANTIES:

A. SCHEDULE B – Requirements for guarantees and warranties for the Project are set forth in Schedule B, which is included as part of the Addendum.

B. FORM – For all guarantee requirements set forth in Schedule B, the Contractor shall provide a written guaranty, in the form set forth herein.

C. Submit fully executed and signed manufacturers' Warranties as listed in the Project Specifications and outlined in Schedule B of the Addendum. Refer to Section 01 77 00, CLOSEOUT PROCEDURES for submittal requirements.

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: _____
Signature of Partner or Corporate Officer

Print Name: _____

Subscribed and sworn to before me this
day of _____ , year _____

_____
Notary Public

2.8 WASTE DISPOSAL DOCUMENTATION:

A. Certify and deliver to the Commissioner all documentation including reports, receipts, certificates, records etc. for the collection, handling, storage, classification, testing, transportation, recycling and/or disposal of all Non-Hazardous Construction Waste as required by Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, and Hazardous Waste as required by other Project Specification Sections. Certify compliance with all applicable governing laws, codes, rules and regulations.

2.9 MISCELLANEOUS RECORD DOCUMENTS:

A. Refer to other Project Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Prior to Final Acceptance, complete miscellaneous records and place in good order, properly identified and bound or otherwise organized to allow for use and reference.

B. Submit three (3) copies of each document to the Commissioner or as otherwise directed by the Commissioner.

PART III – EXECUTION

3.1 RECORDING AND MAINTENANCE:

A. Recording: Maintain one copy of each submittal during the construction period for Contract Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Contract Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to the Contract Record Documents for the Resident Engineer's reference during normal working hours.

END OF SECTION 01 79 39

No Text

SECTION 01 79 00
DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 79 00

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes administrative and procedural requirements, when set forth in sections of the Project Specifications, for instructing facility's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Owner's Pre-Acceptance Orientation in operation and maintenance of systems, subsystems, and equipment.
3. Demonstration and Orientation videotapes. (Non-Commissioned Projects)

B. The Contractor shall provide the services of equipment manufacturers orientation specialists experienced in the type of equipment to be demonstrated.

C. Separate Orientation sessions shall be conducted for mechanical operations and maintenance personnel and for electronic and electrical maintenance personnel.

D. Commissioning: Refer to the Addendum to identify whether this project is to be Commissioned. For Commissioned projects the Contractor shall provide Demonstration and Orientation as described in this section and cooperate with the Commissioning Authority/Agent (CxA) to implement Commissioning requirements as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.

1.3 RELATED SECTIONS: include without limitation the following:

A. Section 01 10 00 SUMMARY
B. Section 01 33 00 SUBMITTAL PROCEDURES
C. Section 01 77 00 CLOSEOUT PROCEDURES
D. Section 01 78 39 CONTRACT RECORD DOCUMENTS
E. Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS
F. Specific requirements for demonstration and training indicated in other sections of the Project Specifications

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

A. Instruction Program: Submit three (3) copies of outline of instructional program for demonstration and orientation, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each orientation module to the Commissioner for approval no less than thirty (30) days prior to the date the proposed orientation is to take place. Include learning objectives and outline for each orientation module.

1. At completion of training, submit three (3) complete training manual(s) and three (3) applicable DVD recording(s) to the Commissioner for the facility's and City's use.

B. Qualification Data: For facilitator, instructor and Videographer.

C. Attendance Record: For each orientation module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each orientation module, submit results and documentation of performance-based test.

E. Submit all final orientation material to the Resident Engineer a minimum of fourteen (14) days prior to the scheduled training.

F. Demonstration and Orientation Recordings:

1. Non-Commissioned Projects:

a. The Contractor shall submit to the Commissioner three (3) copies of Demonstration and Orientation DVD (Digital Video Disk) recordings within seven (7) days of end of each training module.

b. Identification: On each copy, provide an applied label with the following information:

1) Project Contract I.D. Number
2) Project Contract Name
3) Name of Contractor
4) Name of Subcontractor as applicable
5) Name of Design Consultant
6) Name of Construction Manager as applicable
7) Date recorded.
8) Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
9) Table of Contents including list of systems covered.

c. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding DVD recording. Include name of Project and date of recording on each page.

2. Commissioned Projects:

a. Demonstration and Orientation DVD recordings for Commissioned projects will be recorded by the Commissioning Authority/Agent (CxA) under separate contract with the City of New

York. The Contractor performing Demonstration and Orientation shall cooperate with the CxA in the recording of each Demonstration and Orientation module.

1.6 QUALITY ASSURANCE:

A. Facilitator Qualifications: A firm or individual experienced in orientation or educating maintenance personnel in an orientation program similar in content and extent to that indicated for this Project.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 40 00, QUALITY REQUIREMENTS, experienced in operation and maintenance procedures and orientation.

C. Videographer Qualifications: A professional Videographer who has experience with orientation and construction projects.

D. Pre-instruction Conference: Schedule with the Resident Engineer a conference at Project site to comply with requirements in Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION. Review methods and procedures related to demonstration and orientation including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.7 COORDINATION:

A. Coordinate instruction schedule with the Resident Engineer and facility's operations. Adjust schedule as required to minimize disrupting facility's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of orientation modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by the Commissioner.

PART II – PRODUCTS

2.1 INSTRUCTION PROGRAM:

A. Program Structure: Develop an instruction program that includes individual orientation modules for each system and equipment not part of a system, as specified and required by individual Specification Sections.

B. Orientation Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.

d. Regulatory requirements.
e. Equipment function including auxiliary equipment and systems.
f. Operating characteristics.
g. Limiting conditions.
h. Performance curves.

2. Documentation: Review the following items in detail:
   a. Emergency manuals.
   b. Operations manuals.
   c. Maintenance manuals.
   d. Project Record Documents.
   e. Identification systems.
   f. Warranties

3. Emergencies: Include the following, as applicable:
   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:
   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.
   f. Safety procedures.
   g. Instructions on stopping.
   h. Normal shutdown instructions.
   i. Operating procedures for emergencies.
   j. Operating procedures for system, subsystem, or equipment failure.
   k. Seasonal and weekend operating instructions.
   l. Required sequences for electric or electronic systems.
   m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning

e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.
h. Housekeeping practices

8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

PART III – EXECUTION

3.1 INSTRUCTION:

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and the Resident Engineer for the number of participants, instruction times, and location.

B. The Contractor shall engage qualified instructors to instruct facility's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

C. Scheduling: Schedule instruction with the Resident Engineer at mutually agreed times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule orientation with the Resident Engineer with at least fourteen (14) days' advance notice.

D. Evaluation: At conclusion of each orientation module, assess and document each participant's mastery of module(s) by use of an oral a written or a demonstration performance-based test.

E. Cleanup: Collect and remove used and leftover educational materials from project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial orientation use.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2.A or SUB-SECTION 3.2.B

3.2 DEMONSTRATION AND ORIENTATION RECORDINGS:

A. Non-Commissioned projects:
1. The Contractor shall engage a qualified commercial Videographer to record demonstration and orientation sessions. Record each orientation module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
2. At beginning of each orientation module, record each chart containing learning objective and lesson outline.
3. All recordings must be close captioned.
4. Recording Format: Provide high-quality DVD (Digital Video Disk) format.

5. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and orientation. Display continuous running time.
6. Narration: Describe scenes on the recording by audio narration by microphone while recording or by dubbing audio narration off-site after. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
7. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from opposite the corresponding narration segment.

B. Commissioned Projects:

1. The Commissioning Authority/Agent (CxA) under separate contract with the City of New York will be responsible for DVD recording of Demonstration and Orientation sessions as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.

END OF SECTION 01 79 00

SECTION 01 81 13
SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. LEED BUILDING - GENERAL REQUIREMENTS:

The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED™ Green Building rating. Specific project requirements related to this goal are listed in the applicable paragraphs of this section of the General Conditions. The Contractor shall ensure that these requirements as defined in the sections below and in related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor or their Subcontractors, shall not be allowed if such changes compromise the stated LEED BUILDING criteria.

B. This Section includes:

1. Definitions
2. LEED Provisions
3. LEED Building Submittals
4. LEED Building Submittal Requirements
5. LEED Action Plan

1.3 RELATED SECTIONS: Include without limitation the following:

A.	Section 01 74 19	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
B.	Section 01 81 13.13	VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS
C.	Section 01 81 19	INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS
D.	Section 01 91 13	GENERAL COMMISSIONING REQUIREMENTS

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Agrifiber Products: Products derived from recovered agricultural waste fiber from sources such as cereal straw, sugarcane bagasse, sunflower husk, walnut shells, coconut husks, and agricultural prunings, processed and mixed with resins to produce panels with characteristics similar to composite wood.

C. Composite Wood: Products composed of wood or plant particles or fibers bonded by a synthetic resin or binder to produce panels such as plywood, particleboard, and medium density fiberboard (MDF). Does not include hardboard, structural panels, glued laminated timber, prefabricated wood I-joists, or finger-jointed lumber.

D. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

E. Forest Stewardship Council (FSC) Certified Wood: Wood-based materials and products certified in accordance with the Forest Stewardship Council's principles and criteria.

F. LEED: The Leadership in Energy & Environmental Design rating system developed by the United States Green Building Council.

G. Rapidly Renewable Materials: Materials made from agricultural products that are typically harvested within a ten-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.

H. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles from the Project location. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.

I. Regionally Extracted, Harvested, or Recovered Materials: Materials which are extracted, harvested, or recovered and manufactured within a radius of 500 miles from the Project site.

J. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).
   1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
   2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process except mechanical and electrical components are pre-consumer recycled materials.
   3. "Pre-consumer" may also be referred to as "post-industrial".

K. Solar Reflectance Index (SRI): A measure of a material's ability to reflect solar heat, as shown by a small temperature rise. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is equal to 0, and a standard white (reflectance 0.80, emittance of 0.90) is equal to 100.

L. Volatile Organic Compound (VOC): Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.

1.5 LEED PROVISIONS:

A. Refer to the Addendum for the LEED rating to be achieved for this project. The provisions to achieve this LEED rating are integrated within the project construction documents and specifications. The Contractor is specifically directed to the "LEED BUILDING Performance Criteria" and "LEED BUILDING Submittals" sections within the contract specification. Additional LEED requirements are met through aspects of the project design, including material and equipment selections, which may not be specifically identified as LEED BUILDING requirements. Compliance with the requirements needed to obtain LEED prerequisites and credits will be used as one criterion to evaluate substitution requests.

1.6 LEED BUILDING SUBMITTALS:

A. Scope: LEED BUILDING submittals are required for all installed materials included in General Construction work. LEED BUILDING Submittals are only required for field-applied adhesives, sealants, paints and coatings included in Plumbing, Mechanical and Electrical work. Submit all required LEED BUILDING submittals in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.

B. Applicability: The extent of the LEED BUILDING Submittals varies depending on the specification section. Applicable LEED BUILDING Submittals are listed under the "LEED BUILDING Submittals" heading in each specification section. The detailed requirements for the LEED BUILDING Submittals are defined in Item C below.

C. Detailed Requirements: Sub-Sections 1.6 C.1through 1.6 C.3 below defines the information and documents to be provided for each type of LEED BUILDING Submittal as identified in the LEED Submittal Requirements of each specification section:

1. ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM (EBMCF)[GHI]: Information to be supplied for this form (blank sample copy attached at end of this Section to be modified as appropriate to the project) shall include some or all of the following items, as identified in the LEED Submittal Requirements of each specification section:

   a. Cost breakdowns for the materials included in the contractor or sub-contractor's scope of work. Cost reporting shall include itemized material costs (excluding the contractor's labor, equipment, overhead and profit).
   b. The percentages (by weight) of post-consumer and/or post-industrial recycled content in the supplied product(s).
      1. For each product with recycled content, also indicate the total recycled content value (1/2 x pre-consumer percentage x product value + 1 x post-consumer percentage x product value = total recycled content value).
      2. See additional requirements for concrete below.
   c. Identification (Yes/No) of materials manufactured within 500 miles of the project site AND containing raw materials harvested or extracted within 500 miles of the project site.
      1) Indicate the percentage by weight, relative to the total weight of the product, that meets these criteria.
      2) Indicate the point of harvest/extraction/recovery of regional raw materials, the point of final assembly of regional manufactured products, and the distance from each point to the project site.
   d. Volatile Organic Compound (VOC) content of all field-applied adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon, less water.
      1) For detailed requirements refer to Section 01 81 13.13 VOC LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
   e. The amount of "Forest Stewardship Council (FSC) Certified" wood products if used in the Project.
      1) Record only new FSC-certified wood products. Do not record reclaimed, salvaged, or recycled FSC-certified wood products.

2) Reclaimed, salvaged, or recycled FSC-certified wood may be recorded as post-consumer recycled content.

f. The amount of Rapidly Renewable materials if used in the Project.
1) Indicate the type of rapidly renewable material used, and the percentage by weight, relative to the total weight of the product, that consists of rapidly renewable material.

g. The percentage (by weight), relative to the total weight of cementitious materials, of supplementary cementitious materials or pozzolans such as fly ash used in each concrete mix used in the Project.
1) For each concrete mix, provide a complete breakdown of all components, by weight and by cost.

h. Identification (Yes/No) of composite wood or agrifiber products used in the project that are free of added urea-added formaldehyde resins.

i. Identification (Yes/No) of flooring products used in the project that have Carpet and Rug Institute (CRI) Green Label or Green Label Plus certification, or Resilient Floor Covering Institute FloorScore certification.
1) Untreated solid wood flooring, and mineral-based flooring products such as tile, masonry, terrazzo, and cut stone that have no organic-based coatings or sealants, are excluded from this requirement.

j. The EBMCF shall record the above information only for those materials or products permanently installed in the project. The EBMCF shall record VOC content, composite and agrifiber products, and CRI or FloorScore ratings only for those materials or products permanently installed within the weather barrier of the LEED building.

2. EBMCF BACK-UP DOCUMENTATION: These documents are used to validate the information provided on the EBMCF (except cost data). For each material listed on the EBMCF, provide documentation to certify the material's LEED BUILDING attributes, as applicable:

a. RECYCLED CONTENT: Provide published product literature or letter of certification on the manufacturer's letterhead certifying the amounts of post-consumer and/or post-industrial content.

b. REGIONAL MANUFACTURING **AND** REGIONAL RAW MATERIALS (WITHIN 500 MILES): Provide published product literature or letter of certification on the manufacturer's letterhead indicating the city/state where the manufacturing plant is located, where each of the raw materials in the product were extracted, harvested or recovered and the distance in miles from the project site.
1) If only some of the raw materials for a particular product or assembly originate within 500 miles of the project site, provide the percentage (by weight) that these materials comprise in the complete product.

c. VOC CONTENT: Provide Material Safety Data Sheets (MSDS) certifying the Volatile Organic Compound (VOC) content of the adhesive, sealant, paint, or coating products. VOC content is to be reported in grams/liter or lbs./gallon, less water. If the MSDS does not show the product's VOC content, this information must be provided through other published product literature from the manufacturer, or stated in a letter of certification from the product manufacturer on the manufacturer's letterhead.

d. RAPIDLY RENEWABLE MATERIALS: If used in the project, provide published literature or letter of certification on the manufacturer's letterhead certifying the percentage of each product that is rapidly renewable (by weight).

3. PRODUCT CUT SHEETS: Provide product cut sheets with the Contractor's or sub-contractor's stamp, confirming that the submitted products are the products installed in the Project.

4. CRI GREEN LABEL PLUS CERTIFICATION: For carpets and carpet cushions, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the "Green Label Plus" IAQ testing program of the Carpet and Rug Institute of Dalton, GA.

5. CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER RESINS: For all composite wood, engineered wood and agrifiber products (including plywood, particleboard, and medium density fiberboard), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that that the products do not contain added urea-formaldehyde resins.

6. CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER LAMINATING ADHESIVES: For all laminating adhesives used with composite wood, engineered wood and agrifiber products (e.g., adhesives used to laminate wood veneers to an engineered wood substrate), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the adhesive products do not contain urea-formaldehyde.

7. FSC-CERTIFIED WOOD:
   a. If used in the project, provide chain of custody documents and copies of invoices regarding wood products, including whether or not such wood product is FSC-certified.
   b. If used in the project, for assemblies, provide the percentage (by cost and by weight) of the assembly that is FSC-certified wood.
   c. If used in the project, for assemblies, provide published product literature or letter from the manufacturer(on the manufacturer's letterhead) verifying the percentage that is FSC-certified wood.

8. GREEN SEAL COMPLIANCE: Provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the following product types comply with the VOC limits and chemical component restrictions developed by the Green Seal organization of Washington, DC:

   a. Interior Architectural Paints and Coatings: refer to Green Seal standard GS-11 (1st edition, May 1993)
   b. Anti-corrosive and Anti-rust paints: refer to Green Seal standard GC-03 (2nd Edition, January 1997)
   c. Aerosol Adhesives: refer to Green Seal standard GS-36 (1st edition, October 2000)

9. HIGH ALBEDO PAVING AND WALKWAY MATERIALS: For paving and walkway materials made from concrete or brick provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying a minimum Solar Reflectance Index (SRI) value of 29. SRI values shall be calculated according to ASTM E 1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.

10. HIGH ALBEDO ROOFING MATERIALS: For exposed roofing membranes, pavers, and ballast products, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the following minimum Solar Reflectance Index (SRI) values:

    a. 78 for low-sloped roofing applications (slope ≤ 2:12)
    b. 29 for steep-sloped roofing applications (slope > 2:12)

    SRI values shall be calculated according to ASTM E 1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.
    Vegetated roof surfaces are exempt from the SRI criteria.

11. LOW MERCURY LAMPS: For all fluorescent, compact fluorescent, and HID lamps installed in the project, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying:

    a. The mercury content or content range per lamp in milligrams or picograms;
    b. The design light output per lamp (light at 40% of a lamp's useful life) in lumens; and
    c. The rated average life of the lamp in hours.

In addition, provide the total number of each lamp type installed in the project.

12. FLOORSCORE CERTIFICATION: For all hard surface flooring, including vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, and wall base, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the current FloorScore standard requirements.
13. CONCRETE: Provide concrete mix design for each mix, designated by a distinct identifying code or number and signed by a Professional Engineer licensed in the state in which the concrete manufacturer or supplier is located.
14. INTERIOR LIGHTING FIXTURES: For each lighting fixture type installed within the building's weather barrier, provide manufacturer's cut sheets indicating the following:
    a. Fixture power in watts.
    b. Initial lamp lumens.
    c. Photometric distribution data.
    d. Dimming capability, in range of percentages.
15. EXTERIOR LIGHTING FIXTURES: For each lighting fixture type installed on site, provide manufacturer's cut sheets indicating the following:
    a. Fixture power in watts.
    b. Initial lamp lumens.
    c. Photometric distribution data.
    d. Range of field adjustability, if any.
    e. Warranty of suitability for exterior use.
16. ALTERNATIVE TRANSPORTATION: Provide manufacturer's cut sheets and/or shop drawings for the following items installed on site:
    a. Bike racks, including total number of bicycle slots provided.
    b. Signage indicating parking spaces reserved for electric or low-emitting vehicles and for carpools/vanpools, including total number of signs.
17. WATER CONSERVING FIXTURES: For all water consuming plumbing fixtures and fittings, provide manufacturer's cut sheets showing maximum flow rates and/or flush rates.
18. ENERGY SAVING APPLIANCES: Provide manufacturer's cut sheets and published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the product's rating under the U.S. EPA/DOE Energy Star program, for all of the following:
    a. Appliances (i.e., refrigerators, dishwashers, microwave ovens, televisions, clothes washers, clothes dryers, chilled water dispensers).
    b. Office equipment (i.e., copy machines, fax machines, plotters/printers, scanners, binding and publishing equipment).
    c. Electronics (i.e., servers, desktop computers, computer monitor displays, laptop computers, network equipment).
    d. Commercial food service equipment
19. GLAZING: For glazing in any windows, doors, storefront and window wall systems, curtainwall systems, skylights, and partitions, provide manufacturer's cut sheets indicating the following:
    a. Glazed area.
    b. Visible light transmittance.
    c. Solar heat gain coefficient.
    d. Fenestration assembly u-factor.
20. VENTILATION: Provide manufacturer's cut sheets for the following:
    a. Carbon dioxide monitoring systems, if any, installed to measure outside air delivery.
    b. Air filters: for detailed requirements refer to Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS.
21. REFRIGERATION: For all refrigeration equipment, provide manufacturer's cut sheets indicating the following:
    a. Equipment type.

b. Equipment life. Default values specified by the 2007 ASHRAE Applications Handbook will be used unless otherwise demonstrated by the manufacturer's guarantee and an equivalent long-term service contract.
c. Refrigerant type.
d. Refrigerant charge in pounds of refrigerant per ton of gross cooling capacity.
e. Tested refrigerant leakage rate, in percent per year. A default rate of 2% will be used unless otherwise demonstrated by test data.
f. Tested end-of-life refrigerant loss, in percent. A default rate of 10% will be used unless otherwise demonstrated by test data.

1.7 LEED BUILDING SUBMITTAL REQUIREMENTS:

A. The LEED BUILDING submittal information shall be assembled into one package per contract specification section(s) (or per subcontractor), and submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES. Incomplete or inaccurate LEED BUILDING submittals may be used as the basis for rejecting the submittals of products or assemblies.

1.8 LEED ACTION PLANS:

A. Construction Waste Management Plan- Refer to Section 01 74 19, Construction Waste Management and Disposal for detailed submittal requirements.

B. Construction IAQ Management Plan- Refer to Section 01 81 19, Indoor Air Quality Requirements for LEED Buildings, for detailed submittal requirements.

C. Erosion and Sedimentation Control Plan:
1. The Plan shall be in accordance with the New York Department of Environmental Conservation (NYSDEC) or the 2003 EPA Construction General Permit, whichever is more stringent.
2. The Plan shall be submitted in accordance with Section 01 33 00, SUBMITTAL PROCEEDURES.
3. Detailed requirements: ESC Plan
   a. Include the Stormwater Pollution Prevention Plan, if required.
   b. Identify the party responsible for Plan monitoring and documentation. The party must be regularly on site.
   c. Describe all site work that will be implemented on the project.
   d. Provide site plan with location of ESC measures, including, but not limited to, stormwater quantity controls, stormwater quality controls, stabilized construction entrances, washdown areas, and inlet/catch basin protection.
   e. Describe the inspection and maintenance of the ESC measures. Provide a construction schedule indicating weekly site review.
   f. Describe reporting and documentation measures.
4. Detailed requirements: ESC Measures
5. Submittal requirements: ESC Tracking Log
   a. Note date of major rain events, describe damage, describe any repairs or maintenance performed, and note responsible party.
   b. Note date and findings of weekly site review, describe any repairs or maintenance performed, and note responsible party.
   c. Submit monthly.
6. Implementation
   a. The Contractor shall implement the ESC Plan, coordinate the Plan with all affected trades, and designate one individual as the Erosion and Sedimentation Control Representative, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation.

b. The Contractor shall be responsible for the provision, maintenance, and repair of all ESC measures.
c. Demonstration. The Contractor shall provide on-site instruction of proper construction practices required to prevent erosion and sedimentation.
d. Meetings. Urgent or ongoing ESC issues shall be discussed at weekly on-site job meetings.

1.9 QUALITY ASSURANCE:

A. The Contractor shall implement all LEED Action Plans, coordinate the Plans and LEED Building Submittals with all affected trades, and designate one individual as the Sustainable Construction Representative at no additional cost to the City of New York, who will be responsible for communicating the progress of LEED activities with the Commissioner on a regular basis, and for assembling the required LEED documentation.

B. Responsibilities of Contractor's Subcontractors: The Contractor shall be responsible for his/her subcontractors complying with the LEED Action Plans and for providing required LEED documentation as required for the project.

C. Distribution and Compilation: The Contractor shall be responsible for distributing the EBMCF and any other forms or templates required for the subcontractors to record LEED documentation. The Contractor shall also be responsible for collecting and compiling EBMCF information into packages as described in Section 01 33 00 SUBMITTAL PROCEDURES.

D. Meetings: Sustainable design and construction issues shall be discussed at the following meetings:
1. Demolition kick-off meeting
2. Construction kick-off meeting
3. Construction kick-off meeting for LEED (independent meeting)
4. Weekly job-site progress and coordination meetings
5. Closeout meeting

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 13

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM

Date: _____

Contractor Name: _____ Project Name: _____

Contractor Contact: _____ Project I.D.: _____

Telephone Number: _____ Project Location: _____

Product/Manufacturer	Material Cost[1]	Recycled Content			Regional[4]			Rapidly Renewable[7]		VOC content[8]		Flooring[9]	Wood	
		Pre-Consumer (% by wt)[2]	Post-Consumer (% by wt)[3]	Total % (½ Pre + Post)	Location & Distance to Extraction[5]	Location & Distance to Manufacture[6]	Extracted & Manuf. (% by wt)	Material	% by wt	*VOC content listed	*VOC content allowed	*Green Label or FloorScore	*Added urea formaldehyde (Yes/No) [10]	FSC Certified[11] (% by wt)

[1] **Material Cost:** As it appears on the manufacturer's or distributor's invoice to the contractor or subcontractor. Does not include labor or equipment costs associated with installation.

[2] **Pre-Consumer Recycled Content:** Industrial/manufacturing waste material (e.g., fly-ash and synthetic gypsum, both waste products from coal burning electricity plants) diverted from landfill and incorporated into a finished product. Scrap raw materials that can be reused in the same manufacturing process from which they are recovered are not considered Pre-Consumer Recycled Content.

[3] **Post-Consumer Recycled Content:** Material or product that has served its intended consumer use (e.g., an empty plastic bottle) and has been diverted from landfill and incorporated into a finished product.

[4] **Regional:** Refers to a material/product that is BOTH extracted AND manufactured within 500 miles of the Project site. Record this information ONLY for materials/products meeting BOTH of these criteria.

[5] **Extraction:** Refers to the location from which the raw resources used in a building product are extracted, harvested, or recovered.

[6] **Manufacture:** Refers to the location of the final assembly of components into a building product that is furnished and installed by the Contractor.

[7] **Rapidly Renewable:** Refers to materials/products derived from agricultural products that are typically harvested within a ten-year or shorter cycle.

[8] **VOC Content:** The quantity of volatile organic compounds contained in adhesives, sealants. paints and architectural coatings. Reported in grams/liter or lbs/gallon, less water.

[9] **Flooring:** For carpet, indicate Carpet and Rug Institute (CRI) Green Label Plus certification. For carpet cushion, indicate CRI Green Label certification. For all flooring except unfinished/untreated wood and mineral-based flooring (tile, masonry, terrazzo, cut stone) without organic-based coatings or sealants, indicate Resilient Floor Covering Institute FloorScore rating. VOC limits for adhesives, sealants, etc. still apply.

[10] **Added Urea Formaldehyde:** Applies to composite wood and agrifiber products only (plywood, particleboard, MDF, OSB, wheatboard, strawboard). Resins or binders with added urea formaldehyde are prohibited.

[11] **FSC Certified:** Certification from the Forest Stewardship Council. This column is only applicable to wood products.

* Applies only to materials/products installed within the weather barrier.

Contractor Certification:

I, _____ a duly authorized representative of _____ (the Contractor) hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by the Contractor as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Commissioner.

Signature of Authorized Representative: _____ Date: _____

No Text

SECTION 01 81 13.13
VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.13

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes requirements for volatile organic compound (VOC) content in adhesives, sealants, paints and coatings used for the project.

B. All sections in the Project Specifications with adhesives, sealant or sealant primer applications, paints and coatings shall follow all requirements of this section. In the event of any conflict or inconsistency between this section and the Specifications regarding adhesives, sealant or sealant applications, paints and coatings, the requirements set forth in this Section shall prevail.

C. This Section includes:

1. General Requirements
2. References
3. VOC Requirements for Interior Adhesives
4. VOC Requirements for Interior Sealants
5. VOC requirements for Interior Paints
6. VOC requirements for Interior Coatings
7. Submittals

1.3 RELATED SECTIONS: Include without limitation the following:

A. Section 01 10 00 SUMMARY
B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
D. Section 01 33 00 SUBMITTAL PROCEDURES
E. Section 01 73 00 EXECUTION
F. Section 01 77 00 CLOSEOUT PROCEDURES
G. Section 01 78 39 CONTRACT RECORD DOCUMENTS
H. Section 01 81 19 INDOOR AIR QUALITY FOR LEED BUILDINGS

1.4 DEFINITIONS:

A. ADHESIVE: Any substance used to bond one surface to another by attachment. Includes adhesive primers and adhesive bonding primers.
   1. Aerosol Adhesive: Any adhesive packaged as an aerosol with a spray mechanism permanently housed in a non-refillable can designed for hand-held application without the need for ancillary equipment.

B. CARCINOGEN: A chemical listed as a known, probable, reasonably anticipated, or possible human carcinogen by the International Agency for Research on Cancer (IARC) (Groups 1, 2A, and 2B), the National

Toxicology Program (NTP) (Groups 1 and 2), the U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS) (weight-of-evidence classifications A, B1, B2, and C, carcinogenic, likely to be carcinogenic, and suggestive evidence of carcinogenicity or carcinogen potential), or the Occupational Safety and Health Administration (OSHA).

C. CLEAR WOOD FINISH: Clear/semi-transparent coating applied to wood substrates to provide a transparent or translucent solid film.
   1. Lacquer: Clear/semi-transparent coating formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and provide a solid, protective film.
   2. Sanding Sealer: A sanding sealer that also meets the definition of a lacquer.
   3. Varnish: Clear/semi-transparent coating, excluding lacquers and shellacs, formulated to dry by chemical reaction on exposure to air. May contain small amounts of pigment.

D. COATING: Liquid, liquefiable, or mastic composition that is converted to a solid adherent film after application to a substrate as a thin layer; and is used for decorating, protecting, identifying or to serve some functional purpose such as the filling or concealing of surface irregularities or the modification of light and heat radiation characteristics; and is intended for on-site application to interior or exterior surfaces of buildings. Does not include stains, clear finishes, recycled latex paint, specialty (industrial, marine or automotive) coatings or paint sold in aerosol cans.

E. FLOOR COATING: Opaque coating applied to flooring. Excludes industrial maintenance coatings.

F. HAZARDOUS AIR POLLUTANT: Any compound listed by the U.S. EPA in the Clean Air Act Section 112(b)(1) as a hazardous air pollutant.

G. MUTAGEN: A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarding as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification of Chemicals Which Cause Mutations in Germ Cells (United Nations Economic Commission for Europe, Globally Harmonized System of Classification and Labeling of Chemicals).

H. OZONE-DEPLETING COMPOUNDS: A compound with an ozone-depletion potential greater than 0.1 (CFC 11=1) according to the U.S. EPA list of Class I and Class II Ozone-Depleting Substances.

I. PAINT: A pigmented coating. For the purposes of this specification, paint primers are considered to be paints.
   1. Flat Coating or Paint: Has a gloss of less than 15 (using an 85-degree meter) or less than 5 (using a 60-degree meter).
   2. Non-Flat Coating or Paint: Has a gloss of greater than or equal to 15 (using an 85-degree meter) or greater than or equal to 5 (using a 60-degree meter).
   3. Non-Flat High-Gloss Coating or Paint: Has a gloss of greater than or equal to 70 (using a 60-degree meter).
   4. Anti-Corrosive / Rust Preventative Paint: Coating formulated and recommended for use in preventing the corrosion of ferrous metal substrates.

J. PRIMER: Coating that is formulated and recommended for one or more of the following purposes: to provide a firm bond between the substrate and a subsequent coating; to prevent a subsequent coating from being absorbed into the substrate; to prevent harm to a subsequent coating from materials in the substrate; or to provide a smooth surface for application of a subsequent coating.

K. REPRODUCTIVE TOXIN: A chemical listed as a reproductive toxin (including developmental, female, and male toxins) by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Code of Regulations, Title 22, Division 2, Subdivision 1, Chapter 3, Sections 1200, et. Seq.).

L. SANDING SEALER: Clear/semi-transparent coating formulated to seal bare wood. Can be abraded to create a smooth surface for subsequent coatings. Does not include sanding sealers that are lacquers (see Clear Wood Finish above).

M. SEALANT: Any material with adhesive properties, formulated primarily to fill, seal, or waterproof gaps or joints between surfaces. Includes sealant primers and caulks.

N. SHELLAC: Clear or pigmented coating formulated solely with the resinous secretions of the lac beetle, thinned with alcohol and formulated to dry by evaporation without chemical reaction. Excludes floor applications.

O. STAIN: Clear semi-transparent/opaque coating formulated to change the color but not conceal the grain pattern or texture of the substrate.

P. VOLATILE AROMATIC COMPOUND: Any hydrocarbon compound containing one or more 6-carbone benzene rings, and having an initial boiling point less than or equal to 280 degrees Celsius measured at standard conditions of temperature and pressure.

Q. VOLATILE ORGANIC COMPOUND: Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.

R. WATERPROOFING SEALER: A coating that prevents the penetration of water into porous substrates.

1.5 GENERAL REQUIREMENTS:

A. The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED Green building rating. Specific project requirements related to this goal which may impact this area of work are listed in the applicable paragraphs of this specification section. The Contractor shall ensure that the requirements as defined in the sections below and in related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor or their Subcontractors, shall not be allowed if such changes compromise the stated environmental goals.

1.6 REFERENCES:

A. Rule 1168 – "Adhesive and Sealant Applications", amended 7 January 2005): South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov

B. Rule 1113 - "Architectural Coatings", amended 9 July 2004: South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov

C. Green Seal Standard GS-11- "Paints", of Green Seal, Inc., Washington, DC, www.greenseal.org

D. Green Seal Standard GC-03- "Anti-Corrosive Paints", of Green Seal, Inc., Washington, DC, www.greenseal.org

1.7 VOC REQUIREMENTS FOR INTERIOR ADHESIVES, SEALANTS, PAINTS AND COATINGS:

A. GENERAL: Unless otherwise specified herein, the VOC content of all interior adhesives, sealants, paints and coatings (herein referred to as "products") shall not be in excess of **250 grams per liter.**

B. No product shall contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bioacculmulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which shall be less than or equal to 1% by weight of the product.

C. No product shall contain the following:
1. methylene chloride
2. 1,1,1-trichloroethane
3. benzene
4. toluene
5. ethylbenzene

6. vinyl chloride
7. naphthalene
8. 1,2-dichlorobenzene
9. di (2-ethylhexyl) phthalate
10. butyl benzyl phthalate
11. di-n-butyl phthalate
12. di-n-octyl phthalate
13. diethyl phthalate
14. dimethyl phthalate
15. isophorone
16. antimony
17. cadmium
18. hexavalent chromium
19. lead
20. mercury
21. formaldehyde
22. methyl ethyl ketone
23. methyl isobutyl ketone
24. acrolein
25. acrylonitrile

D. No product shall contain more than 1.0% by weight of sum total of volatile aromatic compounds.

1.8 VOC REQUIREMENTS FOR INTERIOR ADHESIVES:

A. The volatile organic compound (VOC) content of adhesives, adhesive bonding primers, or adhesive primers used in this project shall not exceed the limits defined in Rule 1168 – "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.

B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.

C. For specified building construction related applications, the allowable VOC content is as follows:

a. Architectural Applications:

i.	Indoor carpet adhesive	50
ii.	Carpet pad adhesive	50
iii.	Wood flooring adhesive	100
iv.	Rubber floor adhesive	60
v.	Subfloor adhesive	50
vi.	Ceramic tile adhesive	65
vii.	VCT and asphalt tile adhesive	50
viii.	Drywall and panel adhesive	50
ix.	Cove base adhesive	50
x.	Multipurpose construction adhesive	70
xi.	Structural glazing adhesive	100

b. Specialty Applications:

a.	PVC welding	510
b.	CPVC welding	490
c.	ABS welding	325
d.	Plastic cement welding	250

e.	Adhesive primer for plastic	550
f.	Contact Adhesive	80
g.	Special Purpose Contact Adhesive	250
h.	Structural Wood Member Adhesive	140
i.	Sheet Applied Rubber Lining Operations	850
j.	Top and Trim Adhesive	250

c. Substrate Specific Applications:

a.	Metal to metal	30
b.	Plastic foams	50
c.	Porous material (except wood)	50
d.	Wood	30
e.	Fiberglass	80

d. Aerosol Adhesives:

a.	General purpose mist spray	65% VOC's by weight
b.	General purpose web spray	55% VOC's by weight
c.	Special purpose aerosol adhesives (all types)	70% VOC's by weight

1.9 VOC REQUIREMENTS FOR INTERIOR SEALANTS:

A. The volatile organic compound (VOC) content of sealants, or sealant primers used in this project shall not exceed the limits defined in Rule 1168 – "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.

B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.

1 Sealants:

a.	Architectural	250
b.	Non-membrane roof	300
c.	Roadway	250
d.	Single-ply roof membrane	450
e.	Other	420

2 Sealant Primer:

a.	Architectural – Nonporous	250
b.	Architectural – Porous	775
c.	Other	750

1.10 VOC REQUIREMENTS FOR INTERIOR PAINTS:

A. Paints and Primers: Paints and primers used in non-specialized interior applications (i.e., for wallboard, plaster, wood, metal doors and frames, etc.) shall meet the VOC limitations of the Green Seal Paint Standard GS-11, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:

1. Volatile Organic Compounds:
   a. The VOC concentrations (in grams per liter) of the product shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.

   Interior Paints and Primers:
   Non-flat: 150 g/l

Flat: 50 g/l
The calculation of VOC shall exclude water and tinting color added at the point of sale.

B. Anti- Corrosive and Anti-Rust Paints: Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates shall meet the VOC limitations of the Green Seal Paint Standard GC-03, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:
1. Volatile Organic Compounds:

a. The VOC concentrations (in grams per liter) of the product shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.
Anti-Corrosive and Anti-Rust Paints: 250 g/l

The calculation of VOC shall exclude water and tinting color added at the point of sale.

1.11 VOC REQUIREMENTS FOR INTERIOR COATINGS:

A. Clear wood finishes, floor coatings, stains, sealers, and shellacs applied to the interior shall meet the VOC limitations defined in Rule 1113, "Architectural Coatings" of SCAQMD, of the State of California. The VOC limits defined by SCAQMD, based on 7/9/04 amendments, are as follows. VOC limits are defined in grams per liter, less water and less exempt compounds.

1. Clear Wood Finishes:		
	a. Varnish	350
	b. Sanding Sealers	350
	c. Lacquer	550
2. Shellac:		
	a. Clear	730
	b. Pigmented	550
3. Stains		250
4. Floor Coatings		100
5. Waterproofing Sealers		250
6. Sanding Sealers		275
7. Other Sealers		200

The calculation of VOC shall exclude water and tinting color added at the point of sale.

1.12 SUBMITTALS:

A. Submit Material Safety Data Sheets, for all applicable products in accordance with Section 01 33 00, SUBMITTAL PROCEDURES. Applicable products include, but are not limited to adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted. (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

B. Submit Environmental Building Materials Certification Form (EBMCF): For each field-applied adhesive, sealant, paint, and coating product, provide the VOC requirement, as provided in this Specification, for the relevant material category indicated on the documentation noted above.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 13.13

SECTION 01 81 19
INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 19

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 CONSTRUCTION IAQ MANAGEMENT GOALS FOR THE PROJECT:

A. The City of New York has determined that this Project shall minimize the detrimental impacts on Indoor Air Quality (IAQ) resulting from construction activities. Factors that contaminate indoor air, such as dust entering HVAC systems and ductwork, improper storage of materials on-site, poor housekeeping, shall be minimized.

1.3 RELATED SECTIONS:

A. All sections of the Specifications related to interior construction, MEP systems, and items affecting indoor air quality.

B. Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

C. Section 01 81 13.13, VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.

D. Division 9 (of the Specifications): Finishes.

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

C. Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products, including solvents in paints, coatings, adhesives and sealants, wood preservatives, composite wood binder, and foam insulations. Not all VOC's are harmful, but many of those contained within building products contribute to the formation of smog and may irritate building occupants by their smell and/or health impact.

D. Materials that act as "sinks" for VOC contamination: Absorptive materials, typically dry and soft materials (such as textiles, carpeting, acoustical ceiling tiles and gypsum board) that readily absorb VOC's emitted by "source" materials and release them over a prolonged period of time.

E. Materials that act as "sources" for VOC contamination: Products with high VOC contents that emit VOC's either rapidly during application and curing (typically "wet" products, such as paints, sealants, adhesives, caulks and sealers) or over a prolonged period (typically "dry" products such as flooring coverings with plasticizers and engineered wood with formaldehyde).

1.5 REFERENCES, RESOURCES:

A. "IAQ Guidelines for Occupied Buildings Under Construction", First Edition, November 1995, The Sheet Metal and Air Conditioner Contractors National Association (SMACNA). (703) 803-2980, www.smacna.org.

B. ANSI/ASHRAE 52.2-1999, "Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size", www.ashrae.org

1.6 LEED BUILDING GENERAL REQUIREMENTS:

A. Implement practices and procedures as necessary to meet the project's environmental performance goals as set forth in the specific requirements of this section. Specific project goals that may impact this area of work include: use of recycled-content materials; use of low-emitting materials; construction waste recycling; and the implementation of a construction indoor air quality management plan. Ensure that the requirements related to these goals, as defined in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be allowed if such changes compromise the stated LEED BUILDING Performance Criteria.

1.7 CONSTRUCTION IAQ MANAGEMENT PLAN :

A. The Contractor shall prepare a Construction IAQ Management Plan in coordination with each subcontractor and submit the IAQ Management Plan to the Commissioner for approval in accordance with Section 01 33 00, SUBMITTAL PROCDEURES. The Construction IAQ Management Plan shall meet the following criteria:

1. Construction activities shall be planned to meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors' Association (SMACNA) "IAQ Guidelines for Occupied Buildings under Construction", First Edition, 1995.
2. Absorptive materials shall be protected from moisture damage when stored on-site and after installation.
3. If air handlers are to be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999.
4. Filtration media shall be replaced immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 as determined by ASHRAE 52.2-1999 if the project is pursuing Indoor Air Quality Credit 5: Indoor Chemical Pollutant Source Control.
5. A "Sequence of Finish Installation Plan" shall be developed, highlighting measures to reduce the absorption of VOCs by materials that act as "sinks".
6. Upon approval of the Plan by the Commissioner, it shall be implemented by the Contractor through the duration of the construction process, and documented in accordance with the Submittal Requirements of Sub-section 1.8 herein.

B. Further description of the Construction IAQ Management Plan requirements is as follows:

1. SMACNA Guidelines: Chapter 3 of the referenced "IAQ Guidelines for Occupied Buildings Under Construction", outline IAQ measures in five categories as listed below. The Construction IAQ Management Plan shall be organized in accordance with the SMACNA format, and shall address measures to be implemented in each of the five categories (including subsections). All subsections shall be listed in the Plan; items that are not applicable for this project should be listed as such.
   a. HVAC Protection
      1) Protect air handling and distribution equipment and air supply and return ducting during construction.
      2) All ductwork arriving on site will be sealed with plastic sheeting and stored on pallets or dunnage until installed.
      3) Cover and protect all exposed air inlets and outlets, openings, grilles, ducts, plenums, etc. to prevent water, moisture, dust and other contaminant intrusion.
      4) Apply protection immediately after ducting.
      5) Protect ducting runs at the end of day's work.
      6) Inspect temporary filtration weekly and replace as required to maintain the proper ventilation rates in the building.
   b. Source Control
      1) Protect stored on-site or installed absorptive or porous materials.
      2) Do not use wet or damaged porous materials in the building.
      3) Recover, isolate, and ventilate containers housing toxic materials and materials with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications.
      4) Exhaust fumes from idling vehicles and gasoline fueled tools through use of funnels or temporary piping.
      5) Containers housing toxic materials and materials with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications, shall be closed when not in use.
   c. Pathway Interruption
      1) Depressurize work areas to contain dust and odors.
      2) Pressurize occupied spaces to prevent intrusion of dust and odors.
      3) Erect barriers to contain construction areas.
      4) Relocate pollutant sources.
      5) Temporarily seal the building and provide 100% outside air for ventilation.
   d. Housekeeping
      1) Store materials on elevated platforms under cover, in a designated dry, clean location, prior to unpacking for installation.
      2) If materials are not stored in an enclosed location, cover tops and sides of material with waterproof sheeting, securely tied.
      3) Institute cleaning activities to remove contaminants from the building prior to occupancy. Clean all coils, air filters, and ductwork prior to performing testing, adjusting, and balancing of HVAC systems.
      4) Sweep the work area on a daily basis. Use an efficient and effective dust collecting method such as damp cloth, wet mop, or vacuum with particulate filters. Activities which produce high levels of dust shall be cleaned up immediately upon completion.
      5) Spills or excess applications of products containing solvents, or with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications, must be removed immediately.
      6) Dust all walls prior to application of finishes.
      7) Vacuum all stud tracks prior to application of insulation.
      8) Materials which become contaminated through direct exposure to moisture from precipitation, plumbing leaks, or condensation shall be replaced by the Contractor.
   e. Scheduling
      1) Phase construction such that absorptive materials are installed only in areas that are

weathertight.

2) Schedule activities that utilize "sources" of VOC contamination to take place prior to installing high absorbent materials that will act as "sinks" for contaminants.
3) Review of the appropriate components of the Construction IAQ Management Plan shall be a regular action topic at weekly site coordination meetings. Implementation of the Plan shall be documented in the meeting minutes.

2. Protection of Materials from Moisture Damage: As part of the "Housekeeping" section of the Construction IAQ Management Plan, measures to prevent installed materials or material stored on-site from moisture damage shall be described. This section should also describe measures to be taken if moisture damage does occur to absorptive materials during the course of construction.

3. Replacement of Filtration Media: Under the "HVAC Protection" section of the Construction IAQ Management Plan, a description of the filtration media in all ventilation equipment shall be provided. The description shall include replacement criteria for filtration media during construction, and confirmation of filtration media replacement for all equipment immediately prior to occupancy.

4. Sequence of Finish Installation for Materials: Where feasible, absorptive materials shall be installed after the installation of materials or finishes which have high short-term emissions of VOC's, formaldehyde, particulates, or other air-borne compounds. Absorptive materials include, but are not limited to: carpets; acoustical ceiling panels; fabric wall coverings; insulations (exposed to the airstream); upholstered furnishings; and other woven, fibrous or porous materials. Materials with high short-term emissions include, but are not limited to: adhesives, sealants and glazing compounds (specifically those with petrochemical vehicles or carriers); paints, wood preservatives and finishes; control and/or expansion joint fillers; hard finishes requiring adhesive installation; gypsum board (with associated finish processes and products); and composite or engineered wood products with formaldehyde binders.

5. Develop and implement an Indoor Air Quality (IAQ) Management Plan for the pre-occupancy phase as follows:

<u>OPTION 1 — Flush-Out</u>
• After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%.

OR

• If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cu.ft. of outdoor air per sq.ft. of floor area to the space. Once a space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14,000 cu.ft./sq.ft. of outside air has been delivered to the space.

OR

<u>OPTION 2 — Air Testing</u>
• Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the United States Environmental Protection Agency Compendium of

Methods for the Determination of Air Pollutants in Indoor Air and as additionally detailed in the LEED-NC Reference Guide.

• Demonstrate that the contaminant maximum concentrations listed below are not exceeded.

CONTAMINANT	MAXIMUM CONCENTRATION
Formaldehyde	27 parts per billion
Particulates (PM10)	50 micrograms per cubic meter
Total Volatile Organic Compounds (TVOC)	500 micrograms per cubic meter
* 4-Phenylcyclohexene (4-PCH)	6.5 micrograms per cubic meter
Carbon Monoxide (CO)	9 part per million and no greater than 2 parts per million above outdoor levels
* This test is only required if carpets and fabrics with styrene butadiene rubber (SBR) latex backing material are installed as part of the base building systems.	

• For each sampling point where the maximum concentration limits are exceeded, conduct additional flush-out with outside air and retest the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from the same locations as in the first test.

• The air sample testing shall be conducted as follows:

a. All measurements shall be conducted prior to occupancy, but during normal occupied hours and with the building ventilation system starting at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.

b. The building shall have all interior finishes installed, including but not limited to millwork, doors, paint, carpet and acoustic tiles. Non-fixed furnishings such as workstations and partitions are encouraged, but not required, to be in place for the testing.

c. The number of sampling locations will vary depending upon the size of the building and number of ventilation systems. For each portion of the building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq.ft., or for each contiguous floor area, whichever is larger, and include areas with the least ventilation and greatest presumed source strength.

d. Air samples shall be collected between 3 feet and 6 feet from the floor to represent the breathing zone of occupants, and over a minimum 4-hour period.

6. Implementation and Coordination: Implement the Construction IAQ Management Plan, and coordinate the Plan with all affected trades. Designate one individual as the Construction IAQ Representative at no additional cost to the City of New York, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation. Include provisions in the Construction IAQ Management Plan for addressing conditions in the field that do not adhere to the Plan, including provisions to implement a stop work order, or to rectify non-compliant conditions.

a. Distribution: The Contractor shall distribute copies of the Construction IAQ Management Plan in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.

b. Instruction: The Contractor shall provide on-site instruction of appropriate site management to all Contractor's Subcontractors.

c. Monitoring: The Construction IAQ Representative shall monitor the implementation of the Construction IAQ Management Plan.

1.8 SUBMITTALS:

Submit the following LEED-required records and documents in accordance with Section 01 33 00, SUBMITTAL PROCEDURES and Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.

A. A copy of the Construction IAQ Management Plan as defined in Sub-Section 1.7 herein.

B. Product cut-sheets for all filtration media used during construction and installed immediately prior to occupancy, with MERV values highlighted. Cut sheets shall be submitted with the Contactor's or Subcontractor's 'approved' stamp as confirmation that the products are the products installed on the project.

C. Provide the Commissioner with a minimum of 18 photographs as required under the provision for Special Photographs, in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION, comprised of at least six photographs taken on three different occasions during construction. The photographs shall document the implementation of the Construction IAQ Management Plan throughout the course of the project construction. Examples include photographs of ductwork sealing and protection, temporary ventilation measures, and conditions of on-site materials storage (to prevent moisture damage). Photographs shall include integral date stamping, and shall be submitted with brief descriptions of the Construction IAQ Management Plan measure documented, or be referenced to project meeting minutes or similar project documents which reference to the Construction IAQ Management Plan measure documented.

D. A copy of the project's TAQ Testing report if applicable.

1.9 QUALITY ASSURANCE:

A. The Contractor shall be responsible for preparing and implementing the Construction IAQ Management Plan and shall coordinate and incorporate the work of its subcontractors in the IAQ Management Plan.

B. Responsibility of Subcontractors: Subcontractors for this project shall be responsible to cooperate with the Contractor in the preparation and implementation of the Construction IAQ Management Plan.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 19

SECTION 01 91 13
GENERAL COMMISSIONING REQUIREMENTS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 91 13

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

B. OPR and BoD documentation are included by reference for information only.

C. The Commissioning Plan, prepared by the Commissioning Agent (CxA) under separate contract with the City of New York, contains requirements that apply to this section.

1.2 SUMMARY:

A. This Section includes general requirements that apply to implementation of Commissioning without regard to systems, subsystems, and equipment being commissioned.

B. This Section includes:
1. Definitions
2. Commissioning Team
3. City's Responsibilities
4. Each Contractor's Responsibilities
5. Commissioning Authority's/Agent's (CxA) Responsibilities
6. Commissioning Documentation
7. Submittals
8. Coordination

1.3 RELATED SECTIONS: Include without limitation the following:

A. "HVAC Commissioning Requirements" indicated in other sections of the project specifications for specific requirements for commissioning HVAC systems.

B. This project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED procedures, and specific commissioning requirements of the Project Specifications, whichever is more stringent. The Contractor shall cooperate with the CxA and provide whatever assistance is required.

C. Related Sections include without limitation the following:

1.	Section 01 10 00	SUMMARY
2.	Section 01 31 00	PROJECT MANAGEMENT AND COORDINATION
3.	Section 01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
4.	Section 01 78 39	CONTRACT RECORD DOCUMENTS
5.	Section 01 79 00	DEMONSTRATION AND TRAINING
6.	Section 01 81 13	SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

C. Commissioner: The Commissioner of the Department of Design and Construction of the City of New York, his/her successors, or duly authorized representative(s).

D. BoD: Basis of Design: A document, prepared by the Consultant Architect/Engineer, that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.

E. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.

F. CxA: Commissioning Agent (Aka Commissioning Authority) under separate contract with the City of New York to provide Commissioning Services for this project.

G. OPR: Owner's (City of New York) Project Requirements: A document, prepared by the Consulting Architect/Engineer that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.

H. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

I. TAB: Testing, Adjusting, and Balancing.

1.5 COMMISSIONING TEAM:

A. Members Appointed by the Contractor and its Subcontractors: Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated actions. The commissioning team shall consist of, but not be limited to, representatives of the Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.

B. Members Appointed by the City:

1. Commissioning Authority/Agent (CxA): The designated person, company, or entity under separate contract with the City that plans, schedules, and coordinates the commissioning team to implement the commissioning process.
2. Representatives of the facility user and operation and maintenance personnel.
3. Consultant Architect/Engineer and other concerned entities.

1.6 CITY'S RESPONSIBILITIES:

A. Provide the OPR documentation to the Commissioning Agent (CxA) for use in developing the commissioning plan; systems manual; operation and maintenance training plan; and testing plans and checklists.

B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.

C. Provide the BoD documents, prepared by the Consulting Architect/Engineer and approved by the Commissioner, to the Commissioning Agent (CxA) for use in developing the commissioning plan, systems manual, and operation and maintenance training plan.

1.7 CONTRACTOR'S RESPONSIBILITIES:

A. The Contractor shall provide utility services required for the commissioning process.

B. As a member of the Commissioning Team, the Contractor and subcontractor(s) shall assign representatives with expertise and authority to act on behalf of the Contractor and its subcontractor(s) and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:

1. Participate in scheduled construction-phase coordination and commissioning team meetings.
2. Integrate and coordinate commissioning process activities with the construction schedule.
3. Review and accept commissioning process test procedures provided by the CxA.
4. Review and accept construction checklists provided by the CxA.
5. Perform testing required in the Commissioning Schedule as per the Commissioning Process test procedures provided by the CxA.
6. Complete installation checklists as Work is completed and return to CxA through the Resident Engineer.
7. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
8. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
9. Submit As-Built documents, operation and maintenance manuals for systems and subsystems, and equipment in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS.
10. Provide orientation sessions for operation and maintenance personnel (sessions will be video recorded by the CxA) in accordance with Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.

1.8 COMMISSIONING AGENT'S (CxA) RESPONSIBILITIES:

A. Organize and lead the commissioning team.

B. Prepare a construction-phase commissioning plan. Collaborate through the Resident Engineer with each Contractor and with subcontractors to develop test and inspection procedures. Include design changes and coordinate commissioning activities with the overall Project schedule. Identify commissioning team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.

C. Review and comment in accordance with Section 01 33 00, SUBMITTAL PROCEDURES, on submittals from the Contractor for compliance with the OPR, BoD, Contract Documents, and construction-phase commissioning plan. Review and comment on performance expectations of systems and equipment and interface between systems relating to the OPR and BoD.

D. Coordinate with the Resident Engineer to convene commissioning team meetings for the purpose of coordination, communication, and conflict resolution; discuss progress of the commissioning processes. Responsibilities include arranging for facilities, preparing agenda and attendance lists, and notifying participants. The Commissioning Agent CxA will prepare and distribute minutes to commissioning team members and attendees within three workdays of the commissioning meeting.

E. At the beginning of the construction phase, coordinate with the Resident Engineer's kick-off meeting schedule to conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for operation and maintenance submittals, operation and maintenance training sessions, TAB Work, and Project completion.

F. Observe and inspect construction. Report progress and deficiencies to the Commissioner. In addition to compliance with the OPR, BoD, and Contract Documents, inspect systems and equipment installation for adequate accessibility required for component maintenance replacement and repair.

G. Prepare Project-specific test and inspection procedures and checklists.

H. Coordinate with the Resident Engineer to schedule, direct, witness, and document tests, inspections, and systems startup.

I. Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.

J. Certify date of acceptance and startup for each item of equipment for start of warranty periods.

K. Review and comment on operation and maintenance documentation and systems manual outline for compliance with the OPR, BoD, and Contract Documents. Operation and maintenance documentation requirements are specified in other sections of the project specifications and described in Section 01 78 39, CONTRACT RECORD DOCUMENTS.

L. Record and edit demonstration and orientation sessions on DVD.

M. Prepare commissioning reports.

N. Assemble the final commissioning documentation, including the commissioning report and Systems Manual.

1.9 COMMISSIONING DOCUMENTATION:

The Contractor shall assist the Commissioning Agent (CxA) in the development and compiling of the following Commissioning Documentation:

A. Index of Commissioning Documents: The Commissioning Agent (CxA) will prepare an index including the storage location of each document.

B. OPR: A written document prepared by the Consulting Architect/Engineer that details the functional requirements of the Project and expectations of how it will be used and operated. This document includes the Project and design goals, measurable performance criteria, budgets, schedules, success criteria, and supporting information.

C. BoD Document: A document prepared by the Consulting Architect/Engineer that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that explain the designed systems.

D. Commissioning Plan: A document prepared by the Commissioning Agent (CxA) that outlines the schedule, allocation of resources, and documentation requirements of the commissioning process.

E. Test Checklists: The Commissioning Agent (CxA) will develop test checklists for each system, subsystem, or equipment including interfaces and interlocks, and include a separate entry, with space for comments, for each item to be tested. The CxA will prepare separate checklists for each mode of operation and provide space to indicate whether the mode under test responded as required. Space will be provided for testing personnel to sign off on each checklist. Specific checklist content requirements are specified in other sections of the project specifications.

F. Inspection Checklists will be signed by the Contractor, Subcontractor(s), Installer(s), and CxA certifying that systems, subsystems, equipment, and associated controls are ready for testing.

G. Test and Inspection Reports: The Commissioning Agent (CxA) will record test data, observations, and measurements on test checklists. Photographs, forms, and other means appropriate for the application will be included with data. CxA shall compile test and inspection reports and test and inspection certificates and include them in systems manual and commissioning report.

H. Corrective Action Documents: The Commissioning Agent (CxA) will document corrective action taken for systems and equipment that fail tests and include required modifications to systems and equipment and revisions to test procedures, if any. The Contractor shall retest systems and equipment requiring corrective action. The CxA will document retest results.

I. Issues Log: The Commissioning Agent (CxA) will prepare and maintain an issues log that describes design, installation, and performance issues that are at variance with the OPR, BoD, and Contract Documents. The log will identify and track issues as they are encountered, documenting the status of unresolved and resolved issues.

1. Commissioning Report: The Commissioning Agent (CxA) will document results of the commissioning process including unresolved issues and performance of systems, subsystems, and equipment. The commissioning report will indicate whether systems, subsystems, and equipment have been completed and are performing according to the OPR, BoD, and Contract Documents.

J. Systems Manual: The Commissioning Agent (CxA) will gather required information and compile systems manual as specified in other sections of the project specifications and described in Section 01 78 39, CONTRACT RECORD DOCUMENTS..

1.10 SUBMITTALS:

A. Commissioning Plan Pre-final Submittal: The Commissioning Agent (CxA) will submit six (6) copies of the pre-final commissioning plan to the Commissioner for review and distribution.

B. Commissioning Plan Final Submittal: The Commissioning Agent (CxA) will submit six (6) hard copies and electronically formatted information of the final commissioning plan to the Commissioner. The final submittal will address previous review comments.

C. Test and Inspection Reports: CxA will submit test and inspection reports.

D. Corrective Action Documents: CxA will submit corrective action documents.

1.11 COORDINATION:

A. Coordinating Meetings: The Commissioning Agent (CxA) will coordinate with the Resident Engineer's regularly scheduled construction progress meetings to conduct coordination meetings of the commissioning team to review progress on the commissioning plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities.

B. Pre-testing Meetings: The Commissioning Agent (CxA) will coordinate with the Resident Engineer to conduct pretest meetings of the commissioning team to review startup reports, pretest inspection results, testing procedures, testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested.

C. Testing Coordination: The Commissioning Agent (CxA) will coordinate with the Resident Engineer the sequence of testing activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Coordinate schedule times with the Resident Engineer for tests, inspections, obtaining samples, and similar activities.

D. Manufacturers' Field Services: The Commissioning Agent (CxA) will coordinate services of manufacturers' field services.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 OPERATION & MAINTENANCE MANUALS

A. General
   1. The CxA shall review the Operation & Maintenance manuals provided by the Contractor or subcontractors for completeness of the document. The review process shall verify that Operation & Maintenance instructions meet specifications and are included for all commissioned equipment furnished by the Contractor.
   2. Published literature shall be specifically oriented to the provided equipment, indicating required operation and maintenance procedures, parts lists, assembly / disassembly diagrams and related information.
   3. The Contractor shall incorporate the standard technical literature into system specific formats for this facility as designed and as actually installed. The resulting Operation & Maintenance information shall be system specific, concise, to the point and tailored specifically to this facility. The CxA shall review these documents as necessary for final corrections by the Contractor.

B. The Operation & Maintenance Manual review and coordination efforts shall be completed prior to Owner training sessions, as these documents are to be utilized in the training sessions.

C. System Operations Manual
   1. The CxA shall prepare and deliver these documents with inputs from other agencies. The contractors will confirm the proper documents are onsite and readily available. Typically, the manual includes the following:
      a. Commissioned systems single line diagrams (Mechanical, Electrical, Plumbing, and Building Management System (BMS) subcontractors).
      b. As built sequences of operations, control drawings and original set points (Architect, Engineer, and BMS subcontractor)
      c. Operating instructions for integrated building systems (mechanical and BMS subcontractors).
      d. Recommended schedule of maintenance requirements and frequency (subcontractors).
      e. Recommended schedule for calibrating sensors and actuators (BMS subcontractor)

3.2 DEMONSTRATION AND INSTRUCTION

A. The Contractor shall schedule and coordinate instruction sessions for the facility's staff for each commissioned system. Demonstrations shall be held per Contract Documents, along with the appropriate schematics, handouts and visual / audio training aids onsite with equipment.

B. The equipment vendors shall provide instruction on the specifics of each major equipment item including philosophy, troubleshooting and repair techniques.

C. For additional prescription pertinent to instruction, refer to other specific divisions for demonstration and instruction requirements.

3.3 WARRANTY REVIEW / SEASONAL TESTING

A. The CxA will return upon the start of the new season (cooling or heating) after project completion to conduct performance tests that could not be performed due to ambient conditions. The seasonal testing will only be performed if unsuitable loads / conditions were unavailable during the performance testing stages (in other words; the requirement for testing is warranted).

B. If agreed upon by facility, Seasonal Testing can also be used for the Warranty Review. During which the CxA will interview the occupants, maintenance staff, review the operation of the building, provide recommendations for installation and operational problems and document warranty and operational issues in the issues database.

3.4 RECORD DRAWINGS

A. The CxA shall review the as built contract documents to verify incorporation of both design changes and as built construction details. Discrepancies noted shall be corrected by the appropriate party.

END OF SECTION 01 91 13

No Text

NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary

Contractor

Dated _____ , 20 _____

Approved as to Form
Certified as to Legal Authority

Acting Corporation Counsel

Dated _____ , 20 _____

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____ , 20 _____

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

PROJECT ID: PW357MOCS

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

30-30 THOMSON AVENUE
LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000
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VOLUME 3 OF 3

ADDENDUM TO THE GENERAL CONDITIONS

SPECIFICATIONS

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR:

Mayor's Office of Contract Services Renovation

LOCATION: 253 Broadway, 9th Floor
BOROUGH: Manhattan 10007
CITY OF NEW YORK

CONTRACT NO. 1 GENERAL CONSTRUCTION WORK

Department of Human Services

Joseph R. Loring & Associates, Inc.

Date: August 1, 2013

14-019

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

ADDENDUM TO THE GENERAL CONDITIONS FOR SINGLE CONTRACT PROJECTS

The General Conditions are hereby amended in accordance with the terms and conditions set forth in this Addendum.

I. PROJECT DESCRIPTION

FMS #: PW357MOCS

PROJECT NAME: MOCS
9TH FLOOR RENOVATIONS

PROJECT DESCRIPTION: This Project consists of Renovation of Architectural, Mechanical, Electrical and Plumbing 9th floor for 253 Broadway.

PROJECT LOCATION: 253 BROADWAY, 9TH fLOOR
BOROUGH: Manhattan
CITY OF NEW YORK
ZIP CODE: 10007
COMMUNITY BOARD #: Manhattan 1

LANDMARK STATUS:

DESIGNATED LANDMARK STRUCTURE OR SITE: *Yes* .
LANDMARK QUALITY STRUCTURE: *Yes*

II. LEED GREEN BUILDING REQUIREMENTS

NOT USED

III. COMMISSIONING REQUIREMENTS

This project includes Commissioning Requirements. The General Commissioning Requirements are found in Section 01 9113 of the DDC Standard General Conditions. Other specific Commissioning Requirements can be found in the Project Specification Sections.

IV. PROJECT MANAGEMENT

[x] DDC shall publicly bid and enter into all contracts for the Project. DDC shall manage the Project using its own personnel.

[ ] DDC shall publicly bid and enter into all contracts for the Project. A Construction Management firm (the "CM") hired by DDC shall manage the Project. The Contractor is advised that the CM shall serve as the representative of the Commissioner at the site and shall, subject to review by the Commissioner, be responsible for the inspection, management, coordination and administration of the required construction work, as delineated in the article of the Standard Construction Contract entitled "The Resident Engineer".

V. CONTRACTS FOR THE PROJECT

The Project consists of a single contract, the Contract for General Construction Work. The Contractor for General Construction Work is responsible for the performance of all required work for the Project as set forth in the Contract Documents (General Conditions, Drawings and Specifications), including all responsibilities and obligations assigned to separate Contractors for the following subdivisions of the work: Plumbing Work, HVAC Work, and Electrical Work. All responsibilities and obligations in the Contract Documents assigned to separate Contractors for such subdivisions of the work are the responsibility of the Contractor for General Construction Work.

VI. SCHEDULES

The Contractor is advised that Schedules A through F are attached to, and incorporated as part of, this Addendum to the General Conditions. These schedules contain important information that is specific to this Project. The Contractor is advised to carefully review these schedules.

VII. APPLICABILITY OF SECTIONS/SUB-SECTIONS AND AMENDED SUB-SECTIONS

The Contractor is advised that various Sections/Sub-Sections in the General Conditions may not apply to this Project or may apply as amended. Such Sections/Sub-Sections advise the Contractor to "Refer to the Addendum for the applicability of this Section/Sub-Section." Such Sections/Sub-Sections are set forth below. A check mark indicates whether the Section/Sub-Section (1) applies to the Project, (2) does not apply to the Project, or (3) applies to the Project as amended. If no box is checked, the Section/Sub-Section, as set forth in the General Conditions, applies to the Project. Amended Sections/Sub-Sections, if any, are set forth following this list of Sections.

Section	Sub-Section	Sub-Section	Applies	Does not Apply	Applies as Amended
01 1000	1.4 (B)	Scope and Intent / LEED		x	
	1.4(C)	Scope and Intent / Commissioning	x		
01 3233		Photographic Documentation	x		
01 3300	1.7 (A-D)	LEED Submittals		x	
01 3503		General Mechanical Requirements	x		
01 3506	3.2 (A-B)	Electrical Conduit System Including Boxes (Pull, Junction and Outlet)	x		
	3.3 (A-E)	Electrical Wiring Devices	x		
	3.4 (A-I)	Electrical Conductors and Terminations	x		
	3.5 (A-B)	Circuit Protective Devices	x		
	3.6 (A-J)	Distribution Centers	x		
	3.7 (A-I)	Motors	x		
	3.8 (A-I)	Motor Control Equipment	x		
01 3591		Historic Treatment Procedures		x	
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water		x	
	3.2 (B)	Temporary Water Facilities / Temporary Water – Work in Existing Facilities	x		
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained Toilet Units		x	
	3.3 (C)	Temporary Sanitary Facilities / Existing Toilets	x		
	3.4 (B) 1	Temporary Power, Lighting, and Site Lighting / Connection to Utility Lines		x	

Section	Sub-Section	Sub-Section	Applies	Does not Apply	Applies as Amended
01 5000	3.4 (B) 2	Temporary Power, Lighting, and Site Lighting / Connection to Existing Electrical Power Service	x		
	3.4 (B) 3	Temporary Power, Lighting, and Site Lighting / Electrical Generator Power Service		x	
	3.4 (D)	Temporary Power, Lighting, and Site Lighting / Temporary Lighting			
	3.4 (E)	Temporary Power, Lighting, and Site Lighting / Site Security Lighting (for New Construction Only)	x		
	3.5 (A-J)	Temporary Heat		x	
	3.8 (A)	DDC Field Office / Office Space in Existing Building	x		
	3.8 (B)	DDC Field Office / DDC Field Office Trailer		x	
	3.8 (B-3a)	DDC Field Office / DDC Managed Field Office Trailer		x	
	3.8 (B-3b)	DDC Field Office / CM Managed Field Office Trailer		x	
	3.8 (D)	DDC Field Office / Additional Equipment for the DDC Field Office	x		
	3.13(A-D)	Work Fence Enclosure		x	
	3.17(B)	Project Rendering		x	
	3.18 (A-C)	Security Guards / Fire Guards on Site		x	
01 5411	3.1 (A-J)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Up To and Including 15 Stories		x	
	3.2 (A-M)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Over 15 Stories		x	
	3.3 (A-E)	Temporary Use, Operation and Maintenance of Elevators During Construction for Existing Buildings	x		
01 7300	3.3 (A-I)	Surveys		x	
	3.4 (A-B)	Borings		x	
	3.12 (A-D)	Sleeves and Hangers		x	
	3.13 (A)	Sleeve and Penetration Drawings	x		
	3.15 (A)	Location of Partitions		x	
01 7419	1.5 (C)	Waste Management Performance Requirements / LEED Certification		x	
01 7900		Demonstration and Owner's Pre-Acceptance Orientation	x		
	3.2 (A)	Non-Commissioned Projects		x	
	3.2 (B)	Commissioned Projects	x		
01 8113		Sustainable Design Requirements for LEED Buildings		x	
01 8113.13		VOC Limits for Adhesives, Sealants, Paints and Coatings for LEED Buildings		x	
01 8119		Indoor Air Quality Requirements for LEED Buildings		x	
01 9113		General Commissioning Requirements	x		

VIII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT

NOT USED

IX. REVISIONS: SPECIFICATIONS AND CONTRACT DRAWINGS

The Specifications and the Contract Drawings for the Project are revised in accordance with the provisions set forth below.

(1) Owner: Wherever the term "Owner" is used in the Specifications and/or the Contract Drawings, such term shall mean the City of New York.

(2) Other Entities: In the event any entity other than the City of New York is referred to or named as the "Owner" in the Specifications and/or the Contract Drawings, the name of such other entity is deemed deleted and replaced with the "City of New York".

(3) Architect / Engineer: Wherever the words "Architect", "Engineer", "Architect / Engineer" or "Architect and/or Engineer" are used in the Specifications and/or the Contract Drawings, such words are deemed deleted and replaced with the word "Commissioner".

(4) Products / Manufacturers: Wherever the Specifications and/or the Contract Drawings require the contractor to provide a particular product (i.e., material and/or equipment) from a designated manufacturer and/or vendor, the term "or approved equal" is deemed inserted, even if only one product and/or manufacturer is specified, except as otherwise provided below.

(a) Proprietary Items: If the Bid Booklet contains a Notice which identifies a particular product from a designated manufacturer as a "Proprietary Item", the Contractor shall be required to provide such specified product. In such case, no substitution or "approved equal" will be permitted.

(5) Special Experience Requirements: Special Experience Requirements for the Project, if any, are set forth in the Bid Booklet. Special Experience Requirements may apply to contractors, subcontractors, installers, manufacturers and/or suppliers. If the Specifications and/or the Contract Drawings contain any Special Experience Requirement that is not set forth in the Bid Booklet, such Special Experience Requirement is deemed deleted, except as otherwise provided below.

(a) Any Special Experience Requirement that provides that the entity performing the work or supplying the material must have more than three (3) years of experience, is revised to provide that the entity performing the work or supplying the material must have three (3) years of experience, except as described in paragraph (b) below.

(b) Any Special Experience Requirement that pertains to the abatement of hazardous materials shall not be subject to the deletion and/or revision set forth above. Such Special Experience Requirement shall remain in full force and effect.

(c) Any Special Experience Requirement that provides that the entity performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such entity must be properly trained for the specified work.

(d) Any Special Experience Requirement that provides that the individual workers performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such individual workers must be properly trained for the specified work.

(6) Alternate Bids: If the agency is requesting the submission of Alternate Bids, a Notice regarding such Alternate Bids is set forth in the Bid Booklet. In the event of any conflict or inconsistency between (1) the Notice regarding Alternate Bids set forth in the Bid Booklet and (2) a provision in the Specifications and/or the Contract Drawings regarding Alternate Bids, the Notice set forth in the Bid Booklet shall prevail. If the agency is not requesting the submission of Alternate Bids, as indicated by the absence of a Notice in the Bid Booklet, and the Specifications and/or the Contract Drawings contain any provision regarding Alternate Bids, such provision is deemed deleted.

(7) Contractor Retained Engineer: If the Specifications and/or the Contract Drawings require the Contractor to retain an Engineer to provide engineering services for the Project, the following sentence is deemed inserted: "Such Engineer must be a Professional Engineer, licensed in the State of New York."

(8) LEED Related Provisions: If the Specifications and/or the Contract Drawings require the Contractor to purchase FSC certified wood, rapidly renewable materials, or materials within 500 miles, such provisions are deemed deleted and replaced with the requirement that if the contractor has purchased FSC certified wood, rapidly renewable materials, or materials within 500 miles, the contractor shall submit such forms or documentation as may be required by the City in order for the USGBC to certify that the Project qualifies for the related LEED credit(s).

(9) Guarantees: Requirements for Guarantees and Maintenance are set forth in Schedule B, which is included in the Addendum to the General Conditions. In the event of any conflict or inconsistency between (1) a guarantee and/or maintenance requirement set forth in the Specifications and/or the Contract Drawings and (2) a guarantee and/or maintenance requirement set forth in Schedule B, the guarantee and/or maintenance requirement set forth in Schedule B shall prevail.

(10) Warranties: Requirements for Warranties are set forth in Schedule B, which is included in the Addendum to the General Conditions.

(a) In the event of any conflict or inconsistency between (1) a warranty requirement set forth in the Specifications and/or the Contract Drawings and (2) a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall prevail.

(b) In the event a warranty requirement set forth in the Specifications and/or the Contract Drawings is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications and/or the Contract Drawings, shall remain in full force and effect.

(c) In the event a warranty requirement for a particular item of material or equipment is omitted from Schedule B, as well as from the Specifications or the Contract Drawings, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.

(11) Exculpatory Provisions: In the event the Specifications and/or the Contract Drawings contain any provision whereby the consultant and/or any of its officers, employees or agents, including subconsultants, is absolved of responsibility for any act or omission, such provision is deemed deleted.

(12) Insurance: Provisions regarding insurance coverage the Contractor is required to provide are set forth in Article 22 of the City of New York Standard Construction Contract and Schedule A, which is included in the Addendum to the General Conditions. In the event the Specifications and/or the Contract Drawings contain any provision regarding insurance requirements, such provision is deemed deleted.

(13) Indemnification: Provisions regarding indemnification are set forth in Articles 7, 12, 22 and 57 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding indemnification, such provision is deemed deleted.

(14) Dispute Resolution: Provisions regarding dispute resolution are set forth in Article 27 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding dispute resolution, such provision is deemed deleted.

(15) Payment to Other Entities: In the event the Specifications and/or the Contract Drawings contain any provision which requires the Contractor to make payments to an entity other than a subcontractor and/or supplier providing services and/or material for the project, such provision is deemed deleted.

(16) General Conditions: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the General Conditions, the General Conditions shall prevail.

(17) Standard Construction Contract: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the City of New York Standard Construction Contract, the City of New York Standard Construction Contract shall prevail.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)
Contract Requirements

Various Articles of the Contract refer to requirements which are set forth in Schedule A of the General Conditions. The Schedule set forth below specifies the following: (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to each separate contract.

REFERENCE	ITEM	REQUIREMENTS	CONTRACT #1	
Article 14 Contract	Time of Completetion	Consecutive Calendar Days	100	
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 $500,000	**10%**
			If 100% bonds are not required, and Contract Price is more than $500,000	**10%**
Article 24 Contract	Maintenance & Guaranty	Percent of Contract Price	**1%**	
Article 76 Contract	MWBE Program		See Subcontractor Utilization Plan In the Bid Booklet	

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART I. Minimum Limits and Special Conditions

Insurance indicated by a blackened box (■) or by (X) in the ☐ to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
■ Commercial General Liability Art. 22.1.1	$ 1,000,000 per occurrence $ 2,000,000 aggregate (applicable separately to this **Project**) Additional Insureds: 1. City of New York, including its officials and employees, and 2. Department of Human Services 3. _____
■ Workers' Compensation Art. 22.1.2 ■ Disability Benefits Insurance Art. 22.1.2 ■ Employers' Liability Art. 22.1.3 □ Jones Act Art. 22.1.4 □ U.S. Longshoremen's and Harbor Workers Compensation Act Art. 22.1.4	Workers' Compensation: Statutory per New York State law without regard to jurisdiction Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction Employers' Liability: $1,000,000 each accident
□ Builders' Risk Art. 22.1.5 ■ Installation Floater	100 % of total value of **Work** City of New York and the **Contractor** named as Loss Payee for the **Work** in order of precedence, as their interests may appear. Note: Article 22.1.5 is revised by deleting the following sentence: "Such policy shall name as insureds the City, the Contractor, and its Subcontractors". This deletion applies to Builders' Risk and Installation Floater.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART I. Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the ☐ to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
■ Comprehensive Business Auto Coverage Art. 22.1.6	$ 1,000,000 per accident If vehicles are used for transporting hazardous materials, the **Contractor** shall provide pollution liability broadened coverage for covered autos (endorsement CA 99 48) as well as proof of MCS 90 Additional Insured: 1. City of New York, including its officials and employees
☐ Pollution/Environmental Liability Art. 22.1.7	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
☐ Marine Protection and Indemnity Art. 22.1.8(a)	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART I. Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the ☐ to left will be required under this contract.

□ Ship Repairers Legal Liability Art. 22.1.8(b)	$_____ each occurrence [Contracting agency to fill in total value of City vessels involved]
□ Collision Liability/Towers Liability Art. 22.1.8(c)	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
□ Marine Pollution Liability Art. 22.1.8(d)	$_____ each occurrence Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.9 □ Railroad Protective Liability _____	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART I. Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the ☐ to left will be required under this contract.

[OTHER] Art. 22.1.9 □ Asbestos Liability _____	Only required of the Contractor or Subcontractor performing any required asbestos removal. $1,000,000 each occurrence, $2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal. Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.9 □ Boiler Insurance_____	$200,000
[OTHER] Art. 22.1.9 ■ Professional Liability In the event any section of the Specifications requires the Contractor to engage a Professional Engineer to provide design and/or engineering services, the Engineer engaged by the Contractor, as well as any sub consultant(s) performing professional services, shall provide Professional Liability Insurance.	$1,000,000 per occurrence 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. 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.

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 _____, 20__

_____
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

30-30 Thomson Avenue, 4th Floor

Long Island City, New York 11101

SCHEDULE B

Guarantees and Warranties

(Reference: Section 01 7839, Article 2.7 of the DDC Standard General Conditions)

GUARANTY FROM CONTRACTOR

(1) Contractor's Guaranty Obligation: The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with the Contract), except for the areas of Work set forth below:

- Roofing, Waterproofing, and Joint Sealant Work. For these types of work, the guarantee period shall be (2) two years.

- Trees and/or Plant Material. For trees and/or plant material furnished and installed, the guarantee period shall be (2) two years. During the guarantee period, the Contractor shall provide all maintenance services set forth in the Specifications.

(2) Guaranty Period: The obligation of the Contractor, and its Surety under the Performance Bond, is limited to the period(s) of time specified above.

(3) Other Provisions Deemed Deleted: In the event the Specifications and/or the Contract Drawings contain any provisions regarding guaranty requirements, such provisions are deemed deleted and replaced with the guaranty requirements set forth in this Schedule B.

****

WARRANTY FROM MANUFACTURER

(1) Contractor's Obligation to Provide Warranties: The items of material and/or equipment for which manufacturer warranties are required are listed below. For each item of material and/or equipment listed below, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth below and will be replaced or repaired within such specified period. The Contractor shall deliver all required warranties to the Commissioner.

(2) Required Warranties:

Specification Number	Material or Equipment	Warranty Period
See Individual Specifications for Manufacturer Warranties		

(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: Section 01 1000, Article 1.5 (A) of the DDC Standard General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

253 BROADWAY 9TH FLOOR RENOVATIONS - DRAWING LIST

GENERAL
T001.00 TITLE SHEET
T002.00 GENERAL NOTES
T003.00 GENERAL NOTES
T004.00 GENERAL NOTES
T005.00 LEGEND AND SYMBOLS

ARCHITECTURAL
A059.00 EXISTING 9TH FLOOR PLAN
A061.00 SELECTIVE REMOVAL PLAN
A109.00 9TH FLOOR PLAN
A421.00 MISCELLANEOUS DETAILS
A601.00 TYPICAL BATHROOM PLAN AND ELEVATION
A701.00 INTERIOR WALL & CONSTRUCTION DETAILS
A711.00 INTERIOR FIRE PROTECTION DETAILS
A809.00 REFLECTED CEILING PLAN
A811.00 TYPICAL CEILING DETAILS
A910.00 INTERIOR SCHEDULES AND DETAILS
A913.00 INTERIOR HARDWARE SCHEDULE AND DOOR DETAILS

MECHANICAL
M001.00 MECHANICAL REMOVAL NOTES, SYMBOLS AND ABBREVIATIONS
M002.00 MECHANICAL BUILDING DEPARTMENT NOTES AND GENERAL REQUIREMENTS
M069.00 MECHANICAL 9TH FLOOR REMOVAL PLAN
M109.00 MECHANICAL 9TH FLOOR PLAN
M301.00 MECHANICAL PART PLANS AND SECTIONS
M401.00 MECHANICAL AIR AND WATER RISER DIAGRAMS
M402.00 MECHANICAL CONTROL DIAGRAM AND OPERATING SEQUENCE
M501.00 MECHANICAL EQUIPMENT SCHEDULE SHEET No.1
M502.00 MECHANICAL EQUIPMENT SCHEDULE SHEET No.2
M601.00 MECHANICAL DETAILS SHEET No.1
M602.00 MECHANICAL DETAILS SHEET No.2
M603.00 MECHANICAL DETAILS SHEET No.3

ELECTRICAL
E001.00 ELECTRICAL SYMBOLS, ABBREVIATIONS AND NOTES
E068.00 ELECTRICAL 9TH FLOOR LIGHTING REMOVAL PLAN
E069.00 ELECTRICAL 9TH FLOOR POWER REMOVAL PLAN
E109.00 ELECTRICAL 9TH FLOOR POWER PLAN
E209.00 ELECTRICAL 9TH FLOOR LIGHTING PLAN
E401.00 ELECTRICAL POWER RISER DIAGRAM SHEET No.1
E501.00 ELECTRICAL PANEL SCHEDULES
E601.00 ELECTRICAL LIGHTING CONTROL SYSTEM SCHEDULE
E602.00 ELECTRICAL SECURITY SYSTEM DETAILS

PLUMBING
P001.00 PLUMBING SYMBOLS, ABBREVIATIONS AND NOTES AND SCHEDULES
P069.00 PLUMBING 9TH FLOOR REMOVAL PLAN

P108.00 PLUMBING 8TH FLOOR PLAN
P109.00 PLUMBING 9TH FLOOR PLAN
P401.00 PLUMBING SANITARY WATER AND RISER DIAGRAMS
P601.00 PLUMBING DETAILS No.1

SCHEDULE D

Electrical Motor Control Equipment

(Reference: 01 3506, Article 3.8 of the DDC Standard General Conditions)

Requirements for electrical motor equipment may be included in one or more sections of the Specifications for the Contract for the Project. Schedule D set forth below delineates specific information for electrical motor control equipment. In the event of any conflict between the Specifications and this Schedule D, Schedule D shall take precedence; provided, however, in the event of an omission from Schedule D (i.e., Schedule D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from Schedule D shall have no effect and the Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

DB Disconnect Circuit Breaker (Switch)
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:
ACU-9-1	9th Floor	1	20.81 KW	230/3	DB	
ACU-9-2	9th Floor	1	38.2 KW	230 /3	DB	
O.A.F-9-1	Mech Room #1	1	2 HP	208/3	DB	
O.A.F-9-2	Mech Room #2	1	1.5HP	208/3	DB	
TEF-9-1	HC Toilet	1	0.080 KW	115/1	DB	
EF-9-1A	Pantry	1	0.129 KW	115/1	DB	

SCHEDULE E

Separation of Trades

NOT USED FOR SINGLE CONTRACTS

SCHEDULE F

Submittals Schedule

(Reference: Section 01 3300 Article 1.5 (C) of the General Conditions)

The Schedule set forth below lists all submittal requirements for the Contract. In the event of any conflict between the Specifications and this Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and the Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.

CONSULTANT:
TELEPHONE NUMBER:
DDC PROJECT MANAGER:
TELEPHONE NUMBER:

DATE: _____

APPROVED: _____
(DDC RESIDENT ENGINEER/CPM)

REPORT DATE		FMS ID #/PROJECT ID #: CONTRACT REGISTRATION #: PROJECT NAME:							CONTRACT #: **Contract 1 – GENERAL CONSTRUCTION** TRADE: SHOP DRAWING LOG SHEET #								
SPEC. SECT. #	DESCRIPTION	COORD. WITH CONTR.	SUBMITTAL			SUB. DATE	REQ'D DEL.	FABRIC. TIME	SUBMISSIONS								
			SHOP DWG.	SAMPLE	CAT. CUTS				REC'D	RET'D	ACTION	REC'D	RET'D	ACTION	REC'D	RET'D	ACTION
01 3526	Safety and Health Program	X															
01 3526	Contractor's Safety Plan	X															
01 3526	Historic Treatment Plan	X															
01 5000	Site Plan		X														
01 5000	Reports	X															
01 5423	NYC DOB Scaffold & Sidewalk Shed Permits	X	X														
01 5423	Site Logistics/Site Safety Plan	X															

01 5423	Scaffold & Shed Installation Drawings		X														
01 7419	Waste Management Plan	X															
01 7900	Instruction Program for Demonstration & Orientation	X															
01 7900	Qualification Data	X															
01 8113.13	MSDS			X	X												
01 8119	IAQ Management Plan	X															
01 8119	Product Cut Sheets				X												
01 8119	IAQ Management Plan Photographs	X															

TABLE OF CONTENTS

CONTRACT 1 – GENERAL CONSTRUCTION WORK

END OF TOC

SECTION 01 1010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK UNDER THE CONTRACT

A. The Work shall be as described in the Contract Documents.

1.02-04 NOT USED

1.05 PRODUCTS, MATERIAL, AND EQUIPMENT PURCHASED BY THE FACILITY

A. The Contractor shall be responsible for scheduling delivery, storing, coordinating, and installing such Facility-purchased products, material and equipment.

B. The Contractor's responsibilities are the same as if the Contractor supplied the products, material and/or equipment as part of the bid. The Contractor is responsible for assuring that all equipment received from the vendor is in good working order. When necessary, the Contractor shall arrange for replacement or repairs with the vendor in a timely manner so as not to affect the schedule. The Contractor shall include the costs of all responsibilities for these items in their bid.

1.06 PRODUCTS, MATERIAL, AND EQUIPMENT ORDERED IN ADVANCE

A. The Facility will purchase HVAC equipment from suppliers that shall be incorporated into the Work and hereby assigns the purchase order to the Contractor. The Contractor shall refer to specification section 23 81 19 for work related to pre-purchased equipment. The Contractor shall be responsible for scheduling delivery, storing, coordinating, installing and testing the pre-purchased equipment.

1.07 PHASING

A. NOT USED

1.08 WORK UNDER OTHER CONTRACTS

A. NOT USED

1.09 ITEMS NOT INCLUDED

The following items shown on the Drawings are not included in the Work:

A. Items indicated "By Others".
B. Items indicated "N.I.C." (Not in Contract).
C. Demolition Drawings which are indicated "For Reference Only"
D. Existing construction not indicated or specified to be removed, replaced or altered.

1.10-18 NOT USED

1.19 TRADE COORDINATION

A. The Work of all trades is to be coordinated. Ensure that all penetrations made by the various trades into other trade work has been sealed to an airtight/watertight condition.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 028013 – GENERAL CONTRACTOR WORK

ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

1.01 SCOPE FOR ASBESTOS ABATEMENT WORK

A. The "General Conditions" apply to the work of this Section.

B. The Asbestos abatement contractor shall remove asbestos containing materials as needed to perform the other work of this Contract when discovered during the course of work. When required, the Asbestos abatement contractor shall replace the ACM with non-asbestos containing materials. An allowance of **$15,000.00** for the **General Contractor** is herein established for this incidental work when so ordered and authorized by the Commissioner.

C. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE RULES AND REGULATIONS OF THE ASBESTOS CONTROL PROGRAM AS PROMULGATED BY TITLE 15 CHAPTER I OF RCNY AND NEW YORK STATE DEPARTMENT OF LABOR INDUSTRIAL CODE RULE 56 CITED AS 12 NYCRR, PART 56 WHICHEVER IS MORE STRINGENT AS PER LATEST AMENDMENTS TO THESE LAWS AND AS MODIFIED HEREIN BY THESE SPECIFICATIONS.

D. ALL DISPOSAL OF ASBESTOS CONTAMINATED MATERIAL SHALL BE PER LOCAL LAW 70/85.

E. THE ASBESTOS ABATEMENT CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT CERTAIN METHODS OF ASBESTOS ABATEMENT ARE PROTECTED BY PATENTS. TO DATE, PATENTS HAVE BEEN ISSUED WITH RESPECT TO "NEGATIVE PRESSURE ENCLOSURE" OR "NEGATIVE-AIR" OR "REDUCED PRESSURE" AND "GLOVE BAG".

F. THE ASBESTOS ABATEMENT CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND SHALL HOLD THE DEPARTMENT OF DESIGN AND CONSTRUCTION AND THE CITY HARMLESS FROM ANY AND ALL DAMAGES, LOSSES AND EXPENSES RESULTING FROM ANY INFRINGEMENT BY THE ASBESTOS ABATEMENT CONTRACTOR OF ANY PATENT, INCLUDING BUT NOT LIMITED TO THE PATENTS DESCRIBED ABOVE, USED BY THE ASBESTOS ABATEMENT CONTRACTOR DURING PERFORMANCE OF THIS AGREEMENT.

G. "Asbestos" shall mean any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumingtonite-grunerite), crocidolite (riebeckite), tremolite, anthrophyllite and actinolite.

H. Prior to starting, the Asbestos abatement contractor must notify the Commissioner of the Department of Design and Construction if he/she anticipates any difficulty in performing the Work as required by these Specifications. The Asbestos abatement contractor is responsible to prepare and submit all filings, notifications, etc. required by all City, State and Federal regulatory agencies having jurisdiction.

The Asbestos abatement contractor is responsible for submitting the Asbestos Project Notification Form (ACP-7 Form) to the Department of Environmental Protection, Asbestos Control Program, as per Title 15, Chapter I of RCNY and to the NYSDOL as per Industrial Code Rule 56.

The Asbestos abatement contractor is responsible for preparing, and submitting Asbestos Variance Application (ACP-9). If a Variance is required, the Asbestos abatement contractor is responsible to retain a NYSDOL Asbestos Project Designer, as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required variance.

The Asbestos abatement contractor is responsible for preparing and submitting an Asbestos Abatement Permit and/or Work Place Safety Plans (WPSP) that may be required for the completion of the Contract or incidental work. If such plans are required, the Asbestos abatement contractor is responsible to retain a NYSDOL Licensed Design Professional as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required plans.

The Asbestos abatement contractor is responsible for the submission of all required documents to the NYCDEP to acquire the appropriate Asbestos Project Conditional Closeout (ACP-20) and/or Asbestos Project Completion Forms (ACP-21) on a timely basis for the completion of the incidental work encountered under this contract.

The Asbestos abatement contractor will be required to attend an on-site job meeting with the Construction Project Manager prior to the start of work to examine conditions and plan the sequence of operations, etc.

The Asbestos abatement contractor shall have a NYSDOL/NYCDEP Asbestos Supervisor onsite to oversee the work and conduct a final visual inspection as required by both Title 15, Chapter 1 of the RCNY and NYSDOL Industrial Code Rule 56.

I. All work shall be done during regular working hours unless the Asbestos abatement contractor requests authorization to work in other then regular working hours and such authorization is granted by the Commissioner. (Regular work hours are those hours during which any given facility, in which work is to be done, is customarily open and functioning, normally between the hours of 8:00 A.M. and 4:00 P.M. Monday - Friday.) If such work schedule is authorized by the Commissioner, the work shall be done at no additional cost to the City.

J. The Commissioner may order that work be done in other than regular working hours as herein by defined and this order may require the Asbestos abatement contractor to pay premium or overtime wages to complete the work. If the Commissioner orders work in other than regular working hours, the Asbestos abatement contractor shall multiply the unit price for that portion of the work requiring premium wages by 1.50 when computing payment in accordance with Paragraph 1.09. All requests for premium payment must be supported by certified payroll sheets and field sheets approved by the Construction Project Manager.

1.02 QUALIFICATIONS OF ASBESTOS ABATEMENT CONTRACTOR

A. Requirements: The asbestos abatement contractor must demonstrate compliance with the special experience requirements set forth in subparagraphs (1) through (5) below. The asbestos abatement contractor must, submit documentation demonstrating compliance with all listed requirements. Such documentation shall include without limitation, all required licenses, certificates, and documentation.

1. The asbestos abatement contractor must, whether an individual, corporation, partnership, joint venture or other legal entity, must demonstrate for the three year period prior to the work, that it has been licensed by the New York State Department of Labor, as an "Asbestos abatement contractor".

2. The asbestos abatement contractor must, for the three year period prior to the work, have been in the business of providing asbestos abatement services as a routine part of its daily operations.

3. The asbestos abatement contractor proposing to do asbestos abatement work must be thoroughly experienced in such work and must provide evidence of having successfully performed and completed in a timely fashion at least five (5) asbestos abatement projects of similar size and complexity. The aggregate cost of these projects must be at least $250,000.00 in each of the three years.

4. For each project submitted to meet the experience requirements set forth above, the asbestos abatement contractor must submit the following information for the project; name and location of the project; name title and telephone number of the owner or the owner's representative who is familiar with the asbestos abatement contractor's work, brief description of the work completed as a prime or sub-asbestos abatement contractor; amount of contract or subcontract and the date of completion.

5. The asbestos abatement contractor must demonstrate that it has the financial resources, supervisory personnel and equipment necessary to carry out the work and to comply with the required performance schedule,

taking into consideration other business commitments. The asbestos abatement contractor must submit such documentation as may be required by the Department of Design and Construction to demonstrate that it has the requisite capacity to perform the required services of this contract.

B. Insurance Requirements: The asbestos abatement contractor must provide asbestos liability insurance in the following amount: 1 million dollars per occurrence, 2 million dollars aggregate (combined single limit). The City of New York shall be named as an additional insured on such insurance policy.

C. Throughout the specifications, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics thereof.

1.03 ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITIES

The Asbestos abatement contractor will visit the subject location within one (1) working day of notification to ascertain actual work required. If the project is identified as being "urgent", then work shall commence no later than 48 hours from the time of notification. In this event, the asbestos abatement contractor shall immediately notify when applicable EPA NESHAPS Coordinator, NYSDOL Asbestos Control Bureau and NYCDEP Asbestos Control Program of start of the work and file the necessary Asbestos Notifications and any applicable Variance Applications with the regulatory agencies cited above..

In the event that the project is not classified as "urgent" the Asbestos abatement contractor shall notify the EPA NESHAPS Coordinator, NYSDOL and NYCDEP by submitting the requisite asbestos project notification forms, postmarked 10 days before activity begins if 260 linear feet or more and/or 160 square feet or more of asbestos containing material will be disturbed.

The following information must be included in the notification:

A. Name and address of building City or operator;

B. Project description:

1. Size - square feet, number of linear feet, etc;

2. Age - date of construction and renovations (if known);

3. Use - i.e., office, school, industrial, etc.

4. Scope - repair, demolition, cleaning, etc.

C. Amount of asbestos involved in work and an explanation of techniques used to determine the amount;

D. Building location/address, including Block and Lot numbers;

E. Work schedule including the starting and completion dates;

F. Abatement methods to be employed;

G. Procedures for removal of asbestos-containing material;

H. Name, title and authority of governmental representative sponsoring project.

1.04 WORK INCLUDED IN UNIT PRICE

The Asbestos abatement contractor will be paid a basic unit price of **$25.00** per square feet for the removal and disposal of asbestos containing material and replacement of the same with non-asbestos containing materials.

Unit price shall include all costs necessary to do the work of this Contract, including but not limited to: labor, materials, equipment, utilities, disposal, insurance, overhead and profit.

1.05 AIR MONITORING – ASBESTOS ABATEMENT CONTRACTOR

A. "Air Sampling" shall mean the process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the N1OSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Standard and Technology which are utilized for lower detectability and specific fiber identification.

B. Air monitoring of Asbestos abatement contractor's personnel will be performed in conformance with OSHA requirements, (All costs associated with this work are deemed included in the unit price.).

C. Qualifications of Testing Laboratory:

The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).

Note: Work area air testing and analysis before, during and upon completion of work (clearance testing) will be performed by a Third Party Air Monitor under separate Contract with the City.

1.06 THIRD PARTY MONITORING AND LABORATORY

A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.

B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM).

C. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the Asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.

D. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the Asbestos abatement contractor.

1.07 PAYMENT REQUEST DOCUMENTATION

B. The following information shall be included for each payment request:

1. Description of work performed.
2. Linear footage and pipe sizes involved.
3. Square footage for boiler & breaching insulation removed.
4. Square footage of non pipe and boiler areas removed, patched, enclosed, sealed, or painted.
5. Square footage of encapsulation, sealing, patching, and painting involved.
6. Total cost associated with compliance with the assigned task.
7. Architectural, Electrical, HVAC, Plumbing, etc. work incidental to the Asbestos Abatement Work.
8. A certified copy (in form 4312-39) to the Comptroller or Financial Officer of the New York City to the effect that the financial statement is true.
9. A signed copy (in form 6506q-6) of certificate of compliance with non-discriminatory provisions of the Contract.
10. Attach a copy of valid workmen compensation insurance.

11. Valid asbestos insurance per occurrence.

12. General liability insurance when required.

C. Each payment request shall include a grand total for all work completed that billing period, the landfill waste manifests and a copy of waste transporter permit. The Department of Design and Construction will inspect the work performed, review the cost and approve or disapprove requests for payment.

D. EXPOSURE LOG: With this final payment, the Asbestos abatement contractor shall submit a listing of the names and social security numbers of all employees actively engaged in the abatement work of this Contract. This list shall include a summary showing each part of the abatement work in which the employee was engaged and the dates thereof.

1.08 QUANTITY CALCULATIONS

In order to determine the square footage involved for the various pipe sizes of pipe insulation that might be encountered, the following table is to be used.

PIPE INSULATION SIZE O.D.	PIPE SIZE O.D.	SQUARE FOOTAGE PER LINEAR FOOT
2-1/2"	1/2"	0.65
2-3/4"	3/4"	0.72
3"	1"	0.79
3-1/4"	1-1/4"	0.85
3-1/2"	1-1/2"	0.92
4"	2"	1.05
4-1/2"	2-1/2"	1.18
5"	3"	1.31
6"	3-1/4"	1.57
7"	3-1/2"	1.83
8"	4"	2.09
9"	5"	2.36
10"	6"	2.62
12"	8"	3.14
14"	10"	3.67
16"	12"	4.19
18"	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 X 0.65 = 65 sq.ft. 65 x unit price = Payment

100 X 2.62 = 262 sq.ft. 262 x unit price = Payment

B. **REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER INSULATION:** (all types including Silicate Block and including the removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

EXAMPLE: Item B. removal and replacement of 1000 S.F. of boiler insulation (incl. Silicate block)

1000 S.F. X (1.5) X the Unit Price = Payment

C. **REMOVAL, DISPOSAL AND REPLACEMENT OF TANK INSULATION:** (all types including removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

D. **REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER UPTAKE, & BREACHING INSULATION:** (all types including stiffening angles and wire lath) Payment shall be made at 2.0 times the unit price per square foot.

E. **REMOVAL, DISPOSAL AND REPLACEMENT OF DUCT INSULATION:** Payment shall be made at 1.0 times the unit price per square foot.

F. **REMOVAL, DISPOSAL AND REPLACEMENT OF SOFT ASBESTOS CONTAINING MATERIAL:** (Including sprayed-on fire proofing and sound proofing) Payment shall be made at 1.0 times the unit price per square foot of surface area. Area of irregular surfaces must be calculated and confirmed with DDC representative.

G. **ACOUSTIC PLASTER REPAIR AND/OR ENCAPSULATION:** Payment shall be made at 0.5 times the unit price per square foot.

H. **PATCHING OR REPAIR** of items listed in A through F will be paid at 0.33 times the unit price per square foot.

I. **REMOVAL, DISPOSAL AND REPLACEMENT OF WATERPROOFING ASBESTOS CONTAINING MATERIAL:** (including friable and non-friable waterproofing material from interior and exterior walls, floors, foundations, penetrations, louvers, vents and openings other than windows, doors and skylights) Payment shall be made at 0.5 times the unit price per square foot.

J. **REMOVAL, DISPOSAL AND REPLACEMENT OF ASBESTOS CONTAINING ELECTRICAL WIRING INSULATION:** (including friable and non-friable wiring insulation) Payment shall be made at 0.33 times the unit price per square foot.

K. **PAINTING:** Payment shall be made at 0.05 times the unit price per square foot.

L. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING PLASTER:** from ceilings and walls, including any wire lath and disposal as asbestos containing waste. Payment shall be made at 0.80 times the unit price per square foot.

M. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING FLOOR TILES, CEILING TILES, TRANSITE PANELS:** (including any adhesive, glue, mastic and/or underlayment) and disposal as asbestos containing waste. Payment shall be made at 0.40 times the unit price per square foot. If multiple layers are discovered, each additional layer shall be paid at 0.20 times the unit price per square foot.

N. **ADDITIONAL CLEAN UP/HOUSEKEEPING OF WORK AREA:** (excluding pre-cleaning of work area required by regulations) HEPA vacuuming and wet cleaning of asbestos contaminated surface. Payment shall be made at 0.20 times the unit price per square foot. When GLOVE BAG is employed to remove ACM, cost of HEPA vacuuming and wet cleaning of floor area up to 3 feet on each side of glove-bag shall be included in unit price and no extra payment will be made.

O. **REMOVAL, DISPOSAL OF ASBESTOS-CONTAINING ROOFING MATERIAL:** including mastic, flashing and sealant compound and provide temporary asbestos-free roof covering consisting of one layer of rolled roofing paper sealed with asphaltic roofing compound. Payment shall be made at 0.8 times the unit price per square foot. Credit at a rate of 0.33 times the unit price will be taken for each square foot of temporary roof covering which the Asbestos abatement contractor is directed not to install.

P. **PICK-UP AND DISPOSAL OF GROSS DEBRIS:** (excluding any waste generated from abatement under Item A-R) at a rate of $150 per cubic yard for asbestos contaminated waste and $75 per cubic yard for non-asbestos contaminated waste. This cost includes all labor and material cost associated with work.

Q. **REMOVAL OF ASBESTOS-CONTAINING BRICK, BLOCK, MORTAR, CEMENT OR CONCRETE:** along with all surfacing materials including wire lath and/or other supporting structures and disposal as ACM waste. Payment shall be made at a rate of $25.00 per cubic foot of material removed.

R. **REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING WINDOW/DOOR CAULKING:** including friable and non-friable caulking, weather-stripping, glazing, sealants or other waterproofing materials applied to windows, doors, skylights, etc. Payment shall be made at the rate of $400.00 per opening regardless of size or configuration. This cost includes labor, consumable materials, set-up/breakdown, removal and disposal, as required.

Note 1: CREDIT: For items listed in A through F, a credit at a rate of 0.33 times the unit price, times the respective multiplier (for each item) will be taken for each square foot of insulation which the asbestos abatement contractor is not directed to reapply.

Note 2: MINIMUM PAYMENT: The minimum payment per call at any individual job sites or various job sites during the same day will be eight hundred dollars ($800.00).

Note 3: All payments shall be made as described in paragraph 1.09 herein.

Note 4: WORKING HIGHER THAN 12 FEET ABOVE FLOOR LEVEL OR WORK REQUIRING COMPLEX SCAFFOLDING OR CONSTRUCTION WORK PLATFORMS: Provisions are made in this Contract to compensate the Asbestos abatement contractor for work performed in locations that are difficult to access due to work at elevations that are significantly higher than the normal work level. The unit price for these items will be paid at 1.20 times the unit price described in Paragraphs 1.09, A through R for those portions of the work that are more than twelve (12) feet above the grade for that would be judged as the normal working level.

1.10 GUARANTEE

A. Work performed in compliance with each task shall be guaranteed for a period of one year from the date the completed work is accepted by the Department of Design and Construction.

B. The Commissioner of The Department of Design and Construction will notify the Asbestos abatement contractor in writing regarding defects in work under the guarantee.

1.11 OCCUPANCY OF SITE NOT EXCLUSIVE

Attention is specifically drawn to the fact that contractors, performing the work of other Contracts, may be brought upon any of the work sites of this Contract. Therefore, the Asbestos abatement contractor shall not have exclusive rights to any site of his work and shall fully cooperate and coordinate his work with the work of other contractors who may be brought upon any site of the work of this Contract. This paragraph applies to those areas outside the regulated Work Area as defined by Title 15, Chapter I of RCNY.

1.12 SUBMITTALS

A. Pre-Construction Submittals:

1. Attend a pre-construction meeting scheduled by the City of New York Department of Design and Construction. This meeting shall also be attended by a designated representative of the City of New York third party air monitoring firm, facility manager and the Construction Project Manager. At this meeting, the Asbestos abatement contractor shall present three copies of the following items:
   a. Asbestos abatement contractor's scope of work, work plan and schedule.

   b. Asbestos project notifications, approved variances and plans to Government Agencies.

   c. Copies of Permits, clearance and licenses if required.

   d. Schedules: the Asbestos abatement contractor shall provide to the Construction Project Manager a copy of the following schedules for approval. Once approved, schedules shall be maintained and updated as received. Asbestos abatement contractor shall post a copy of all schedules at the site:

      (1) A construction schedule stating critical dates of the project including, but not limited to, mobilization, Work Area preparation, demolition, gross removal, fine cleaning, encapsulation, inspections, clearance monitoring, and phase of refinishing and final inspections. The schedule shall be updated biweekly, at a minimum.

      (2) A schedule of staffing stating number of workers per shift per activity, name and number of supervisor(s) per shift, shifts per day, and total days to be worked.

      (3) Submit all changes in schedule or staffing to the Construction Project Manager prior to implementation.

e. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance (name and telephone number to nearest hospital) and procedures to be used for access by medical personnel (examples: first aid squad and physician). NOTE: Necessary Emergency Procedures Shall Take Priority Over All Other Requirements of These Specifications.

f. Material Safety Data Sheets (MSDS) for encapsulants, sealants, firestopping foam, cleaners/disinfectants, spray adhesive and any and all potentially hazardous materials that may be employed on the project. No work involving the aforementioned will be allowed to proceed until MSDS are reviewed.

g. Worker Training and Medical Surveillance: The Asbestos abatement contractor shall submit a list of the persons who will be employed by him /her to perform the removal work. Present evidence that workers have received proper training required by the regulations and the medical examinations required by OSHA 29 CFR 1926.1101.

h. Logs: Specimen copies of daily progress log, visitor's log, and disposal log.

(1) The Asbestos abatement contractor shall provide a permanently bound log book of minimum 8-1/2" x 11" size at the entrance to the Worker and Waste Decontamination enclosure system as hereinafter specified. Log book shall contain on title page the project name, name, address and phone number of the Asbestos abatement contractor; name, address and phone number of Asbestos abatement contractor and City's third party air monitoring firm; emergency numbers including, but not limited to local Fire/Rescue Department. Log book shall contain a list of personnel approved for entry into the Work Area.

(2) All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted. Any significant events occurring during the abatement project shall be entered into the log. Upon completion of the job, the Asbestos abatement contractor shall submit the logbook containing a day-to-day record of personnel log entries countersigned by the Construction Project Manager every day.

i. Worker's Acknowledgments: Submit statements signed by each employee that the employee has received training in the proper handling of ACM, understands the health implications and risks involved; and understands the use and limitations of the respiratory equipment to be used.

B. During Construction Submittals:

1. Security and safety logs showing names of person entering workspace, date and time of entry and exit, record of any accident, emergency evacuation, and any other safety and/or health incident.

2. Progress logs showing the number of workers, supervisors, hours of work and tasks completed shall be submitted daily to the Construction Project Manager.

3. Floor plans indicating Asbestos abatement contractor's current work progress shall be submitted for review by the Construction Project Manager.

4. All Asbestos abatement contractors' air monitoring and inspection results.

C. Project Closeout Submittals:

Upon completion of the project and as a condition of acceptance, the Asbestos abatement contractor shall present two copies of the following items, bound and indexed:

1. Lien Waivers from Asbestos abatement contractor, Sub-Asbestos abatement contractors and Suppliers,

2. Daily OSHA air monitoring results,

3. All Waste Manifests (Asbestos and Construction Debris), seals and disposal logs,

4. Field Sign-In/Sign-Out Logs for every shift,

5. Copies of all Building Department Forms and Permits,

6. A Letter of Compliance stating that all the work on this project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations,

7. All Warranties as stated in the Specifications,

a. Fully executed disposal certificates and transportation manifest.

8. Project Record: The Asbestos abatement contractor shall maintain a project record for all small and large asbestos projects. During the project, the project record shall be kept on site at all times. Upon completion of the project, the project record shall be maintained by the building owner. The project record shall be submitted to DDC as part of the close out documents. The project record shall consist of:

a. Copies of licenses of all asbestos abatement contractors involved in the project;

b. Copies of NYCDEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;

c. Copies of all project notifications and reports filed with NYCDEP, NYSDOL and USEPA for the project, with any amendments or variances;

d. Copies of all asbestos abatement permits, including associated approved plans and work place safety plan;

e. A copy of the air sampling log and all air sampling results;

f. A copy of the abatement asbestos abatement contractor's daily log book;

g. Copies of all asbestos waste manifests;

h. A copy of all Project Monitor's Reports (ACP-15).

i. A copy of each ATR-1 Form completed for the asbestos project (if required).

j. A copy of each Asbestos Project Conditional Closeout Report (ACP-20) if required.

k. A copy of the Asbestos Project Completion Form (ACP-21).

1.13 PROTECTION OF FURNITURE AND EQUIPMENT

Cover all furniture and equipment that cannot be removed from Work Areas. Movable furniture and equipment will be removed from Work Areas by the Asbestos abatement contractor prior to start of work. At the conclusion of the work (after final air testing), the Asbestos abatement contractor will remove all plastic covering on walls, floors, furniture,

equipment and reinstall furniture and equipment. He shall remove and store all sheaths, curtains and drapes, and reinstall same following final clean up.

1.14 UTILITIES

A. General:

All temporary facilities shall be subject to the approval of the Commissioner. Prior to starting work at any site, locations and/or sketches (if required) of temporary facilities must be submitted to the Construction Project Manager for the required approval.

B. Water:

The Department of Design and Construction will furnish all water needed for construction, at no cost to the Asbestos abatement contractor in buildings under their jurisdiction. However, it is the responsibility of the Asbestos abatement contractor to ensure that hot water is provided for showering in the decontamination unit. The Asbestos abatement contractor shall furnish, install and maintain any needed equipment to meet these requirements at his own expense.

C. Electricity:

The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the Asbestos abatement contractor in a building, under their jurisdiction. The Asbestos abatement contractor is responsible for routing the electric power to the abatement Work Area.

All temporary lighting and temporary electrical service for Work Area shall be in weatherproof enclosures and be ground fault protected.

D. In leased spaces, arrangements for water supplies and electricity must be made with the landlord. However, all such arrangements must be made through and are subject to approval of the Department of Design and Construction. Utilities will be provided at no cost to the Asbestos abatement contractor. However, it is the Asbestos abatement contractor's (or the General contractor's) responsibility to furnish and install a suitable distribution system to the Work Area. This system will be provided at no cost to the City.

1.15 FEES

The Asbestos abatement contractor shall be responsible for any and all fees or charges imposed by Local, State or Federal Law, Rule and Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the date of the Bid opening.

END OF SECTION

SECTION 02 0700
SELECTIVE REMOVALS & DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of Work

Removal and demolition of selected items from selected areas of the building as indicated on the Drawings; items to be removed include, but are not limited to, the following:

1. Where noted on plans

1.02 NOT USED

1.03 SUBMITTALS

A. Submit a schedule indicating proposed methods and sequence of operations for selective removals and demolition Work, prior to commencement of operations. The sequence of operations shall be planned, in detail, to ensure uninterrupted progress of school sessions.

B. Submit details and procedures for dust and noise control.

C. Signed receipt for salvaged items delivered to the Facility.

D. Quality Control Submittals

1. Contractor Qualifications

a. Provide proof of Contractor and Professional Engineer qualifications specified under "Quality Assurance".

b. Provide proof of Refrigerant Recovery Technician qualifications

E. Sustainability Submittals

1. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all

refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

2. Statement of the measures taken to reduce air with dust and particulate matter.

1.04 RESPONSIBILITY, PROTECTION, DAMAGES, RESTRICTIONS

A. Condition of Space

The Facility assumes no responsibility for actual condition of the space in which removals and demolition Work is performed.

B. Protections

Provide temporary barricades and other forms of protection required to protect Facility and Facility property, personnel, students and general public from injury due to selective removals and demolition work.

1. Provide protective measures as required to provide free and safe passage of students, Facility personnel, Facility personnel, and the general public.

2. Protect from damage existing finish work that is to remain in place and which becomes exposed during operations.

3. Protect floors with building paper or other suitable covering.

C. Damages

Promptly repair any and all damages to all property and finishes caused by the removals and demolition work; to the Facility's satisfaction and at no extra cost to the Facility.

D. Explosives

The use of explosives is prohibited.

E. Power-driven Tools (for interior removals and demolition).

Only hand-held electric power-driven tools conforming to the following criteria shall be used to cut or drill concrete and masonry:

1. Electric Chiselling Hammer

   a. Power Data 115 Volts AC
      7-8 Amps
      Three-wire grounded connection

   b. Percussion 2400-2600 Impacts/Minute

   c. Type/Size Hand-held (+ 18-inch length)

   d. Unit Weight 12-15 pounds (minus chisel bit)

2. Electric Hammer Drill

   a. Power Data 115 Volts AC
      5-8 Amps
      Three-wire grounded connection

   b. Percussion 2400-3200 Impacts/Minute

   c. Type/Size Hand-held (+ 18-inch length)

   d. Unit Weight 12-15 pounds (minus chisel bit)

   e. Speed Data 0-0500 RPM (Under load)

1.05 QUALITY ASSURANCE

A. Qualifications

1. Company specializing in performing the Work of this Section shall have a minimum of 3 years experience and shall have worked on under 3 projects of similar size.

2. Preparation of details of shoring and bracing and underpinning shall be under the direct supervision of and bear the seal of a Licensed Professional Engineer of the State of New York experienced in the design of such work, who shall also be responsible for construction supervision of such.

3. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Regulatory Requirements

1. Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations and guidelines of all governmental authorities having jurisdiction, including, but not limited to, safety, health, and anti-pollution regulations. Where more stringent requirements than those contained in the Building Code or other applicable regulations are given in this Section, the requirements of this Section shall govern.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.01 INSPECTION

A. Prior to commencement of the selective removals and demolition Work, inspect the areas in which the Work will be performed. Determine and list the existing conditions of rooms or area surfaces and equipment. After the Work in each respective area is completed, determine if adjacent surfaces or equipment have been damaged as a result of the Work; if so, the damage shall be corrected at the Contractor's expense.

3.02 REMOVALS AND DEMOLITION WORK

A. Perform selective demolition Work in a systematic manner and use such methods as are required to complete the Work indicated, and in accordance with the Specifications and governing City, State, and Federal regulations.

B. When walls, partitions, floors, and ceilings (or portions thereof) are indicated to be removed; unless indicated otherwise:

1. Remove all items attached to the surfaces of the construction to be removed.

2. Remove all plumbing piping, fixtures, accessories and rough-in occurring on or in the construction to be removed; cap piping and/or re-route lines as indicated or required.

3. Remove all connectors, piping, ductwork and other HVAC items and accessories occurring on or in the construction to be removed; cap and/or re-route piping and ductwork as indicated or required.

4. Remove all electrical wiring, to include, but not limited to, lighting, communications, alarms and all related appurtenances, conduits, devices, fixtures, and other electrical items and accessories occurring on or in the construction to be removed; disconnect power and remove wiring and conduit back to source.

C. Carefully remove items, equipment and materials to be retained by the Facility and deliver them to locations indicated in the Article titled "Ownership of Materials".

3.03 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubbish and other materials resulting from the removals and demolitions from the building immediately; transport and legally dispose of materials off-site. Disposal method shall be in accordance with City, State, and Federal regulations. Items to be retained by the Facility shall be delivered to locations indicated in the Article titled "Ownership of Materials".

B. Burning of removed materials is not permitted on the job site.

3.04 CLEAN-UP AND REPAIR

A. Upon completion of removals and demolition Work, remove tools, equipment and all remaining demolished materials from the site.

B. Repair all damaged areas caused by the removals and demolition Work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

C. All areas in which Work was performed under this Section shall be left "broom-clean."

3.05 OWNERSHIP OF MATERIALS

A. All equipment, materials, and items removed shall remain the property of the Facility, if desired; equipment, material and items not desired to be re-used or retained by the Facility and the Facility shall be removed from the

site by the Contractor. The Facility's Representative will designate which equipment, materials and items will be retained.

B. The items, equipment and materials listed in this Paragraph shall be removed and salvaged by the Contractor for future use by the Facility. Deliver the items to the appropriate shops in the Facility, and obtain written receipts for all items. Salvage items shall include:

1. All equipment from the PA/clock system.

END OF SECTION

SECTION 03 3100
CONCRETE FORMWORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide forms wherever necessary to confine concrete and shape it to required dimensions. Provide special formwork or formliners for concrete with smooth or special finishes.

B. Provide mock-up of smooth and architectural finishes prior to beginning work as described in Section 03300.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Mechanical and Electrical items.....Division 23 & 26

1.03 RELATED SECTIONS

A. Concrete Reinforcement.....Section 03 3200

B. Cast-in-Place Concrete.....Section 03 3300

1.04 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Concrete Institute (ACI) standards, latest editions.

1. ACI 301 Specifications for Structural Concrete for Buildings.

2. ACI 347 Guide to Formwork for Concrete.

1.05 DESIGN REQUIREMENTS

A. The design and engineering of the formwork, as well as its construction, is the responsibility of the Contractor.

B. Design formwork in accordance with ACI 347 and Section BC 1906 of the 2008 NYC Building Code.

1.06 SUBMITTALS

A. Product Data

Submit manufacturers' information for the following:

1. Overlaid plyform formwork or formliners

2. Ties, each type and where to be used

3. Form-release agent. Form-release agent to be submitted for review only.

B. Samples

Submit 12" x 12" samples of the following items:

1. Overlaid plyform formwork or formliners

C. Shop Drawings

1. Prepare and submit formwork shop drawings and calculations prepared and sealed by a Professional Engineer licensed in the State of New York for review when required by Section BC 1906.3 of the 2008 NYC Building Code.

2. Exposed concrete indicated on the Drawings as "Architectural Concrete" or "Architectural Finish" shall have the formwork designed and shop drawings submitted for review to ensure tightness and prevention of leakage. Formwork is to be designed to limit deflections.

3. Submit method of producing special finish (eg exposed aggregate, sandblast, etc).

D. Quality Control Submittals

1. Contractor Qualifications

Provide proof of Formwork Installer qualifications specified under "Quality Assurance".

1.07 QUALITY ASSURANCE

A. Qualifications

1. Company specializing in performing the Work of this Section shall have three years minimum experience.

2. Person responsible for inspection of formwork shall be a qualified person as defined in Section BC 3302.1 of the 2008 NYC Building Code.

B. Regulatory Requirements

1. Building Code

Work of this Section shall conform to all requirements of the NYC Building Code. Where more severe requirements than those contained in the Building Code are given in this Section and ACI 347, the requirements of this Section and ACI 347 shall govern.

2. Industrial Code Rule #23 of the Department of Labor, paragraphs 23.10.1 to 23-10.5 inclusive.

3. ACI 347.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protection

1. Protect formwork materials before, during and after installation.

2. Protect installed work and materials of other trades.

B. Replacement

1. Repair or replace damaged formwork as approved by the Authority.

2. Repair overlaid plyform formwork as per manufac- turer's instructions. Replace pieces when number of manufacturer recommended reuses is up or when finish deteriorates.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Overlaid Plyform Formwork

1. Simpson Timber Company, Shelton Washington 98584.

2. Dayton Richmond Concrete Accessories, Folcroft PA

B. Form Liners

1. Greenstreak, St. Louis Missouri 63177.

2. Architectural Polymers, New Ringgold PA 17960

3. Fitzgerald Formliners, Santa Ana CA 92705

2.02 MATERIALS

A. Rough Formwork

Shall be Commercial Douglas Fir, DFPA: 5/8" thick minimum or modular metal units.

B. Overlaid Plyform Formwork

Plywood with thermosetting phenolic resin or urethane coating bonded to it to provide a flat matte finish. Shall be equal to B-Matte Formguard by Simpson Timber Company.

C. Smooth Form Finish Formliner

1. Shall be equal to #340 Smooth Face by Greenstreak.

2. Nails and staples used to attach formliner to formwork are to be Type 304 stainless steel.

D. Architectural Finish" Formliner

1. Nails and staples used to attach formliner to formwork are to be Type 304 stainless steel.

E. Release Agent

VOC compliant material such as those of the Cresset Chemical Company for coating forms.

F. Form Ties

1. Form ties for exposed concrete shall be adjustable.

2. Form ties for exposed concrete and concrete to receive membranes shall be a break-off type and leave no metal closer than $1^1/_2$" to the surface.

3. Form ties for concrete stated in 2 above shall be free of devices which leave holes or depressions larger than 7/8" back of exposed surface.

4. Wire ties not permitted.

PART 3 - EXECUTION

3.01 PREPARATION OF FORMWORK SURFACES

A. Clean all surfaces of forms and embedded items of any accumulated mortar or grout from previous concreting and other foreign material before concrete is placed in them. Repair or replace any formwork as required.

B. Before placing either reinforcing steel or concrete, cover the surfaces of the rough or overlaid plyform formwork (when used) with an approved form release agent that will effectively prevent absorption of moisture, prevent bond with the concrete, and which will not stain the concrete surfaces. Material shall be carefully applied at the amount recommended by the release agent manufacturer to obtain the desired finish. Do not apply oil or

release agents on formwork for concrete to receive coatings such as membrane waterproofing, plaster, or additional concrete (such as at construction joints). Follow manufacturer's recommendations for alternatives. For the overlaid plyform formwork, release agent should be a chemically reactive agent compatible with the factory treatment. Do not allow excess form coating material to stand in puddles in the forms nor allow coating to come in contact with hardened concrete against which fresh concrete is to be placed.

3.02 CONSTRUCTION AND DETAILS

A. Adequately support and substantially brace formwork to hold lines and shape.

B. Formwork shall be tight jointed to prevent leakage of mortar from the concrete.

C. Place chamfer strips in the corners of forms to produce beveled edges (chamfers) on permanently exposed surfaces (such as exposed columns). Do not provide beveled edge for interior corners of such surfaces and where members are flush with partitions or walls, unless required by Drawings or specified elsewhere.

D. Set slab-forms with camber of 1/4" per 10 feet of span to maintain tolerances. For two way slabs the lesser span dimension shall govern.

E. Provide positive means of adjustment (wedges or jacks) for shores and struts to take up all settlement during concrete placing operations. Fasten wedges used for final adjustment of forms prior to concrete placement in position after final check. Securely brace forms against lateral deflection.

F. Provide mud sills where shores rest on compressible materials.

G. Provide temporary openings to permit cleaning and inspection. Provide ample time for proper inspection before placement of concrete.

H. Provide "Rough Form Finish" for surfaces not exposed to view. Use plywood or metal forms coated with a release agent.

I. Provide "Smooth Form Finish" (and/or Architectural Finish", "Textured Finish", "Formliner Finish" if shown on Drawings) for surfaces exposed to view. Use dress, square-edged lumber with form liner or overlaid plyform

forms with applicable release agent. Do not exceed manufacture's recommendations for number of re-uses for the form liner or overlaid plyform. Arrange the forms or form liner in an orderly and symmetrical fashion, keeping the number of seams to a practical minimum. Items indicated as "Architectural Concrete" or Architectural Finish" shall use specially designed formwork to attain the desired finish and shall have a CS 1 surface finish as developed by the Cresset Chemical Company, or other special finish specified. Other exposed concrete shall have CS3 or better surface finish.

J. Form holes for pipes, pipe sleeves, electric outlets, electric conduits, etc. as required. Construct woodforms for wall forms to facilitate loosening, if necessary, to counteract swelling of forms.

K. Provide runways for moving equipment with struts or legs, which shall be supported directly on the formwork or structural member without resting on the reinforcing steel.

L. Provide for rebates, reglets, grooves keys, pockets, ground nailers, projections and other built-in work prior to placement of concrete. Install reglets as per manufacturer's instructions.

M. Install dovetail slots, concrete inserts, and other metal fabrications. Secure to inside forms and space as specified in Section 05500 or as shown on Drawings.

N. At construction joints, contact surface of the form sheathing for flush surfaces exposed to view shall overlap the hardened concrete in the previous placement by not more than 1". The forms shall be held against the hardened concrete to prevent offsets or loss of mortar at the construction joint and to maintain a true surface.

O. Form accessories to be partially or wholly embedded in the concrete, such as ties and hangers, shall be of a commercially manufactured type. Use of non-fabricated wire is not permitted. Construct form ties so that the ends or end fasteners can be removed without causing appreciable spalling at the faces of the concrete. After the ends or end fasteners of the form ties have been removed, terminate the embedded portion of the ties not less than 2 diameters or twice the minimum dimension of the tie from the formed faces of concrete to be permanently exposed to view, except that in no case shall this distance be less than 3/4". When the formed face of the concrete is

not to be permanently exposed to view, form ties may be cut off flush with the formed surfaces.

P. Carefully check all forms before placement of concrete. Give special care to suspended first floor slabs resting on compressible material to prevent settlement.

Q. Notify the Engineer of Record if openings are required but not shown on the Drawings, who will issue instructions accordingly.

3.03 REMOVAL OF FORMS AND SHORING

A. Remove forms in such a manner as to assure the complete safety of the structure as required by Section BC 1906.5 of the 2008 NYC Building Code. In no case remove forms or shoring supporting the weight of concrete in beams, slabs or structural members until the members have reached the minimum compressive strength specified on the Drawings or as permitted by the Engineer of Record.

B. Formwork for columns, walls, sides of beams, and other parts not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations and as required by C below. For normal temperature conditions, this shall be a minimum of 12 hours. For cold weather conditions, this shall be increased to 24 hours. Concrete shall remain protected at all times.

C. When repair of surface defects or finishing is required at an early age, remove forms as soon as the concrete has hardened sufficiently to resist damage from removal operations.

D. Remove top forms on sloping surfaces of concrete as soon as the concrete has attained sufficient stiffness to prevent sagging. Perform any needed repairs or treatment required on such sloping surfaces at once and follow it with the specified curing.

E. Loosen wood forms for wall openings as soon as this can be accomplished without damage to the concrete.

F. Proper safe shoring, number of shores, adequacy, size and location of these shores and forms shall be in accordance with acceptable good construction practice and it is the sole responsibility of the Contractor to provide safe conditions at all times during stripping.

G. Reshoring is subject to the approval of the Special Inspector. While reshoring is underway, do not permit live load on new construction. Members shall never be left unsupported until concrete has attained required strength to be left unsupported as verified by the Special Inspector and if approved by the Engineer of Record.

H. Floors supporting shores under wet concrete shall be reshored or shall have their original shore left in place. The reshores shall have at least one-half the load capacity of the shores above and shall be distributed in approximately the same pattern as above. Tighten reshores to carry the required loads without overstressing the construction. Leave reshores in place until the freshly placed concrete has reached 75% of its 28-day strength, unless otherwise specified.

I. When reshoring of beam and girder construction is required, do not remove forms from more than one girder at a time and reshore the girder before any other supports are removed. After the supporting girders are reshored, remove the forms from one beam with its adjacent slab (half slab on each side) and reshore the beam and slab before any other supports are removed.

J. When reshoring of flat slab construction is required, leave the shores for the area within the intersection of the middle strip of each panel in place at all times until the concrete has attained sufficient strength to support the loading to which it will be subjected. After the other shores in each panel have been removed (within the bay), place reshores on the column lines at the midpoints between columns, before the next panel is stripped.

K. Stripping and reshoring shall conform to the requirements of Section BC 1906.6 of the 2008 NYC Building Code. Perform control tests as per Section BC 1906.5.6 for the removal of forms and shoring without simultaneous reshoring. Proper number, adequacy, size, and location of reshores shall be in accordance with acceptable good construction practice and it is the sole responsibility of the Contractor to provide safe conditions at all times during stripping and reshoring operations.

3.04 TOLERANCES

A. Construct formwork so that concrete surfaces will conform to the tolerance limits listed in ACI 117.

B. Establish and maintain in an undisturbed condition and until final completion and acceptance of the project sufficient control points and bench marks to be used for reference purposes to check tolerances.

C. Regardless of the tolerances listed, do not extend any portion of the concrete work beyond the lot or street line.

D. Formwork for "Architectural" Concrete shall not deflect more than 1/8" over the height of the member.

3.05 INSPECTION

A. Under the requirements of Section BC 1906.2 of the 2008 NYC Building Code, formwork, including shores, reshores, braces, and other supports shall be inspected by a qualified person engaged by the Contractor. The qualified person shall make inspections prior to placement of steel to verify correct sizes of members formed and subsequently periodically after placement and during placement of concrete to detect incipient problems. Maintain a record of all inspections.

B. Under the requirements of Section 1704.4 of the Building Code, the Authority will assign a Special Inspector to inspect formwork for size of members and to verify in-situ concrete strengths prior to removal of formwork and shores from beams and slabs.

C. During and after concrete placement, check elevations, camber, and vertical alignment of formwork systems using tell-tale devices.

D. Keep a record of all inspections, the name of the persons making them, and the name of the foreman in charge of formwork at the site. Submit to the Authority's representative on the site a copy of the inspection records prior to each concrete placement.

END OF SECTION

SECTION 03 3200
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide and install all reinforcement and associated items required for cast-in-place.

1.02 RELATED SECTIONS

A. Concrete Formwork.....Section 033100

B. Cast-in-Place Concrete.....Section 033300

1.03 SUSTAINABILITY REQUIREMENTS

A. The Contractor shall implement practices and procedures to meet the Project's sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in the Specifications, Sustainability Requirements, and as specified in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be proposed by the Contractor or their sub-contractors if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainability requirements included in the Section are as follows:

1. Documentation on material costs.

1.04 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Society of Testing and Materials (ASTM) standards, latest editions.

A82 Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

A184 Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.

A185 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete Reinforcement.

A496 Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.

A497 Standard Specification for Steel Welded Wire Reinforcement, Deformed for Concrete Reinforcement.

A615 Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

A706 Standard Specifications for Low-Alloy Steel Deformed and Plain Bars for Concrete reinforcement

B. American Concrete Institute (ACI) standards, latest editions.

ACI 301 "Specification for Structural Concrete for Buildings."

ACI 315 "Details and Detailing of Concrete Reinforce-ment."

ACI 318-02 "Building Code Requirements for Reinforced Concrete (With modifications per Section BC 1908 of the 2008 NYC Building Code).

C. "Placing Reinforcing Bars - CRSI-WCRSI Recommended Practices", latest edition. Concrete Reinforcing Steel Institute.

D. "Structural Welding Code - Reinforcing Steel" D1.4 - American Welding Society (AWS).

1.05 DESIGN REQUIREMENTS

A. In lieu of placing reinforcement bars, the contractor has the option of using welded wire reinforcement (WWR).

1. WWR must be demonstrated to the satisfaction of the engineer of record that they are of equivalent strength to the reinforcing bars that are being substituted.

2. As per ACI 318, yield strength greater than 60,000 psi may be used (for WWR) provided the yield strength is measured at a strain of 0.0035 in./in in accordance with ACI code requirements.

B. Detailing requirements for reinforced concrete structures shall meet the structural integrity requirements as set in Section BC 1917 of the 2008 NYC Building Code.

1.06 SUBMITTALS

A. Product Data

Submit manufacturers' information for the following:

1. Steel welded wire fabric

2. Steel welded wire reinforcement.

3. Supports

4. Mechanical connectors

B. Shop Drawings

1. Immediately after award of Contract, prepare shop drawings showing all fabrication dimensions and locations for placing of the reinforcing steel and accessories. Shop Drawings are to be prepared by a rebar detailer.

2. Follow detailing recommendations of ACI 315.

3. Submit drawings gradually and not all at the same time so that sufficient time is allowed for checking and approval. Improperly prepared and incomplete shop drawings will be disapproved without review.

4. Shop drawings will be checked for size of material and spacing by the Engineer of Record, which shall not render the Engineer

responsible for any errors in construction dimensions, quantities, bends, etc. that have been made in preparation of the shop drawings. The Contractor shall assume full responsibility for the correctness of quantities, dimensions and fit.

5. Do not order or deliver reinforcement to job site prior to approval of drawings.

C. Quality Control Submittals

1. Certificates

a. Submit certificate stating that reinforcement meets or exceeds the specified requirements.

b. If WWR is used, provide certificate from the manufacturer that WWR meets or exceeds the requirements specified in ACI 318 and provide calculations that it is of equivalent strength to the reinforcing bars that are being substituted.

2. Contractor Qualifications

Provide proof of Installer and Detailer qualifications specified under "Quality Assurance".

D. Sustainable Submittals:

1. Submit Contractor's Sustainable Materials Form for reinforcement with complete materials cost information in accordance with Section S01352, Sustainability Requirements.

1.06 QUALITY ASSURANCE

A. Qualifications

1. Rebar Installer: Company specializing in performing the Work of this Section shall have three years minimum experience on successful projects of similar size.

2. Rebar Detailer: Company shall be specialized in the detailing of reinforcing bar shop drawings with a minimum of three years experience.

B. Regulatory Requirements

1. Building Code

Work of this section shall conform to all requirements of the NYC Building Code. Deliveries will be rejected unless:

a. All reinforcing bars are identifiable as to point of origin, grade of steel, and size.

b. All bundles or rolls of cold drawn steel wire reinforcement are securely tagged to identify the manufacturer, the grade of steel, and the size.

Where more severe requirements than those contained in the Building Code are given in this Section and ACI 318, the requirements of this Section and ACI 318 shall govern.

2. Industry Standards

Details of Concrete reinforcement not covered herein shall be in accordance with "Building Code Requirements for Reinforced Concrete" (ACI 318) and "Details and Detailing of Concrete Reinforcement" (ACI 315), latest editions and the Concrete Reinforcing Steel Institute Manual on "Placing Reinforcing Bars" (CRSI).

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store in location to prevent rusting, etc.

B. Protect reinforcement before, during, and after installation.

C. Insure proper identification after bundles are broken.

D. WWR is shipped in two forms; rolls or sheets. If the rolls or sheets must be lifted by crane at the job site, the contractor may request the manufacturer to install lifting eyes. At all times during off loading of materials, caution must be exercised and all safety regulations and practices must be observed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars

1. All reinforcing bars, except those to be welded, shall be of deformed type of new billet steel conforming to current requirements of ASTM A615. No rail or re-rolled steel will be permitted. Reinforcement to be welded shall conform to the requirements of ASTM A706.

2. Grade or yield strength of reinforcing bars is indicated on Drawings.

B. Welded Steel Wire Fabric

1. Wire Fabric shall conform to the requirements of ASTM A185.

2. Required net area, placement details, and other requirements are indicated on Drawings.

C. Welded Wire Reinforcement (WWR)

1. Welded Wire Reinforcement shall conform to ASTM A497 and shall be made of wire conforming to ASTM A496.

D. Supports for Reinforcement

1. Supports for reinforcement supported by formwork or deck shall consist of metal bolsters and chairs of adequate strength, size, and number. Provide CRSI Class C supports (plastic tipped) for formed concrete surfaces and Class A (bright basic) for metal deck.

2. Supports for reinforcement of slabs supported by ground shall consist of above supports with sand plates or horizontal runners. Support for reinforcement of footings/pile-caps shall consist of the above supports or precast concrete block, 4" square, having a compressive strength equal to that of the concrete being placed.

2.02 FABRICATION

A. Fabricate reinforcing bars in accordance with fabricating allowances given in ACI 315.

PART 3 - EXECUTION

3.01 PLACEMENT

A. General

1. Place reinforcement in accordance with CRSI "Placing Reinforcement Bars" and Section BC 1907.5 of the 2008 NYC Building Code.

2. Unless otherwise permitted, welding of crossing bars (tack welding) for assembly of reinforcement is prohibited.

3. Avoid cutting or puncturing vapor barrier during placement.

B. Supports

1. Support and fasten together all reinforcement to prevent displacement by construction loads or placing of concrete.

2. Provide supports specified in Article 2.01.

3. Provide Continuous High Chair Upper (CHCU) or Continuous Support (CS) for welded wire fabric in the metal deck and place every four feet (4') parallel to the supporting beams.

4. Lifting of bars, welded wire fabric, and welded wire reinforcement into position during placement of concrete is not permitted.

5. Where the concrete surface will be exposed to the weather in the finished structure, the portions of all accessories within 1/2" of the concrete surface shall be non-corrosive or protected against corrosion.

6. The following guidelines for WWR support spacing can be used for supported concrete slabs whether formed or placed on composite metal decks.

Wire Size	Wire Spacing	Support Spacing
W or D9 and larger	12" and greater	4-6 ft.
W or D5 to W or D8	12" and greater	3-4 ft.
W or D9 and larger	Less than 12"	3-4 ft.

W or D4 to W or D8	Less than 12"	2-3 ft.
Less than W or D4	Less than 12"	2-3 ft. or less.

C. Cover

Provide minimum protective cover given in Section BC 1907.7 of the 2008 NYC Building Code if not indicated on Drawings.

D. Splices

1. All splices not shown on the Project Drawings shall be shown on the shop drawings and approved by the Engineer of Record.

2. Provide welded splices where indicated on Drawings. All welding shall conform to AWS D1.4. At these locations, only reinforcement conforming to ASTM A706 shall be used.

3. Provide mechanical connectors where indicated on Drawings. Install in accordance with splice device manufacturer's recommendations.

E. Embedment Lengths

All embedment lengths not shown on the Project Drawings shall be shown on the shop drawings and approved by the Engineer of Record.

3.02 TOLERANCES

A. Place reinforcing bars in accordance with the tolerances given in Section BC 1907.5.2 of the 2008 NYC Building Code.

B. Move bars as necessary to avoid interference with other reinforcement, conduits, or imbedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangements are subject to approval by the Engineer of Record.

3.03 FIELD QUALITY CONTROL

A. Under the requirements of Section BC 1704.4 of the 2008 NYC Building Code, the Authority will assign a Special Inspector to inspect the size and placement of reinforcement. A record will be made of all inspection of reinforcement at the bending bench and in place.

B. Do not proceed with the completion of wall forms until all reinforcement has been approved and recorded by the Special Inspector.

C. Do not proceed with concreting until all reinforcing in place has been approved and recorded.

D. Promptly correct all reinforcement displaced during pouring of concrete.

E. Damaged reinforcement shall not be used.

3.04 CLEANING

A. Steel reinforcement shall be free of all rust, scale, oil, paint, grease, loose mill scale, and all other foreign matter that will prevent bonding of concrete and steel just prior to pouring of concrete.

END OF SECTION

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SECTION 00 3300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Furnish material, equipment, labor, services required to provide for cast-in-place concrete. Work includes but is not limited to structural, sitework, slabs, concrete fire protection, equipment pads, and installation of miscellaneous inserts, waterstops, vapor barriers, toppings, expansion joints and other items listed herein. Allow ample time and facility for the Work of other Divisions to be installed. Grouting shall be provided as required. Provide self-leveling underlayment to achieve finish tolerances required by finish floor manufacturers.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

Products to be installed include, but are not limited to, the following:

A. Joint fillers.....Section 07 9000

1.03 RELATED SECTIONS

A. Concrete Formwork.....Section 03 3100

B. Concrete Reinforcement.....Section 03 3200

1.04 SUSTAINABILITY REQUIREMENTS

A. The Contractor shall implement practices and procedures to meet the Project's sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in the Specifications, Sustainability Requirements, and as specified in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be proposed by the Contractor or their sub-contractors if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainability requirements included in the Section are as follows:

1. Meet established minimum recycled content for concrete.

2. Documentation of Recycled materials.

3. Documentation of Regional materials.

1.05 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Society of Testing and Materials (ASTM) standards, latest editions.

C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field.

C33 Standard Specifications for Concrete Aggregates.

C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

C78 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Three-point Loading)

C94 Standard Specification for Ready-Mixed Concrete.

C127 Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Course Aggregate.

C131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angles Machine.

C138 Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

C143 Standard Test Method for Slump of Hydraulic Cement Concrete.

C150 Standard Specification for Portland Cement.

C172 Standard Method of Sampling Freshly Mixed Concrete.

C173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

C192 Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.

C231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

C260 Standard Specifications for Air-Entraining Admixtures for Concrete.

C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

C330 Standard Specification for Lightweight Aggregates for Structural Concrete.

C387 Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.

C494 Standard Specification for Chemical Admixture for Concrete.

C496 Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens.

C567 Standard Test Method for Density of Structural Lightweight Concrete.

C685 Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.

C882 Standard Test Method for Bond Strength of Epoxy-Resin Systems used with Concrete by Slant Shear

C1315 Standard Specification for Liquid-Forming Compounds Having Special properties for Curing and Sealing Concrete

E96 Standard Test Methods for Water Vapor Transmission of Materials

E154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs

E329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction

E1155 Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers

E1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

E1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

B. American Concrete Institute (ACI) standards, latest editions.

ACI 117 Standard Tolerances for Concrete Construction and Materials

ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.

ACI 211.2 Standard Practice for Selecting Proportions for Structural Lightweight Concrete.

ACI 212.3R Chemical Admixtures for Concrete.

ACI 214 Evaluation of Results of Tests Used to Determine the Strength of Concrete.

ACI 301 Specifications for Structural Concrete for Buildings.

ACI 302.1R Guide for Concrete Floor and Slab Construction.

ACI 304R Guide for Measuring, Mixing, Transporting and Placing Concrete.

ACI 305R Hot Weather Concreting.

ACI 306R Cold Weather Concreting.

ACI 308 Standard Practice for Curing Concrete.

ACI 309R Guide for Consolidation of Concrete.

ACI 311.4R Guide for Concrete Inspection.

ACI 318-02 Building Code Requirements for Reinforced Concrete (With modifications per Section BC 1908 of the 2008 NYC Building Code).

C. American Association of State Highway and Transportation Officials

T318 Water Content of Freshly Mixed Concrete Using Microwave Oven Testing

1.06 DEFINITIONS

A. Exposed to view

Situated so that it can be seen from eye level from a public location. A public location is that which is accessible to persons not responsible for operation or maintenance of the building.

B. Lightweight concrete

Concrete intentionally made to have low density by use of lightweight aggregate conforming to ASTM C330 and required to have an air-dry unit weight less than 115 lb/ft^3.

C. Normal weight concrete

Concrete for which density is not a controlling attribute, made with aggregates of the types covered by ASTM C33 and usually having unit weights in the range of 135 to 160 lb/ft^3.

1.07 DESIGN REQUIREMENTS

A. Performance Characteristics:

1. Interior slabs on grade: Normal weight concrete with a minimum compressive strength of 3500 psi, non-air entrained, and a maximum water to cement ratio of 0.45.

2. Foundations, foundation walls: Normal weight concrete with a minimum compressive strength of 3500 psi, air entrained, and a maximum water to cement ratio of 0.45.

3. Exterior slabs on grade (pavements, stairs, areaways, etc), exposed to the elements: Normal weight concrete with a minimum compressive strength of 3500 psi, air entrained, and a maximum water to cement ratio of 0.40.

4. Exterior framed slabs exposed to the elements: Normal weight concrete with a minimum compressive strength of 4500 psi, air entrained, and a maximum water to cement ratio of 0.40

5. Interior slabs of superstructure: Lightweight concrete with a minimum compressive strength of 3500 psi, air-entrained.

6. Concrete parapet: Normal weight concrete with a minimum compressive strength of 3500 psi, air-entrained and a maximum water to cement ratio of 0.45.

B. Mix design for concrete with smooth form or architectural finish is to contain a high-range water reducer (super plasticizer). Self-consolidating concrete (SCC), with a slump/flow of 20" to 30" and containing the high-range water reducing admixture and a viscosity modifying admixture, is required where noted on Drawings or as indicated herein.

1.08 SUBMITTALS

A. Product Data

Submit manufacturers' information for the following:

1. Admixtures

2. Curing compounds

3. Hardener

4. Bonding Agent

5. Beam clips

6. Vapor barrier

7. Vapor retarder

8. Waterstop

B. Samples

Submit samples of the following items

1. Vapor Barrier

2. Vapor Retarder

3. Beam clips

4. Waterstop

C. Quality Control Submittals

1. Design Data: Submit design mixes for concrete, including list of admixtures to be used, to the Testing Agency, the Special Inspector, and the Engineer of Record. Design mix for lightweight concrete shall include both the dry and saturated (SSD) weights of the aggregate.

2. Test Reports: Strength Test Report for preliminary trial mix (with all admixtures).

3. Certificates

   a. Building Department form TR3, signed and sealed by the licensed concrete laboratory and concrete producer.

   b. Admixture manufacturer's certificate stating that the chloride content of the admixture will not exceed 0.05% by weight.

   c. Concrete laboratory license number and certification of meeting ASTM E329 standards.

d. Concrete producer's certificate stating the plant and trucks are NYSDOT approved.

e. Concrete producer's Computer Batch Ticket in accordance with Section BC 1905.8.2 of the 2008 NYC Building Code must be presented at site before concrete is placed for every load of concrete delivered.

4. Manufactures' Instructions

Waterstop manufacturer's instructions for proper installation of waterstop, including manner in which splices are to be made.

5. Contractor Qualifications

Provide proof of Installer and Producer qualifications specified under "Quality Assurance".

D. Survey

Submit signed and sealed copies of surveys conducted by a Licensed Land Surveyor showing elevations of all finished slab surfaces.

E. Mock-up

Provide mock-up as indicated under Quality Assurance.

1.09 QUALITY ASSURANCE

A. Qualifications

1. Concrete Installer: Company specializing in performing the Work of this Section shall have three years minimum experience on successful projects of similar size.

2. Concrete Producer: Company specializing in the production of concrete shall be certified by the National Ready Mixed Concrete Association (NRMCA) and shall have certification by either a New York City Agency or the NYS Department of Transportation. The plant shall use NYSDOT approved trucks and drivers shall be certified by the NRMCA.

3. Concrete Laboratory: Concrete laboratory providing design mixes shall be New York City licensed and shall meet the requirements of ASTM E329.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations of governmental Facilities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.

2. Industry Standards: The ACI Standards listed under references apply to Work of this Section. Where more severe requirements then those contained in the Standards are given in this Section or the Building Code, requirements of this Section or the Building Code shall govern. The Contractor shall keep a copy of ACI SP-15 - "Field Reference Manual" at the site.

3. Recommendations or suggestions in the codes and references listed in this Article and under "References" shall be deemed to be mandatory unless they are in violation of the Building Code.

C. Certifications

1. Cast-in-Place Concrete shall conform to the material acceptance, certification, and inspection requirements of Sections BC 1701 and BC 1905 of the 2008 NYC Building Code.

2. Cement and aggregate shall be acquired from the same source for all work. If a change in suppliers is required, a new mix submittal must be produced with the new material and submitted for approval.

D. Coordination

Coordinate this work with the work of other Divisions so that items to be installed are done so correctly and in proper sequence.

E. Mock-up

1. Provide mock-up of smooth concrete finish prior to installation of concrete. Coordinate with Section 033100.

2. Provide mock-up of "Architectural Concrete" finish for approval of finish prior to installation of concrete. Coordinate with Section 033100.

3. Provide mock-up of texture for exterior pavements, etc.

F. Pre-Concrete Conference

At least 35 days prior to the start of the concrete construction schedule, conduct a meeting to review the proposed mix designs and to discuss the required methods and procedures to achieve the required concrete quality. The contractor shall send a pre-concrete conference agenda to all attendees 20 days prior to the scheduled date of the conference.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Protect material from the elements and from other damage on the site.

B. Replace and pay for material and work damaged to the satisfaction of the Facility.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Adequately protect concrete placed during rain, sleet, or snow, or when the mean daily temperature falls below 40°F or rises above 90°F as provided in Article 3.05.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Lightweight Aggregate

1. Northeast Solite Corporation,

2. Norlite Corporation,

B. Slag Cement

1. St. Lawrence Cement Company,
2. LaFarge Cement Company

C. Admixtures

1. Euclid Chemical Company, Cleveland, OH 44110
2. Master Builders,
3. Sika Chemical Corporation,
4. Anti Hydro Company,
5. Chem Masters,
6. W.R. Grace & Co.,

D. Curing Compounds

1. Euclid Chemical Company, Cleveland, OH 44110
2. Master Builders,

E. Waterstops

1. BBZ USA-Greenstreak, St. Louis, MO 63122
2. Sika Corp, Lyndhurst NJ 07071
3. DeNeef Construction Chemicals, Waller, TX 77484

F. Vapor Barrier

1. Stego Industries, San Juan Capistrano, CA 92675
2. Reef Industries, Houston, TX 77075
3. W.R. Meadows, Hampshire, IL 60140-0338

4. Raven Industries Inc., Sioux Falls, SD 57104

G. Vapor Retarder

1. Stego Industries, San Juan Capistrano, CA 92675

2. Reef Industries, Houston, TX 77075

3. W.R. Meadows, Hampshire, IL 60140-0338

4. Raven Industries Inc., Sioux Falls, SD 57104

H. Bonding Agent

1. Sto Concrete Restoration Division, Atlanta GA

2. Sika Corp, Lyndhurst NJ

3. Euclid Chemical Company, Cleveland, OH 44110

I. Densifier/Sealer

1. Euclid Chemical Company, Cleveland, OH 44110

2. Curecrete Chemical Company, Inc., Springville, UT 84663

J. Fireproofing Accessories

Equipment Distribution Corporation, Ridgefield Park, N.J., 07660

2.02 MATERIALS

A. Cementitious Materials

1. Portland cement shall conform to ASTM C150 and shall be of the non air-entrained types:

a. Unless otherwise specified or approved by the Engineer of Record, cement shall be Type I or II.

b. Type II shall be used for exterior pavements.

c. Cement shall not contain ingredients that would result in more than two percent air being entrained in the concrete.

2. Slag cement shall conform to ASTM C989, Grade 100 or 120.

3. No other alternate cementitious materials may be utilized.

B. Admixtures

1. General

a. The use of admixtures shall comply with the requirements of Section BC 1903.6 of the 2008 NYC Building Code.

b. The final soluble chloride content in concrete, percent by weight of cement, due to the addition of admixtures and other ingredients shall not exceed 0.05 at 28 days. All admixtures shall be non-corrosive.

c. The amount of cement required by the Building Code may be reduced by 40% as per the code with the use of slag cement that has been reviewed and approved by the Facility.

2. Air-entraining admixture: Shall conform to ASTM C260.

3. Water-reducing admixture: Shall conform to ASTM C494, Type A or D, and contain no more chloride ions than found in drinking water.

4. High range, water-reducing admixture (super- plasticizer): Shall conform to ASTM C494, Type F or G, and contain no more chloride ions than found in drinking water.

5. Water reducing, accelerating admixture: Shall conform to ASTM, Type C or E, and contain no more chloride ions than found in drinking water.

6. Water reducing, retarding admixture: Shall conform to ASTM C494, Type D, and contain no more chloride ions than found in drinking water.

C. Water

Shall be clean potable water free of injurious foreign matter conforming to the requirements of Section BC 1903.4 of the Building Code.

D. Aggregates

Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specifications. Maximum size of coarse aggregate shall conform to paragraph 3.3.2 of ACI 318.

1. Aggregates for normal weight concrete shall conform to ASTM C33 and be of Size No.57, No.67 and/or No.8.

2. Aggregates for lightweight concrete shall conform to ASTM C330 and be of sizes 3/4" to No.4, 1/2" to No.4, and/or 3/8" to No.8.

E. Curing Compounds

1. Non-strippable

a. Clear Curing and Sealing Compound (A.I.M. Regulations - VOC Compliant, 350 g/l): Liquid type membrane-forming curing compound, clear styrene acrylate type, complying with ASTM C1315, Type I, Class A, 25% solids content minimum. Moisture loss shall be not more than 0.40 Kg/m^2 when applied at 300 sq. ft./gal. Manufacturer's certification is required.

b. Curing Compounds shall be "Super Diamond Clear VOX" by The Euclid Chemical Company or "Masterkure 100W" by Master Builders.

2. Strippable

a. Clear Curing Compound: Liquid type membrane-forming curing compound, complying with ASTM C309.

b. Curing Compounds shall be "Kurez DR Vox, Kurez W Vox by The Euclid Chemical Company or "Masterkure N-Seal VOC" by Master Builders.

F. Bonding Agent

1. Epoxy/acrylic resin that will not form a vapor barrier with the concrete with the following properties:

a. Bond strength of 1800 psi in 2 hours when tested in accordance with ASTM C882.

b. Flexural strength of 2000 psi in 28 days when tested in accordance with ASTM C78 or 1200 psi when tested in accordance with ASTM C348.

c. Tensile strength of 600 psi in 28 days when tested in accordance with ASTM C496.

2. Bonding agent shall be "CR246 Sto Bonding and Anti-corrosion Agent" by Sto Concrete Restoration Division, Armatec 110 by Sika Corp, or DuralPrep AC by Euclid Chemical Company.

G. Densifier/Sealer

1. The densifier/sealer compound shall be a siliconate-based sealer that penetrates concrete surfaces, increases abrasion resistance and provides a "low-sheen" surface that is easy to clean. The compound shall contain a minimum solids content of 20%, of which 50% is siliconate.

2. Densifiier/Sealer shall be "Euco Diamond Hard" by The Euclid Chemical Co. or "Ashford Formula" by Curecrete Chemical Co.

H. Vapor Barrier

1. Vapor Barrier shall meet the following properties:

a. Minimum 15-mil polyolefin geomembrane.

b. Water Vapor Barrier – ASTM E1745, Class A

c. Permeance Rating – ASTM E1745/E96 or E1249/E96: 0.018 perms or lower

d. Puncture Resistance by ASTM E1745: Class A, minimum 2300 grams

e. Tensile Strength by ASTM E1745: Class A, minimum 45 lbf/in

2. Accessories

a. Polyethylene tape with pressure sensitive adhesive

b. Pipe boot for piping and conduits, prefabricated or constructed from vapor barrier and tape

3. Shall be:

a. Stego Wrap 15 mil Vapor Barrier by Stego Industries

b. Griffolyn 15 mil Green by Reef Industries

c. Perminator 15 mil by W.R. Meadows

d. Vaporblock VB15 15 mil by Raven Industries

I. Vapor Retarder

1. Vapor retarder shall be polyolefin type material, 10-mil thick minimum, with a perm rating of less than 0.1 when tested in accordance with ASTM E1745/E96, and shall be resistant to decay when tested in accordance with ASTM E154 and meet ASTM E1745 Class A.

2. Shall be:

a. Griffolyn 10 mil Green by Reef Industries

b. Stego Wrap 10 mil Vapor Retarder by Stego Industries

c. Perminator 10 mil by W.R. Meadows

d. Vaporblock VB10 10 mil by Raven Industries

J. Waterstops

1. Concrete Joints

a. Water-swelling acrylate ester resin, hydrophilic rubber, or polyurethane type capable of expanding and contracting over multiple number of wet-dry cycles without reduction in its expansion ratio. If concrete surface is very uneven, provide paste type indicated in 2 below.

b. Shall be Duroseal Gasket Waterstop by BBZ USA-Greenstreak, Swellseal 8 by DeNeef, Adcor ES by W.R. Grace, or SikaSwell Profile by Sika Corp. Provide approximately 1" x 3/4" chemical resistant type. Attach to concrete and membranes with manufacturer's recommended adhesive or paste type waterproofing.

2. Steel, pipe and metal penetrations

a. Water-swelling acrylate ester or polyurethane paste type capable of expanding and contracting over multiple number of wet-dry cycles without reduction in it expansion ratio. Paste is a thixotropic grade material capable of being placed on uneven surfaces.

b. Shall be Duroseal Paste by BBZ USA, Swellseal Mastic by DeNeef, or SikaSwell S by Sika Corp. Provide chemical resistant type. Provide a minimum of 3/8" by 1/2" bead of material.

K. Reed Clips for Concrete Encased Structural Steel

1. Expansible reed clips shall consist of 12-gage longitudinal wires and 12-gage clips 9" on center, which place the wires 3/4" to 1" from the flanges.

2. Provide the following types, depending on member sizes:

a. 4" wide, expansible to 8"

b. 8" wide, expansible to 12"

c. 12" wide, expansible to 16"

d. 16" wide, expansible to 24"

3. Shall be Expansible Reed Clips by Equipment Distributing Corporation.

2.03 MIXES

A. General

Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.

B. Strength

Strength requirements given in Part 1 of this Specification are based on 28-day compressive strength, unless high early strength is specified, in which case required strengths are based on 7-day compressive strength. Mixes with slag will have a slower initial set time, which must be taken into account when finishing.

C. Method of Proportioning

1. Proportion, batch, and mix concrete in accordance with Section BC 1905. The licensed concrete laboratory is responsible running the mix and signing the TR3 for filing with the Building Department. Proportion concrete mix in accordance with Section BC 1905.3.

2. Mix designs are specific to material used, concrete producer, and method of placement. Each mix design must be reviewed by the Engineer of Record and accepted prior to placement along with accompanying TR3 signed by the lab and concrete producer.

3. The recycled content in the concrete mix shall be 40% of the cementitious content or a minimum of 6% of the dry weight.

D. Normal Weight Concrete

1. Unless otherwise specified, proportion and produce normal weight concrete to have a maximum slump of 4" or less. A tolerance of up to 1" above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. The slump shall be determined by ASTM C143. Concrete containing High Range Water Reducer shall have a slump not exceeding 9", unless other wise approved by the Engineer of Record. The concrete shall arrive at the job site at a slump of 2" to 3", be verified, and the HRWR admixture added to increase the slump to the approved level.

2. Where Normal weight concrete is indicated to be air-entrained, provide the following air content for the grading size of coarse aggregate as follows:

   a. No.8.....$7^1/_2$%
   b. No.57 or 67.....6%

   Tolerance on air content as delivered shall be +1.5%.

E. Structural Lightweight Concrete

Lightweight concrete, including concrete used as roof fill and other locations indicated to receive fill, shall conform to the following requirements:

1. Coarse aggregate shall be 100% lightweight aggregate, expanded clay, shale, or slate produced by the rotary kiln method, conforming to the requirements of ASTM C330. Provide 3/8" maximum size coarse aggregate for beam and/or column encasement.

2. The concrete shall not exceed an air dry unit weight of 115 lb/ft^3 as measured in accordance with ASTM C567. The wet unit weight of the fresh concrete shall be within +3 lbs of the wet unit weight which is to be determined and established from the preliminary tests or prequalified mixes.

3. Unless otherwise specified, proportion and produce lightweight concrete to have a slump of 3" or less. A tolerance of up to 1" above the indicated maximum shall be allowed for individual batches

provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. The slump shall be determined by ASTM C143. Concrete containing High Range Water Reducer shall have a slump not exceeding 9", unless other wise approved by the Engineer of Record. The concrete shall arrive at the job site at a slump of 3" to 4", be verified, and the HRWR admixture added to increase the slump to the approved level.

4. Provide the following air content for the grading size of coarse aggregate as follows:

   a. 3/8"...$4^1/_2$ - $7^1/_2$%
   b. 3/4"...4 - 6%

   Tolerance on air content as delivered shall be +1.5%.

5. Mix design shall include the dry and saturated (SSD) weights of the lightweight aggregate. The saturated weight shall take into account the internal and surface moisture content that will be in the aggregate at the time of mixing.

6. Mix design shall be based on the recommendations of the lightweight aggregate producer.

2.04 SOURCE QUALITY CONTROL

A. Tests

1. The Facility's Testing Laboratory will review and/or check test proposed materials for compliance with the Specifications prior to construction.

2. The Testing Laboratory will perform field tests as work progresses as listed in "Field Quality Control".

B. Inspection

1. Testing Laboratory

a. The Facility will engage a Licensed Concrete Testing Laboratory to inspect batching of the concrete, at the Facilities discretion, and perform all field tests. The Laboratory will perform the following services:

1) Review and/or check-test the Contractor's proposed materials for compliance with the Specifications.

2) Review and/or check-test the Contractor's proposed mix design.

3) Secure production samples of materials at plants or stock-piles during the course of the Work and test for compliance with the Specifications.

4) Perform tests during construction as required by Section BC 1905.6.2 of the 2008 NYC Building Code. The Laboratory will obtain samples at the mixer and when directed by the Engineer at the point of placement by the following methods:

a) Secure composite samples in accordance with ASTM C172. Each sample shall be obtained from a different batch of concrete on a random basis, avoiding any selection of the test batch other than by a number selected at random before commencement of concrete placement.

b) Mold and cure specimens from each sample in accordance with ASTM C31 and perform strength tests.

b. The Facility may assign a qualified concrete technician to be stationed at the batch plant depending on the size of the project or evidence of poor concrete breaks. At least one qualified concrete technician will be stationed at the site to obtain the test specimens.

c. The Laboratory will be responsible to and under the supervision of the Special Inspector.

2. Special Inspector

a. The Facility will assign, under the requirements of Section BC 1704.4 a Special Inspector who will supervise the testing of the materials and the inspection of concrete construction. The Special Inspector is responsible any required filing with the Building Department, as well as maintaining a log book of the concrete work.

b. The Special Inspector will check that all required tests are made and the results submitted and shall have the right to order the Contractor to make such changes of the mix of concrete as required to produce concrete of the necessary strength. The Special Inspector will also report to the Building Department Superintendent any deviation from the requirements of the Code, as indicated by records of inspection and reports of tests.

3. Notification

a. Notify the Facility in writing at least forty-eight hours in advance of each concrete placement. The Facility will notify the Testing Laboratory immediately to order out the necessary concrete technicians to cover the work.

b. Once the concrete technicians are ordered out and a cancellation follows, the Contractor will be charged Four Hundred Fifty Dollars for each technician so ordered to appear, unless a cancellation order is issued to the Laboratory by 3 PM the day before the concrete placement.

c. During the placement of the concrete, notify the Facility immediately of any delay at the concrete plant or at the job site. Where the Facility decides to provide a technician at the plant, do not mix concrete or add admixtures unless the Technician is present. Do not add admixtures to be added at the site unless the Technician is present.

4. Contractors Responsibility for Quality Control

a. The Contractor will receive a copy of all reports prepared by the Laboratory and/or Special Inspector. Copies of the daily concrete reports prepared by the Special Inspector will be available for reference.

b. The Contractor will therefore be afforded an opportunity to review all reports and mix data and submit to the Special Inspector any recommendations in changing the mixes provided they conform to the Code and Specifications. Any testing required because of changes in materials or proportions of the mix requested by the Contractor, as well as any extra testing of concrete or materials occasioned by the failure to meet Specification requirements shall be at the Contractor's expense. The Contractor, at any time, can arrange to have independent tests made at own expense by an approved laboratory and submit the reports and recommendations to the Special Inspector and Engineer of Record.

c. The tests and inspections, as provided in the Code, do not in any way relieve the Contractor of responsibility to construct the Work in accordance with the Drawings and Specifications and to use safe, standard methods of construction at all times, safeguarding the public, workmen, and structure. The Contractor shall be solely responsible for the physical control of the materials and concrete mixes, and shall see that such mix designs, tests, and controls are in accordance with the Code and Specifi-cations.

d. It shall be the Contractor's complete responsibility to adjust, alter, and/or correct any controls necessary in materials and/or concrete operation based upon tests and inspections made by the Facility or the Contractor's independent tests. If, during the course of the concrete operations, a lower water content or more cement is needed per cubic yard above that used in the approved design mix, provide same at no additional cost to the Facility.

e. If the Contractor requests any deviation from the Specifications and Drawings, or makes or causes to be made

any change of construction from Drawings and Specifications, and such request requires the time and investigation of the Engineer of Record, pay all costs incurred by the Facility relating to such time and investigation.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to placement of concrete, verify that the concrete cover over the reinforcement is that specified on Drawings.

B. Prior to placement of concrete, verify that edge of deck and slab are within the required tolerance form theoretical.

C. Verify that anchor bolts, reinforcement, and all other embedded items are provided and held securely, positioned accurately, and will not be a detriment to concrete placement.

D. Examine all adjoining work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Facility any condition that prevents the performance of this Work.

3.02 PROTECTION

A. Protect concrete members on grade and the subgrade from freezing before and after installation. Provide blankets and other items necessary.

B. Protect adjacent finish materials and previously poured concrete against spatter during concrete placement.

C. Provide and maintain barricades and safeguards around openings, etc. to protect workmen from injury and to comply with all Building Code, OSHA, and other Facilities having jurisdiction regulations.

3.03 PREPARATION

A. Remove ice, excess water, trash, and rubbish from forms.

B. Remove hardened concrete from inner surfaces of conveying equipment and all formwork, reinforcement, and dowels.

C. Prepare previously placed concrete to be in contact with new concrete in the manner described under "Construction Joints".

D. Prepare existing concrete to be in contact with new concrete by roughening and cleaning the surface and applying a bonding agent. Surface must be free of laitance. Concrete must be placed after agent cures and within 20 hours of applying bonding agent. If time elapses, apply a new application in accordance with the directions of the manufacturer.

E. In case a conflict arises between concrete as poured and other Work that requires cutting into concrete beams, columns, walls, or slabs, submit requests to the Engineer of Record, who will issue instructions accordingly. Cutting of concrete is otherwise prohibited.

F. Do not place concrete on frozen ground.

3.04 JOINTS AND EMBEDDED ITEMS

A. Construction Joints

1. Make joints not shown on Drawings at locations that will least impair the strength of the structure. Such location is subject to the approval of the Engineer of Record.

2. Continue reinforcement across joints. Provide longitudinal keys at least $1^1/_2$" deep in walls and provide other keys as required. Drawings indicate keys or roughened surface at interface of walls and footings.

3. Thoroughly clean concrete surface of oil, grease, and other contaminants and remove all laitance prior to placement of adjoining concrete. Roughen surface of the concrete in an approved manner that will expose the aggregate uniformly to a 1/4" amplitude and will not leave laitance, loosened particles of aggregate, or damaged concrete at the surface. Dampen surface immediately prior to placement.

4. Properly install all embedded items where required.

5. Construction joints shall be made in accordance with Section BC 1906.8 of the Building Code.

B. Expansion Joints

1. Do not extend reinforcement or other embedded metal items bonded to concrete continuously through expansion joint. Provide smooth dowels greased on one end at the joints with end cap or insert into pvc sleeve of length greater than the dowel length by .75" minimum.

2. Provide joint filler of type specified in Section 07900 at the expansion joint of the sizes indicated on the Drawings or specified herein.

C. Waterstops

1. Provide waterstops at all joints and all penetrations of foundation wall and slabs (all interior slabs on grade) of type indicated in Part 2 of this Section. All surfaces onto which material is placed shall be clean and smooth. Do not let materials come in contact with water by covering waterstop, forms, or other means necessary. Provide minimum clearance from edge of concrete as per manufacturer's recommendations, typically 3".

2. Provide maximum practical lengths for each piece so that the number of end joints will be held to a minimum.

3. Make joints in such a manner that they develop effective watertightness fully equal to that of the continuous material. All joints to be lapped as per manufacturer's instructions.

4. Use manufacturer's adhesive or swelling paste type for applying gasket type to previously poured concrete and/or waterproofing membrane. Surface onto which waterstop is placed shall be smooth.

5. Provide swelling paste type at all pipe penetrations, conduits, drains, steel members, and other areas where items penetrate the concrete foundation system and at uneven concrete surfaces.

6. If water penetrates joints in which waterstops are placed at contract locations or at cracks and cold joints, the Contractor shall remediate the crack with injection material recommended by the Facility that will provide a 5-year labor and material guarantee against water seepage at no cost to the Facility.

D. Other embedded items

1. Place all fence sleeves and shoes, pipe sleeves, inserts, anchors, anchor bolts, and other embedded items required for the Work of other Divisions or for their support prior to concreting. Install Link-seal Watertight Sleeves by Thunderline Corp. through foundation walls and slabs and other locations where watertight construction is required and where indicated on Drawings as per manufacturer's instructions. Coordinate with other trades, all Drawings, and manufacturer for sizes, location, and quantity.

2. Provide ample notice and opportunity for items of other Division to be introduced and/or furnished for installation before concrete is placed. Coordinate the Work of the other Divisions so all items are placed in their proper location.

3. Set metal pipe sleeves, sockets, shoes, etc. into concrete to receive fence posts or any other items, all as indicated on details.

E. Placement of Embedded Items

Position expansion joint material, waterstops, and other embedded items accurately and support against displacement. Fill voids in sleeves, anchor slots, and inserts temporarily with readily removable material to prevent the entry of concrete into the voids.

3.05 MIXING AND PLACING CONCRETE

A. General

1. Notify Facility at least 48 hours in advance of each concrete placement. Do not place concrete without approval of the Special Inspector.

2. Do not allow rainwater to increase mixing water nor damage surface finish.

3. When placing concrete in cold weather (air temperature below 40°F), concrete shall contain either an accelerating admixture or use Type III cement.

B. Mixing

1. Batch, mix, and transport ready-mixed concrete in accordance with the appropriate sections of ASTM C94 and Section BC 1905.8.2 of the 2008 NYC Building Code. Truck mixers and agitators shall meet the requirements of the Truck Mixers Manufacturer's Bureau or shall comply with Section 8.1.2 of ASTM C94 and shall be NYSDOT approved. All trucks shall have working revolution counters and site gages. Batch all other concretes in accordance with subsection 4.3.1 of ACI 301 only if permitted by the Engineer of Record and Special Inspector.

2. Batch ready-mixed concrete only in plants that are are NRMCA certified and NYSDOT approved. Only plants that are NYSDOT approved with current certification meeting the requirements for certification of the NRMCA for automatic batching and automatic recording will be permitted. Concrete shall be batched by the use of automation.

3. Unless otherwise approved by the Engineer of Record, concrete shall be deposited within $1^1/_2$ hours or 300 revolutions of the mixing drum, whichever comes first, after introduction of water to the cement or cement to the aggregate. When the ambient temperature rises above 90°F, the time shall be decreased to 1 hour.

4. Batch lightweight concrete using the saturated weight of aggregate, which shall take into account the internal and surface moisture content.

5. Tempering and control of mixing water

   a. Mix concrete only in quantities for immediate use. Concrete that has started to set shall not be retempered, but shall be discarded. Water shall not be added at the site.

   b. For concrete containing HRWR (Superplasticizer), if loss of slump occurs, HRWR may be redosed at the site as long as a "flash set" has not occurred. Redosage procedures must be discussed and approved by the Engineer and the admixture manufacturer at the Pre-Concrete Conference.

6. Weather Conditions

a. Cold weather (Air Temperatures below 40°F)

1) Concrete shall have either an accelerating admixture or use Type III cement.

2) The temperature of concrete delivered at the site shall conform to the temperature limitations given in Section 5 of ACI 301.

3) If water or aggregate is heated above 100°F, combine the water with the aggregate in the mixer before cement is added. Cement shall not be mixed with water or with mixtures of water and aggregate having a temperature greater than 100°F.

4) Detailed requirements are given in ACI 306R.

b. Hot Weather (Air Temperatures above 90°F)

1) Cool the ingredients before mixing, or substitute flake ice or well-crushed ice of a size that will melt completely during mixing for all or part of the mixing water if, due to high temperature, low slump, flash set, or cold joints are encountered.

2) Detailed requirements are given in ACI 305.

6. Admixtures - General

a. Add all admixtures prior to mixing unless otherwise specified or directed.

b. Air-entraining admixtures and other chemical admixtures shall be charged into the mixer as solutions and shall be measured by means of an approved mechanical dispensing device. The liquid shall be considered a part of the mixing water. Admixtures that cannot be added in solution may be weighed or may be measured by volume if so recommended by the manufacturer. The accuracy of measurement of any admixture shall be within +3 percent.

c. If two or more admixtures are used in the concrete, add them separately to avoid possible interaction that might interfere with the efficiency of either admixture or adversely affect the concrete. Do not charge admixtures into the mixer in such a manner that they will come in direct contact with the cement.

d. Use of accelerating admixtures or Type III cement shall not relax cold weather placement requirements.

e. Use of retarding admixtures in hot weather must be approved by the Special Inspector. Use of such admixtures will not relax hot weather placement requirements.

C. Placing

1. General: Place concrete in accordance with ACI 304R, ACI 318, and Sections BC 1905.9 and BC 1905.10 of the 2008 NYC Building Code.

2. Conveying

a. Handle concrete from the mixer to place of final deposit as rapidly as practicable by methods that will prevent separation or loss of ingredients and in a manner that will assure that the required quality of concrete is obtained.

b. Conveying equipment shall be approved and shall be of a size and design such that detectable setting of concrete shall not occur before adjacent concrete is placed. Conveying equipment shall be cleaned at the end of each operation or workday. Conveying equipment and operations shall conform to the following additional requirements:

1) Truck mixers, agitators, and non-agitating units and their manner of operation shall conform to the applicable requirements of ASTM C94.

2) Belt conveyors shall be horizontal or at a slope which will not cause excessive segregation or loss of ingredients. Concrete shall be protected against undue drying or rise in temperature. An approved arrangement shall be used at the discharge end to

prevent apparent segregation. Mortar shall not be allowed to adhere to the return length of the belt. Long runs shall be discharged into a hopper or through a baffle.

3) Chutes shall be metal or metal-lined and shall have a slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20' long and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.

4) Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity. Pneumatic placement shall be controlled so that segregation is not apparent in the discharged concrete. The loss of slump in pumping or pneumatic conveying equipment shall not exceed 2". Pumping is permitted only if a pump mix is approved. Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy.

3. Depositing: Detailed recommendations are given in ACI 304R.

a. General

1) Deposit concrete continuously, or in layers of such thickness that no concrete will be deposited on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, locate construction joints at points as provided for in the Drawings, shop drawings, or as approved.

2) Carry out placement at such a rate that the concrete that is being integrated with fresh concrete is still plastic. Do not deposit concrete that has partially hardened or has been contaminated by foreign material.

3) Place concrete in a manner that uniformly distributes the material over the metal deck in order to avoid overloading the deck joints.

4) Remove temporary spreaders in forms when the concrete placing has reached an elevation rendering their service unnecessary. They may remain embedded in the concrete only if made of metal or concrete and if prior approval has been obtained.

5) Placing of concrete in supported elements shall not be started until the concrete previously placed in columns and walls is no longer plastic.

b. Segregation: Deposit concrete as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to any procedure that will cause segregation. The maximum drop height shall be five feet. Provide drop tubes for placement in forms and other locations where drop height exceeds the indicated maximum.

c. Consolidation

1) Consolidation of concrete and the use and type of concrete shall be in accordance with ACI 309R.

2) Where a surface mortar is to be the basis of the finish, the coarse aggregate shall be worked back from the forms with a suitable tool so as to bring a full surface of mortar against the form, without the formation of excessive surface voids.

3) Consolidate all concrete by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items and into corners of forms, eliminating all air or stone pocket or weakness. Internal vibrators shall be the largest size and most powerful that can be used in the Work, as described in Table 5.1.5 of ACI 309R, with a minimum frequency of 7000 revolutions per minute and shall be operated by competent workmen. Overvibrating and use of vibrators to transport concrete within forms is

not permitted. Insert and withdraw vibrators at many points, from 18" to 30" apart. At each insertion, the duration shall be sufficient to consol-idate the concrete but not sufficient to cause segregation, generally from 5 to 15 sec duration, and shall reach the bottom of the pour. Keep a spare vibrator on the job site during all concrete placing operations.

4. Cold Weather Concrete Placement and Protection: Detailed requirements are given in ACI 306.

When the mean daily temperature of the atmosphere is less than 40°F during concreting, or within 72 hours there after (or the air temperature is not greater than 50°F for more than one-half of any 24-hr period for a period of 3 consecutive days), follow the procedures outlined in ACI 306R to protect the concrete. Provide a cold weather concreting plan as well as list of equipment and material (e.g. thermometers, blankets) to be used to the Special Inspector. Temperature of the plastic concrete shall be no lower than 55°F. Heat all forms, reinforcing steel, and surfaces to receive concrete above the freezing point and keep them completely free of frost, snow, and ice. Protection shall consist of insulating boards, blankets, or heated enclosures. Underside of slabs shall be heated during placement and protection period. Initial protection period shall be as indicated in tables 5.1 and 5.3 of ACI 306R. Maximum temperature drop of concrete surface after protection is removed shall follow table 5.5 of ACI 306R.

5. Hot Weather Placement and Protection: When the mean daily temperature of the atmosphere is over 90°F during concreting, follow the procedures outlined in ACI 305R to protect the concrete.

a. All concrete, at the time it is actually deposited in the forms, shall have a temperature not lower than 50°F but never above 90°F.

b. Cover reinforcement with water-soaked burlap to cool steel so its temperature will not exceed the ambient air temperature immediately before concrete placement.

c. Dry surfaces that are to receive concrete should be wet down before commencing placement of concrete and the

temperature of such surfaces should not exceed the temperature of the concrete being placed.

6. All concrete washout water, if washed out on site, shall be collected in water-tight containers placed on the site for holding prior to legal disposal off site. Wash water is not permitted to be disposed of in storm, sanitary, or combined sewers.

3.06 FINISHING OF FORMED SURFACES AND REPAIR OF SURFACE DEFECTS

A. General

1. Remove forms as soon as practicable. Refer to Section 03100 and Section BC 1906.5 of the 2008 NYC Building Code.

2. Repair surface defects, including tie holes and cracks, immediately after form removal. Patches shall be of quality to match the specified finish.

3. Remove oil, grease, compounds, and other contaminants from surfaces and areas to be repaired, those surfaces in contact with sprayed fireproofing, and those receiving coatings (ie. plaster, waterproofing, paint, and membranes of any kind).

4. Provide finishes specified below immediately after form removal.

5. Provide curing and protection.

B. Repair of Surface Defects

1. Remove all honeycombed and other defective concrete down to sound concrete. If chipping is necessary, the edges shall be perpendicular to the surface or slightly undercut. Undercut all cracks a minimum of 1" x 1". No featheredges will be permitted. Dampen the area to be patched and an area at least 6" wide surrounding it to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately 1 part cement to 1 part fine sand passing a No. 30 mesh sieve, mixed to the consistency of thick cream, and then well brushed into the surface.

2. The patching mortar shall be made of the same materials and of approximately the same proportions as used for the concrete, except

that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to $2^1/_2$ parts sand by damp loose volume. Substitute white Portland cement for a part of the gray Portland cement on exposed concrete in order to produce a color matching the color of the surrounding concrete, as determined by a trial patch. If the material color cannot be matched properly, the Contractor shall use a specialty repair mortar of the Engineer of Record's choice at the Engineer's discretion. The quantity of mixing water shall be no more than necessary for handling and placing. Mix the patching mortar in advance and allowed to stand with frequent manipulation with a trowel, without addition of water, until it has reached the stiffest consistency that will permit placing.

3. After surface water has evaporated from the area to be patched, brush the bond coat well into the surface. When the bond coat begins to lose the water sheen, apply the premixed patching mortar. The mortar shall be thoroughly consolidated into place and struck off so as to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, leave it undisturbed for at least 1 hr before final finishing. Keep the patched area damp for 7 days. Do not use metal tools for finishing a patch in a formed wall that will be exposed.

C. Tie Holes and Other Repairs

1. Remove ties, nails, and other form accessories below the concrete surface when the surface is exposed to view, the elements, or for surfaces to receive waterproofing or dampproofing. For surfaces not exposed to view or the above-mentioned conditions, remove metal to the surface. Refer to Section 03100.

2. Undercut surfaces of holes. After cleaning and thoroughly dampening the holes, fill them solid with the patching mortar. The mortar shall match the color of the existing concrete for concrete exposed to view as specified in paragraph B.2 above.

D. Formed Finishes

1. Rough Form Finish

a. Provide for concrete not exposed to view unless otherwise indicated under "Finishing" below.

b. Formwork material given in Section 03100.

c. Repair surface as indicated in B. and C. above.

d. Chip or rub off fins exceeding 1/4" in height.

2. Smooth Form Finish

a. Provide for concrete exposed to view, concrete receiving sheet membrane waterproofing, or as indicated under "Finishing" below. Areas exposed to view shall have a CS 3 or better finish as developed by the Cresset Chemical Company.

b. Formwork material is given in Section 03100.

c. Repair surfaces as indicated in B. and C. above.

d. Chip or rub off fins completely and grind smooth.

e. Provide smooth rubbed finish unless otherwise indicated below.

3. Special Architectural Finish

a. Provide where indicated on Drawings. Areas of concrete specified as "Architectural Concrete" or "Architectural Finish" shall have a CS 1 finish as developed by the Cresset Chemical Company and shall have been placed without the need for patching or removal of fins, etc.

b. Self-consolidating concrete containing an approved high-range water reducer and viscosity-modifying admixture shall be used at a slump/flow of 20"-30". The proper mix design, slump/flow, pumpability, and setting time must be verified with a successful test placement on site.

c. Formwork material is given in Section 03100.

E. Finishing

1. Smooth Rubbed Finish

a. Provide for smooth form finish except for those items listed in 2 below.

b. Produce on newly hardened concrete no later than the day following form removal.

c. Wet the surfaces and rub with a No. 16 carborundum brick or other equal abrasive to obtain a smooth, even surface of uniform appearance without applying any cement or other coating.

d. Obtain the final finish by thoroughly rubbing with a No. 30 carborundum brick. The surface shall be wet for a period of 3 days. The Facility shall be the sole judge of whether the finish is proper.

2. Ceiling Surfaces, Beams and Columns

a. Non-painted Concrete

1) Locations: See Architectural Drawings or Schedule of Room Finishes on Drawings.

2) Work Required: Provide smooth form finish without rubbing.

b. Painted Concrete (CRP)

1) Locations: See Architectural Drawings or Schedule of Room Finishes on Drawings.

2) Work Required: In addition to smooth form finish, machine rub with carborundum or other approved abrasive to produce smooth finished surface. Cement wash not permitted.

3) Option: The Contractor has the option of substituting a white coat of plaster in lieu of providing rubbing for concrete ceilings.

c. Acoustical Tile Ceiling: When the Drawings indicate that the tile is to be applied directly to the underside of concrete slabs, provide the non-painted concrete finish. However, exposed beam haunches and exposed columns shall be "CRP".

d. Hung Ceiling: Where hung ceilings are indicated on Drawings or specified, provide a rough form finish.

e. Columns: Exposed concrete surfaces of columns shall be non-painted concrete finish or "CRP" as determined by the required ceiling finish of the room in which columns are located.

F. Acceptance of Concrete Finish

If the finish produced is not acceptable to the Facility, the Contractor shall be responsible for all costs incurred to produce an acceptable finish by whatever means determined by the Facility.

3.07 SLABS

A. Placement

1. Mixing and placing shall be carefully coordinated with finishing. Do not place concrete on the subgrade or forms more rapidly than it can be spread, straightedged, and darbied or bull floated. Provide leveling, floating, troweling, etc. at the correct time interval after poring to prevent dusting and a non-durable surface as specified in ACI 302.1R. These operations must be performed before bleeding water has an opportunity to collect on the surface.

2. To obtain good surfaces and avoid cold joints, the size of finishing crews shall be planned with due regard for the effects of concrete temperature and atmospheric conditions on the rate of hardening of the concrete.

3. Provide extra concrete as required to make up for any deflections in the metal deck and steel beams in order to provide a level surface

using a laser. The beam, girder, and deck deflections may total up to $1^1/_2$".

B. Leveling and Finishing

1. General

a. Carefully provide slab depressions as required for the finishes indicated on the Drawings.

b. Unless otherwise indicated on the Drawings or specified herein, make all slabs even and uniform in appearance and, where no slope is required, level. Utilize screed rails and other methods to achieve the required results.

1) Floor Levelness:

a) Slabs on grade and formed slabs shall be placed shall be placed level to an F_L=35.

b) Slabs placed on metal deck shall be placed level to an F_L=20

c) Slabs placed on stair pans and treads shall be placed level to an F_L=35

2) Floor Flatness

a) Slabs on grade and formed slabs shall be finished flat to an F_F=50 based on 3/16".

b) Slabs placed on metal deck shall be finished flat to an F_F=25 based on 3/16".

c) Slabs of stair pans and treads shall be finished flat to an F_F=50 based on 1/8".

3) Floor flatness and levelness shall be measured in accordance with ASTM E1155 within 72 hours of placement.

c. Where floor drains or floor slopes are indicated, slope slabs uniformly to provide even fall for drainage.

d. Follow detailed recommendations for finishing given in ACI 301, Section 5, and ACI 302.1R.

e. Protect finishes from contamination from time of placing until time of acceptance, placement of topping, etc.

f. Remove defects of sufficient magnitude to show through floor coverings or that do not meet tolerances by grinding.

2. Finishes

a. Surfaces which receive bonded applied cementitious applications such as full-set vitreous ceramic tile, self-leveling underlayment, concrete fills and toppings, crystalline waterproofing: Strike off and level to the proper elevation. After the concrete has stiffened sufficiently to permit the operation, float the surface to a uniform sandy texture. The surface shall then be broomed to a texture as approved by the Architect.

b. Surfaces to receive floor coverings, such as resilient flooring, thin-set terrazzo and vitreous ceramic tile, carpeting, wood floors, or surfaces that are exposed or painted finishes such as at auditorium floors and stairs, unless specified otherwise: Steel trowel surface to a smooth dense finish, free of trowel marks, grooves, depressions and ripples. Exposed or painted slabs are to have a "hard trowel" finish (a second steel hand troweling). Apply densifier/sealer to slabs exposed or painted, except for those specified below to have no finish. Apply two coats in accordance with the manufacturer's instructions at the proper time.

c. Surfaces intended to receive roofing, water-proofing membranes: Level and wood float surface. Leave surface free from depressions, bulges, rough spots, and other defects.

d. Surfaces with no finishes: Areaways, pipe and duct, and crawl spaces; Level and wood float surface level or toward drains if required.

e. Pavements: Finish surface to a true smooth plane and texture with a toothed roller or float with a wood float. Score concrete pavement in squares of approximately 5'-0" and/or as shown on Drawings. Each rectangular slab shall have all edges neatly rounded with proper tools and be bounded on all sides by a troweled border about 1" in width.

f. Ramps, Driveways, Exterior Concrete Steps: Level and float surface. Follow with a broom finish perpendicular to direction of traffic.

C. Slabs on Grade

1. General

a. Aggregate base and crushed stone base material and preparation is part of Work of Section 02200.

b. Where pavements to remain are damaged or destroyed as a result of the Work, patch, repair, or replace as required. Color to match existing.

c. Subgrade and/or aggregate base/crushed stone base shall be free of frost before concrete placing begins.

d. Control Joints:

1) Primary Method: Soff-Cut System method, by Soff-Cut International, Corona, CA (800)776-3328. Finisher must have documented successful experience in the use of this method prior to this project. Install cuts within 2 hours after final finish at each saw cut location. Use 1/8 inch thick blade, cutting $1^1/_4$ inch into slab.

2) Optional Method (Where Soff-Cut System Method Equipment is Not Available): Properly time cutting with the set of the concrete. Saw-cut control joints within 12 hours after finishing. Start cutting as soon as the concrete has hardened sufficiently to prevent aggregates being dislodged by the saw. Complete cutting before shrinkage stresses become sufficient to

produce cracking. Use 1/4" thick blade, cutting 1/4 slab depth.

2. Slabs where vapor barrier required

   a. Provide vapor barrier for all interior slabs on grade except for pipe and duct and crawl spaces.

   b. Install vapor barrier in accordance with manufacturer's instructions and ASTM E1643. Just prior to concrete placement, check vapor barrier for punctures and repair as specified below.

      1) Unroll vapor barrier with the longest dimension parallel to the direction of pour.

      2) Lap barrier over footings and seal to foundation walls.

      3) Overlap joints 6" and seal with pressure sensitive tape.

      4) Seal all penetrations with pipe boots.

      5) No penetration of the barrier is allowed except for reinforcing steel and permanent utilities.

      6) Repair damaged areas by cutting patches of vapor barrier, overlapping damaged areas 6", and taping all four sides with pressure sensitive tape.

   c. Pour slab to required thickness after installation of reinforcement.

3. Slabs where vapor retarder required

   a. Provide vapor retarder for all slabs on grade of pipe and duct and crawl spaces.

   b. Place vapor retarder over compacted base, providing 6" minimum lap at ends. Install vapor retarder in accordance with manufacturer's instructions. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged areas 6".

c. Pour slab to required thickness after installation of reinforcement.

4. Slabs where no vapor barrier required

a. Dampen subgrade or aggregate/crushed stone base immediately prior to placement of concrete.

b. Pour slab to required thickness after installation of reinforcement.

5. Pavements, Areaways

a. Provide 4" thick concrete slab unless otherwise indicated.

b. Provide 6x6-W2.9xW2.9 WWF placed $1^1/_2$" from top surface.

c. When a flagpole is indicated on the ground, form a paved circle around the flagpole as indicated. The pavement in this area shall have a slope of 2" away from the pole.

6. Driveways

a. Provide 7" thick concrete slab.

b. Provide 4x4-W4xW4 WWF placed 2" from top surface.

7. Slab for Handball Court:

a. Provide 5" thick concrete slab.

b. Provide 4x4-W4xW4 WWF placed $1^1/_2$" from top surface.

c. Expansion joints are to be placed outside the playing surfaces.

8. Expansion joints

a. Provide expansion joints for all exterior concrete pavements, driveways, etc. specified under this Section or as shown on Drawings. Expansion joints shall occur at intervals not to exceed 20' in each direction or as indicated on Drawings.

b. Provide continuous expansion joints at the following locations: Driveways and other concrete pavements abutting area walls, buildings, retaining or any other walls, check pieces, steps, curbs. Also provide at the perimeter of interior slabs on grade (except for framed slabs) and as indicated on contract drawings.

c. Expansion joint shall be 1/2" wide, full depth, and flush except where sealer is to be provided at exterior pavements, driveways, and where indicated on Drawings. In this case joint shall be full depth minus 1/4" to allow for the poured joint sealer.

D. Structural Lightweight Concrete Fill

1. Structural lightweight concrete fill is required at the following location:

a. As a gradient fill on the roof slab to obtain the required slope.

b. As a gradient fill to receive setting beds where structural slab is more than 2" below finished floor level.

c. Other areas as indicated on Drawings.

2. Prepare concrete surface to receive fill by cleaning laitance, grease, oil, dust, etc. by mechanical or other acceptable means.

3. Immediately prior to placement of fill, dampen surface (without leaving standing water) and scrub in bonding grout composed of a mix of approximately 1 part cement to 1 part fine sand passing a No. 30 mesh sieve, mixed to the consistency of thick cream or the bonding agent. Do not allow bonding grout to set or dry before fill is placed.

4. Provide finish as specified in paragraph B of this Article.

3.08 MISCELLANEOUS CONCRETE WORK

A. Provide trap-pits, curbs, walls, retaining walls, ramps, athletic field work and other miscellaneous concrete items.

B. Provide motor, blower, and other mechanical bases. Coordinate with the work of Division 15 and 16. Provide concrete bases as shown on Drawings.

3.09 CAST-IN-PLACE CONCRETE FIREPROOFING OF STRUCTURAL STEEL

A. Location

Type of fireproofing is indicated on Drawings. Members that don't receive sprayed fireproofing shall be encased in concrete.

B. Construction

Where structural steel is to be partially or fully encased in concrete, provide 2" of concrete unless otherwise shown on Drawings. Type and strength of concrete is indicated on Drawings. Refer to "Finishing of Formed Surfaces" of this Section for the finish.

1. Unless otherwise indicated on Drawings, provide expansible reed clips on beam and column flanges for those members encased in concrete. Rest the loops on the edge of the flange to place the reinforcement at the center of the fireproofing. Bend the projecting wire around the flanges to hold the clip securely in place.

2. On beams and girders over 2'-0" deep, provide a 6 x 6-W1.4 x W1.4 WWF cage to bond encasement to steel.

3.10 PATCHING AND BONDING TO EXISTING CONCRETE

A. Provide bonding agent whenever new concrete is to be poured against existing concrete, whenever the time between concrete pours is longer than that allowed for proper bond, and wherever bonding agent is indicated on the Drawings to be applied.

B. Remove loose concrete from surface to be bonded with new concrete and clean. Remove rust from reinforcement and structural steel by power chipping and power driven brushes.

C. Apply bonding agent in accordance with manufacturer's specifications. Pour concrete as soon as bonding agent has cured and within 20 hours after application. If the 20-hour period has elapsed, then the bonding agent must be reapplied.

3.11 CURING AND PROTECTION

A. General

1. Begin curing concrete immediately after placement and finishing. Protect all freshly deposited concrete from premature drying and excessively hot or cold temperatures and maintain it with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete. Detailed procedures are given in ACI 308 and Section BC 1905.11 of the 2008 NYC Building Code.

2. Cure floor surfaces in accordance with ACI 308.

3. Do not apply curing compounds to surfaces receiving waterproofing, adhesives, membranes or additional concrete unless approved by adhesive or material manufacturer or compound is removed in an approved manner. As an alternate, provide wet curing.

B. Procedure

1. Concrete surfaces not in contact with forms:

a. Ponding or continuous non-manual sprinkling.

b. Absorptive mat or fabric, sand, or other covering kept continuously wet.

c. Curing compounds conforming to ASTM C1315 or strippable curing compound conforming to ASTM C309.

2. Concrete surfaces in contact with forms:

   a. Minimize moisture loss from forms exposed to heating by the sun by keeping forms wet until they are removed.

   b. After form removal, cure with one of the methods listed in 1 above.

3. Continue curing until a total of 7 days has elapsed during which the temperature of the air in contact with concrete has remained above 50°F. Prevent rapid drying during and at the end of the curing period.

4. Remove all curing compounds with cleaners recommended by curing compound manufacturer.

C. Cold Weather Curing

Concrete must be protected from water loss. This shall be accomplished by the application as soon as possible without harm to the concrete surfaces of either (a) exhaust steam, or vapor-resistant paper or polyethylene film, or (b) curing compounds. In all other respects, curing shall conform to applicable provisions of this Section. Concrete temperature shall be maintained between 50°F and 70°F.

D. Hot Weather Curing

1. During the period June 1 to October 1 or when hot weather conditions require it, maintain continuous water curing for a minimum period of twenty-four hours. Provide for windbreaks, shading, and other necessary provisions.

2. After 24 hours, curing shall be by one of the methods specified under B above. In all other respects, curing shall conform to applicable provisions of this Specification. Upon termination of the specified moist curing, every effort should be made to reduce the rate of drying by avoiding air circulation.

E. Protection from mechanical injury: Protect concrete from mechanical disturbances during curing period as described under "Protection and Cleaning".

3.12 FIELD QUALITY CONTROL

A. Tests

Tests to be performed by the Facility's Testing Laboratory during construction are as follows:

1. Compliance of materials to Specifications tested from production samples.

2. Determination of the slump of the concrete for each sample taken and whenever consistency of the concrete appears to vary using ASTM C143. The Special Inspector will reject any concrete that does meet the slump requirements.

3. Determination of water content of freshly mixed normal weight concrete utilizing the procedure of AASHTO T318. Concrete that does not meet the maximum water to cement ratio or the proportions given in the approved design mix will be immediately rejected regardless of slump.

4. Strength tests on the specimens in accordance with ASTM C39:

   a. The frequency of conducting strength tests of concrete shall be in accordance with Section BC 1905.6.2 of the 2008 NYC Building Code, with additional cylinders taken for an additional strength test and one cylinder for a 7-day break. Strength tests shall be performed for each 50 cubic yards, or portions thereof, of concrete placed in any one day's concreting. Specimens will be stored at the site in the insulated curing box provided by the Contractor. Each group of specimens is considered one strength test. One cylinder will be broken at 7 days for information. A strength test shall be performed at 28 days for acceptance. The remaining cylinders for the additional strength test will be tested only if the 28-day breaks are low or durability of the concrete is in question.

   b. If one specimen in a test manifests evidence of improper sampling, molding, or testing, it shall be discarded and the average strength of the remaining cylinders shall be considered the test result. Should all specimens in a test

show any of the above defects, the entire test shall be discarded.

5. Determination of air content and unit weight of normal weight concrete sample for each strength test in accordance with ASTM C173 or C231 and ASTM C138.

6. Determination of air content and unit weight of lightweight concrete sample for each strength test in accordance with ASTM C173 or C231 and ASTM C567.

7. Determination of temperature of concrete sample for each strength test.

B. Inspection

1. Refer to "Source Quality Control" for responsibility and procedure.

2. The Contractor shall cooperate in the making of all tests by the Laboratory Technician by:

a. Providing a well-constructed shanty, to be approved by the Facility, located adjoining the Facility's inspector's office. This shanty shall have an area of not less than 50 sq ft, be well lighted, and provided with a table for mixing concrete, shelves for storage of the Laboratory's equipment, molds, etc., one chair, hinged door with suitable lock.

b. Providing an insulated curing box of sufficient size and strength to contain all specimens made in any four consecutive working days. The Contractor shall furnish an outlet to provide the necessary temperature in the storage box, pending delivery to the Laboratory of the test cylinders.

c. Providing a buggy for transporting the concrete taken from the mixer (and/or point of placement) to the shanty for testing and the preparation of specimens.

d. Protecting the property of the Laboratory to be stored in the shanty and keeping test specimens free from vibration and other disturbances.

e. Providing a microwave of the size specified in AASHTO T318 and a portable generator.

C. Evaluation and Acceptance of Concrete

1. Strength tests on structural concrete will be evaluated according to Section BC 1905.6.3.3 of the 2008 NYC Building Code.

2. When the average strength of the test cylinders, as defined in Section BC 1905.6.3.3 falls consistently below the specified strength (f'c), the Facility shall have the right to order the Contractor to change the proportions or the water content of the concrete to secure the required strength for the remaining portion of the structure, all at the Contractor's expense. It is the Contractor's complete responsibility to modify the concrete mix design, material controls, and/or concrete operations where necessary to obtain the compressive strength required by the design and Specification.

3. When the average strength of test cylinders for any portion of the structure is less than that required by the design or Specification, or where there is other evidence that the quality of the concrete is below Specification requirements, the adequacy of the concrete will be checked according to the requirements of Section BC 1906.6 either by structural analysis or by core or load tests or by any combination of these procedures. The Engineer of Record will determine which procedures to use:

   a. Structural Analysis Computations (Section BC 1905.6.5.5), which will be performed by the Engineer of Record.

   b. Core Tests (Section BC 1905.6.5.2) - Performed in accordance with ASTM C42.

   c. Load Tests (AC1318 Paragraph 20.3 or Section BC 1713 of the Building Code).

4. Exterior concrete exposed to the elements with low strength test results or other evidence of poor durability will be rejected.

5. Low Strength Tests of Concrete or evidence of poor durability - Results

a. Pay for additional costs of labor and materials required at the job for all damages resulting from load tests and the taking of cores. Remove and replace concrete work that is not of adequate strength or durability and cannot be made to work by remedial methods acceptable to the Facility at own cost. The Contractor shall be held responsible for all delays and damages to the work of other Divisions that occur as a result of non-conformance.

b. Pay for all expenses borne by the Facility resulting from low strength test procedures or evidence of poor durability (such as high slump) specified above.

D. Contractor's Surveys

Provide surveys of finished concrete elevations for all building slabs. Provide elevations taken on a 15-foot grid pattern. Indicate discrepancies between contract elevation and actual. Interpolate sloped areas such as roof slabs. Do not proceed with finish work until slabs are repaired.

3.13 PROTECTION AND CLEANING

A. General

During the curing period, and thereafter as conditions may require, protect the concrete from damaging mechanical disturbances, particularly excessive load stresses, heavy shock, and excess vibration. Protect all finished concrete surfaces from damage caused by construction equipment, materials or methods, and by rain or running water. Self-supporting structures shall not be loaded in such a way as to overstress the concrete.

B. Floors

Floors that have received their final finish shall be closed to all traffic for at least 48 hours following the completion of troweling. Avoid damage to the floor and repair, clean, and prep floor for finishes.

3.14 ACCEPTANCE OF CONCRETE WORK

A. General

1. Completed concrete work that meets all applicable requirements will be accepted without qualification.

2. Completed concrete work which fails to meet one or more requirements but which has been repaired to bring it into compliance will be accepted without qualification.

3. Completed concrete work which fails to meet one or more requirements and which cannot be brought into compliance may be accepted or rejected as provided in these Specifications or in the Contract Documents. In this event, modifications may be required to assure that remaining work complies with the requirements.

4. Concrete work judged inadequate by structural analysis, core test, results of load test or deemed unacceptable due to appearance or durability concerns shall be repaired, reinforced with additional construction if so directed by the Engineer of Record, or be replaced if so directed by the Engineer at the Contractor's expense.

5. Pay all costs incurred by the Facility in providing additional testing and/or analysis required by this Section.

6. The Facility will pay all costs of additional testing and analysis made at its own request that is not required by this Section or that shows concrete is in compliance with the Contract Documents.

B. Dimensional Tolerances

1. Formed surfaces resulting in concrete outlines smaller than permitted by the tolerances of Section 03100 shall be considered potentially deficient in strength and subject to the provisions of paragraph D below.

2. Formed surfaces resulting in concrete outlines larger than permitted by the tolerances of Section 033100 may be rejected and the excess material subject to removal. If removal of the excess material is permitted, it shall be accomplished in such a manner as to maintain

the strength of the section and to meet all other applicable requirements of function and appearance.

3. Concrete members cast in the wrong location may be rejected if the strength, appearance, or function of the structure is adversely affected or if misplaced items interfere with other construction.

4. Inaccurately formed concrete surfaces exceeding the limits on Section 033100 and which are exposed to view may be rejected and shall be repaired or removed and replaced if required.

5. Slab tolerance from theoretical elevation is 1/2" plus or minus in accordance with ACI 117. Finished slabs exceeding the tolerances, including specified levelness tolerances, may be repaired provided that the strength or appearance is not adversely affected. High spots may be removed with a terrazzo grinder, low spots filled with a structural repair mortars, or other remedial measures performed as permitted. Provide self-leveling cement based materials for large expanses of deficient areas. All materials shall be approved by the Engineer of record and installed by the Contractor at its cost.

6. For tolerances not specifically indicated in the Contract Document, follow requirements of ACI 117,

C. Appearance

1. Concrete exposed to view with defects that adversely affect the appearance of the specified finish may be repaired only by approved methods.

2. Concrete not exposed to view is not subject to rejection for defective appearance.

D. Strength of Structure

1. The strength of the structure in place will be considered potentially deficient if it fails to comply with any requirements that control the strength of the structure, including but not necessarily limited to the following conditions:

   a. Low concrete strength as described under "Field Quality Control".

b. Reinforcing steel size, quantity, strength, position, or arrangement at variance with the requirements of Section 03200 or the Contract Documents.

c. Concrete that differs from the required dimensions or location in such a manner as to reduce the strength.

d. Curing less than that specified.

e. Inadequate protection of concrete from extremes of temperature during early stages of hardening and strength development.

f. Mechanical injury as defined under "Protection and Cleaning", construction fires, accidents, or premature removal of formwork likely to result in deficient strength.

2. Structural analysis and/or additional testing may be required when the strength of the structure is considered potentially deficient.

3. Core tests may be required when the strength of the concrete in place is considered potentially deficient.

4. If core tests are inconclusive or impractical to obtain or if structural analysis does not confirm the safety of the structure, load tests may be required and their results evaluated in accordance with Chapter 20 of ACI 318.

END OF SECTION

SECTION 06 1000

ROUGH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide rough carpentry Work as indicated on the Drawings, as required for the completed Work of this Contract, and as specified herein, including, but not limited to, the following:

1. Wood Grounds, nailing strips, blocking, furring, nailers, and framing.
2. Curbs.
3. Rough hardware, including nails, screws, anchors, brackets, braces, bolts, nuts, fittings, and other devices required for the proper fitting, connecting, and erecting of the Work.
4. Rough frames for windows, grilles, louvers, loudspeakers, recesses for cabinets, and for other items, as indicated on the Drawings.
5. Protection of Stonework.
6. Framing for stepped floors and platforms.
7. Preservative treatment for wood.
8. Fire-retardant treatment for wood.
9. Plywood decking, subflooring, and underlayment.
10. Miscellaneous Lumber.
11. Insulation for pegboard.

1.02 INTENTIONALLY LEFT BLANK

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are

explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. U.S. Department of Commerce.

   American Softwood Lumber Standard PS 20

   Product Standard PS 1 for Softwood Plywood

2. APA Engineered Wood Association. APA Design/Construction Guide

3. Western Wood Product Association (WWPA).

   Grading Rules

4. Southern Pine Inspection Bureau (SPIB).

   Grading Rules

5. Redwood Inspection Service (RIS).

   Grading Rules

6. American Wood Preservers' Association (AWPA).

   Standard C2 (Lumber and Timber)

   Standard C9 (Plywood)

7. American Society for Testing and Materials (ASTM).

   A575 Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades

   E84 Standard Test Method for Surface Burning Characteristics of Building Materials

   D226 Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

8. Underwriters Laboratories, Inc. (UL).

   UL Test 723

9. Federal Specifications (FS).

10. American Lumber Standards Committee (ALSC).

11. West Coast Lumber Inspection Bureau (WCLIB).

    Grading Rules

12. National Fire Protection Association (NFPA).

    Test 255 Method of Test of Surface Burning Characteristics of Building Materials

1.04 SUBMITTALS

A. Quality Control Submittals

1. Certificates: Certification for the following wood treatments:

   a. Dip Treatment: Certification by treating plant stating chemical solutions used, submersion period, and conformance with applicable standards.

   b. Pressure Treatment: Certification by treating plant stating chemicals and process used, net amount of chemical preservative retained, and conformance with specified standards.

   c. Waterborne Preservatives: Certified written statement that moisture content of treated materials was reduced to a maximum of 19 percent prior to shipment to Project site.

   d. Fire-Retardant Treatment: Certification by treating plant stating treated material complies with specified standards and treatment will not bleed through specified finishes. Submit BSA or MEA approval certification.

B. Low Emitting Materials Compliance Submittals

1. Provide documentation for each adhesive to be used on site and within the weatherproofing/waterproof membrane (interior) of the

building, indicating that the adhesives comply with V.O.C. requirements as stated in Specifications.

C. Sustainable Submittals:

1. Submit manufacturer's documentation that composite wood products, including plywood, that are used within the weatherproofing/waterproof membrane (interior) of the building are manufactured without the use of any added urea-formaldehyde. This requirement includes binders, and laminating adhesives used in the field or shop. Submit manufacturer's documentation of the resin(s).

1.05 QUALITY ASSURANCE

A. Mill and Producers Mark

Each piece of lumber and plywood shall be grade stamped indicating type, grade, mill, and grading agency certified by the Board of Review of the American Lumber Standards Committee. Mark shall appear on unfinished surface, or ends of pieces with finished surfaces.

1. Pressure Preservative Treated Material: Accredited agency quality mark on each piece of wood including treatment.

2. Fire-Retardant Treated Material: Accredited testing agency mark on each piece of wood indicating compliance with the fire hazard classification.

B. Standards

Comply with the following unless otherwise specified or indicated on the Drawings:

1. Lumber: American Softwood Lumber Standard PS 20 by the U.S. Department of Commerce. Comply with applicable provisions by each indicated use.

2. Plywood: Product Standard PS 1 for Softwood Plywood, Construction and Industrial by the U.S. Department of Commerce.

3. Plywood Installation: APA Design/Construction Guide, by the American Plywood Association (APA), except as indicated otherwise.

4. Grading Rules:

   a. Douglas Fir, Hem-Fir, Idaho White Pine, and other Western Woods: Western Wood Products Association (WWPA) or West Coast Lumber Inspection Bureau (WCLIB).

   b. Southern Pine: Southern Pine Inspection Bureau (SPIB).

   c. Redwood: Redwood Inspection Service (RIS).

5. Preservative Treatment: American Wood Preservers' Association (AWPA) Standards, quality control methods, and inspection requirements

6. Fire-Retardant Treatment: American Wood Preservers' Association (AWPA) Standards.

C. Regulatory Agencies

1. NYC Board of Standards and Appeals (BSA).

2. NYC Materials and Equipment Acceptance (MEA).

1.06 DELIVERY, STORAGE, AND HANDLING

A. Keep materials dry during delivery. Store materials 6" minimum above ground surface. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood, and provide air circulation between stacks.

B. Cover stored materials until ready for use for protection from moisture. Place and anchor covering in a manner which will assure good ventilation under the covering.

1.07 PROJECT CONDITIONS

A. Correlate location of supporting members to allow proper attachment of other Work as specified in this Section.

PART 2 - PRODUCT

2.01 LUMBER

A. General

Furnish seasoned dimensional lumber dressed to nominal sizes indicated with 19 percent maximum moisture content at time of dressing, marked "S-DRY". Comply with dry size requirements of PS 20.

1. Dress: Surfaced 4 sides (S4S) unless otherwise indicated.

B. Framing Lumber

Species: Douglas Fir (WWPA or WCLIB), or Southern Pine (SPIB), unless otherwise indicated.

Refer to Drawings

1. Light Framing; 2" through 4" thick, less than 6" wide:

   a. Stud Framing Grade: Construction Grade.

   b. Other Light Framing Grade: No. 2.

2. Structural Framing; 2" through 4" thick, 6" and wider:

   a. Grade: No. 1.

C. Board Lumber; less than 2" thick:

1. Exposed Board Lumber, for Paint Finish: Southern Pine No. 1 (SPIB), Douglas Fir 2 Common (WWPA) or Select Merchantable (WCLIB), or Redwood Construction Common (RIS).

2. Exposed Board Lumber, for Transparent Finish: Redwood Clear (RIS).

3. Concealed Board Lumber: Southern Pine No. 3 (SPIB), any species No. 4 (WWPA) or any species Standard (WCLIB), or Redwood Merchantable (RIS).

D. Miscellaneous Lumber

Standard grade, No. 3 grade, or better grade of the following species unless otherwise indicated:

1. Nailers and Blocking: Douglas Fir, Hem-Fir, Idaho White Pine or Southern Pine.

2. Furring: Douglas Fir or Southern Pine.

3. Plaster Grounds:

   a. Interior Use: Douglas Fir or Southern Pine.

   b. Exterior Use: Western Red Cedar or Redwood.

4. Floor Sleepers: Western Red Cedar or Redwood Construction Heart.

5. Door and window Bucks: Western Red Cedar or Redwood.

2.02 PLYWOOD

A. Roof and Wall Sheathing and Subflooring: APA RATED SHEATHING, EXPOSURE 1. Furnish APA PS 1 veneered panels, with span ratings for the required thicknesses as listed below unless otherwise indicated.

Thickness	Span Rating
3/8"	24/0
1/2"	32/16
5/8"	40/20
3/4"	48/24

B. Underlayment

APA UNDERLAYMENT, EXPOSURE 1.

1. For use under resilient tile flooring and resilient sheet flooring: Sanded face.

2. For use under carpet and "liquid" flooring: Touch-sanded.

C. All plywood used within the weatherproofing/waterproof membrane (interior) of the building shall contain no added urea- formaldehyde. This requirement applies to plywood roof and wall sheathing.

2.03 MISCELLANEOUS MATERIALS

A. Underlayment Patching Compound

Hardsetting, quicksetting type with latex or polyvinyl acetate binder.

B. Asphalt Felt

Asphalt-saturated felt, No. 15, without perforations, complying with ASTM D226.

C. Rosin Paper

Commercial, rosin-sized building paper, 0.010" thick.

D. Hardboard

PS 58, Class "Tempered, S1S, plainboard.

E. Adhesive

APA Specification AFG-01. For adhesive used on site and within the weatherproofing/waterproof membrane (interior) of the building, comply with V.O.C. requirements.

2.04 PRESERVATIVE TREATMENT

A. Treat lumber and plywood where indicated and as specified. Comply with applicable AWPA Standards and quality control and inspection requirements.

1. Fasteners and anchoring devices to be used with wood treated with waterborne preservatives shall be hot-dip galvanized or stainless steel if the wood will be exposed to moisture.

B. Complete fabrication of items to be treated to the greatest extent possible, prior to treatment. Where items must be cut after treatment, coat cut surfaces with heavy brush coat of the same chemical used for treatment or other solution recommended by AWPA Standards for the treatment.

C. Inspect wood after treating and drying. Discard warped or twisted items.

D. Pressure Treatment (Above Ground Use)

Treat the following wood items with waterborne preservatives for above ground use, complying with. AWPA Standards C2 & C9 Redry wood to a maximum moisture content of 19 percent after treatment.

1. Nailers, blocking, cants, shim stock, and similar members used in conjunction with roofing (including related flashings, trim and vapor barrier), coping, and waterproofing.

2. Nailers, blocking, furring, stripping, and similar concealed members in contact with exterior masonry and concrete (including interior wythe of exterior walls), and all sills for framing.

3. Wood items indicated or scheduled on the Drawings to be preservative treated.

E. Pressure Treatment (Ground Contact Use)

Treat the following wood items with waterborne preservatives for below ground use, complying with AWPA Standards C2 & C9.

1. Wood members placed in the ground.

2. Wood members immersed in fresh water.

2.05 FIRE-RETARDANT TREATMENT

A. Where lumber is indicated or required to be fire-retardant treated, provide "FR-S" lumber, complying with AWPA Standards for pressure impregnation with fire-retardant chemicals to achieve a flamespread rating of 25 or less, when tested in accordance with UL Test 723, ASTM E84 or NFPA Test 255.

1. Where treated items are indicated to receive a transparent or paint finish, use a fire-retardant treatment which will not bleed through or adversely affect bond of finish.

2. Provide UL label or identifying mark on each piece of fire-retardant lumber.

3. Redry treated items to a maximum moisture content of 19 percent after treatment.

B. Fire-retardant Treated Plywood

Comply with APA requirements.

2.06 FRAMING HARDWARE

A. Fasteners and Anchoring Devices

Provide items of type, size, style, grade, and class as required for secure installation of the Work. Items shall be galvanized for exterior use. Unless shown or specified otherwise, comply with the following:

1. Nails and Staples: FS FF-N-105.
2. Wood Screws: FS FF-S-111.
3. Bolts and Studs: FS FF-B-575.
4. Nuts: FS FF-N-836.
5. Washers: FS FF-W-92.
6. Lag Bolts or Lag Screws: S FF-B-561.
7. Masonry Anchoring Devices: Expansion shields, masonry nails and drive screws: FS FF-S-325.
8. Toggle Bolts: FS FF-B-588.
9. Bar or Strap Anchors: ASTM A575 carbon steel bars.
10. Wall Plugs: Corrugated type, galvanized steel, 24 USS gage min, not less than 2" wide x 2-1/2" deep.
11. Cross Bridging: Nailable type, galvanized steel, 16 USS gage min, by 3/4" wide.
12. Metal Hangers and Framing Anchors: Size and type for intended use, galvanized finish, manufacturer's recommended fasteners.

13. Buck Anchors: Corrugated type, galvanized steel not lighter than 12 USS gage min, 4" wide (except where partitions are less than 4" thick) by 8" long, punched for two 5/16" carriage bolts at buck end.

14. Sleeper Anchors: Approved type, galvanized steel not lighter than 20 USS gage min, not less than 1-1/4" wide, designed to anchor into concrete not less than 1-1/2" and permit height adjustment of sleeper.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions

Examine substrate and supporting structure on which rough carpentry is to be installed for defects that will adversely affect the execution and quality of the Work. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 INSTALLATION - GENERAL

A. Do not use units of material with defects which impair the quality of the Work and units which are too small to fabricate the Work with minimum joints or with optimum joint arrangement.

B. Install Work accurately to required lines and levels with members plumb and true, accurately cut and fitted and securely fastened. Closely fit rough carpentry to other associated construction.

C. Securely attach carpentry Work to substrates by anchoring and fastening as indicated, or, if not indicated, as required by the referenced standards. Select fasteners of size that will not penetrate through members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required. Set nail heads in exposed Work which is to be painted or stained and fill resulting holes.

D. Fire-retardant Treated Wood

1. Do not rip or mill; only end cuts, drilling holes and joining cuts shall be permitted.

2. Where material is cut to length, shaped or grooved after treatment, surfaces thereby exposed shall be protected by tightly butting them against noncombustible or fire-retardant treated material, in accordance with the NYC Building Code. Drilled holes shall be covered with tightly fitting noncombustible cover plates.

3.03 WOOD FRAMING

A. Install framing members of nominal sizes indicated or of units built-up to dimensions indicated, on spacings shown. Construct required openings for installation of related work. Do not splice structural members between supports.

B. Anchor and nail members as indicated. If not included, comply with recommendations of the NFPA.

C. Install miscellaneous blocking and framing indicated and as required for attachment and support of facing materials, fixtures, specialty items, and trim.

D. Stud Framing

Install stud framing indicated. Unless otherwise shown, use 2" x 4" wood studs spaced 16" o.c with 4" face perpendicular to direction of wall or partition. Install single bottom plate and double tip plates 2" thick by width of studs; except single top plate may be used for non-load-bearing partitions. Nail or anchor plates to supporting construction.

1. Construct corners and intersections with not less than 3 studs. Frame openings with multiple studs and headers. Install nailed header members of thickness equal to width of studs.

2. Install diagonal bracing in exterior wall stud framing unless otherwise indicated. Brace both walls at each external corner, full story height, at 45 degree angle. Use either a let-in 1" x 4" board or 2" x 4" blocking.

E. Joist Framing

Install framing of sizes and on spacings shown. Install with crown edge up and support ends of each member with not less than 1-1/2" of bearing on wood or metal, or 3" on masonry. Attach to wood bearing members by

toe nailing or metal connectors; frame to wood supporting members with wood ledgers or with metal connectors. Fire-cut members built into masonry (if any). Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceed 4 feet. Do not notch in middle third of joists; limit notches to 1/6-depth of joist, 1/4 at ends. Do not bore holes larger than 1/3-depth of joist or locate closer than 2" from top or bottom. Install solid blocking (2" thick by depth of joist) at ends of joists unless nailed to header or band member.

1. Lap members framing from opposite sides of beams, girders or partitions not less than 4" or securely tie opposing members together. Install solid blocking (2" thick by depth of joist) over supports.

2. Anchor masonry bearing members with 1/4" x 1-1/4" metal strap or "T" anchors with wall ends bent 4" at every second joist. Extend anchors not less than 1'-4" along bottom of joist end and nail.

3. Anchor members paralleling masonry with 1/4" x 1-1/4" metal strap anchors spaced not more than 8 feet o.c. Extend anchors at least 4" into masonry, turn up 4" and extend over and fasten to 3 joists.

4. Install solid blocking between joists under jamb studs at openings.

5. Under non-load-bearing partitions, install double joists separated by solid blocking equal to depth of studs above.

    a. Install triple-joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures, unless otherwise shown.

F. Install bridging between joists where nominal depth-to-thickness ratio exceeds 4, at intervals of 8 feet.

3.04 WOOD NAILERS, BLOCKING, AND GROUNDS

A. Install required items where indicated and where required for support, attachment or screeding of other Work. Form to shapes indicated or required. Coordinate locations and cut and shim as required to provide items at true and level planes to receive Work to be attached. Install closure strips to nailers at all edges.

1. Attach to substrates as indicated; if not indicated, size and space fasteners as required to support applied loading. Maximum spacing of fasteners shall not exceed 16". Unless otherwise shown on the Drawings, install and secure material to non-wood construction as follows:

    a. To Concrete: Attach material less than 1-1/2" thick with screws and non-ferrous metal expansion shields. Attach materials 1-1/2" and thicker with machine bolts and non-ferrous metal compound type anchors.

    b. To Concrete Unit Masonry: Attach material to new masonry with annular ring nails driven into wall plugs where fastening occurs at joints of masonry or with special hardened steel masonry nails where fastening occurs in the masonry units. Attach material to existing masonry with machine screws and non-ferrous metal expansion shields where fastening occurs in solid portions of masonry. If fastening occurs at cells of masonry, secure material in place with toggle bolts.

    c. To Brick Masonry: Attach material to new masonry with annular ring nails driven into wall plugs. Attach material to existing masonry with machine screws and non-ferrous metal expansion shields.

    d. To Steel: Attach material with galvanized bolts and nuts or stainless steel machine screws tapped into the metal, as required by conditions.

    e. To Non-Ferrous Metal: Attach material with stainless steel or other approved non-ferrous metal bolts and nuts or self-tapping screws, as required by conditions.

2. Counter-sink bolts and nuts flush with surfaces, unless otherwise shown. Build into masonry during installation of masonry Work. Where possible, anchor to formwork before concrete placement. Bevel both edges of members to be anchored in concrete. Shims shall be cedar shingles or redwood wedges.

3. Install permanent grounds of dressed, preservative treated, keybeveled lumber not less than 1-1/2" wide and of the thickness

required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

4. The grounds for coat hook and bracket strips in wardrobe cabinets shall be attached to partitions with toggle bolts and to brick walls with expansion bolts before any plastering is done.

3.05 PLYWOOD SHEATHING, SUBFLOORING, AND UNDERLAYMENT

A. Comply with printed installation requirements of the APA Design/Construction Guide, for plywood application required, unless otherwise indicated.

B. Plywood Underlayment

Install underlayment just prior to installation of finish flooring. Stagger end joints between panels in relation to each other and stagger all joints in relation to substrate jointing. Allow 1/32" space between panel ends and edges for expansion. Fasten in accordance with APA recommendations. Prior to installation of finish flooring, patch damaged areas wider than 1/16". Set nails 1/16", but do not fill. Sand rough areas smooth, and uneven joints flush. Fasteners must be flush with the surface of the subfloor.

C. Roof Sheathing

Install panels with face grain across supports. Provide supports at edges by use of clips, wood blocking, or T. & G. panels. Allow 1/16" spacing at panel ends; 1/8" spacing at edges.

Nail 6" o.c along edges and 12" o.c at intermediate supports.

D. Wall Sheathing

Allow 1/16" spacing at panel ends and 1/8" spacing at edges.

Nail 6" o.c along panel edges and 12" o.c at intermediate supports.

E. Subfloor

Install panels continuous over two or more spans, with face grain across supports. End joints shall occur over supports. Allow 1/16" spacing at panel ends and 1/8" at edges.

Before placing panels, apply continuous line of adhesive on joists.

F. Nails

Common.

For plywood thickness to 1/2": 6d.

For plywood thickness greater than 1/2": 8d.

3.06 STEPPED FLOOR AND PLATFORMS

A. Stepped floors shall be built up of framing members of sizes and spacing indicated on the Drawing Details, all thoroughly braced and nailed; risers shall be of oak as specified in Section 06200 "Finish Carpentry". Horizontal surfaces shall be covered with 4" by 7/8" T. & G. edge grain North Carolina pine flooring face nailed with two 10d nails at each bearing; all heading joints shall be on framing members. Cover the North Carolina pine flooring with 1/8" tempered hardboard secured in place with 1 1/4" ring grooved nails, spaced 6" o.c. both ways, 3" o.c at edges; joints shall be staggered. See Drawings for location.

B. All framing members and flooring of wood platforms and stepped wood floors shall be treated with fire-retardant chemicals to develop a flame spread rating of 25 or less.

3.07 WOOD FURRING

A. Install members plumb and level with closure strips at all edges. Shim with wood as required to achieve tolerance specified.

1. Fastening: Attach to substrates as indicated; if not indicated, attach material as specified for nailers and blocking.

2. Tolerance: Shim and level wood furring to a tolerance of 1/8" in 10'.

3. Furring to Receive Plywood Paneling: Unless otherwise indicated, 1" x 3" furring at 2' o.c, horizontally and vertically.

4. Furring to Receive Gypsum Drywall: Unless otherwise indicated, 1" x 2" furring at 16" oc, vertically.

5. Option: In lieu of the grounds for hook and bracket strips, fasten the strips directly to the finished plastered walls provided toggle bolts are used, spaced not over 2' o.c. This option is given on condition that a power drill is used for drilling holes for toggle bolts through the plaster and terra cotta partitions.

6. Where walls are furred out to receive wardrobes, lockers, and other casework, provide and set all required dressed studs, blockings, nailing pieces, and grounds. The studs shall be bolted to the iron frames with 3/8" diameter bolts, spaced as indicated on Drawings.

3.08 FLOOR SLEEPERS

A. Unless otherwise indicated, install 3" x 3" strips, 12" oc and across abutting walls and restricting features. Anchor to slab with sleeper anchors 16" o.c. Shim level to required height with redwood wedges 8" o.c. Fill space between sleepers and floor slab solid with 1 part Portland cement and 2-1/2 parts sand mortar.

3.09 METAL WALL PLUGS

A. Furnish to mason all necessary information to enable him to lay out correctly the location for metal wall plugs. All grounds, furring and standing finish on plastered walls and partitions, except where otherwise specified, shall be secured to metal wall plugs.

3.10 BOARDS, STRIP

A. All Work necessitating the furnishing of boards, strips, casings, and other Work of this nature and the doing of all incidental Work required for the proper finishing and completion of the Work, to the entire satisfaction of the Facility, shall be done by the carpenter.

B. Where wall panels of tackboard or pegboard are indicated on walls of classrooms, kindergartens and rooms of instruction, wall shall be furred out with wood furring strips, blocking, and furring, of sizes as required for the conditions, installed vertically approximately 16" O.C. to receive the tackboard and pegboard. Furring strips shall be toggle-bolted or expansion-bolted (flush head) to walls and partitions.

C. Provide fiberglass insulation back of pegboard on walls of kindergartens and rooms of instruction. Fiberglass shall be 1/2" thick, flexible duct insulation manufactured by Owens-Corning, secured to walls with an adhesive approved by the Manufacturer. See Drawing Details.

D. Furnish and set all wood blocking and nailing strips at coping coverings, canopy fascias, slag stops, fascia boards, base flashing pitch pockets, railing sleeves and similar locations, of No. 1 common southern pine, of sizes indicated on Details. All blocking and nailing strips shall be preservative treated by pressure method as specified in Art. 2.04.

E. Furnish and set all blockings required at skylight and ventilator curbs, and at all other places where indicated or required.

F. Provide wood curbs of sound, seasoned, dressed material of size indicated on Drawings, with corners mitered and securely nailed, and with top outer edges splayed off. Anchor Wood curbs in place at top of concrete curbs with 3/8" anchor bolts, 3 feet on centers and at brick curbs with 1/2" bolts extending through curb angles. Top nuts of all bolts shall be countersunk into curbs.

G. Where copper gutters, or other such copper covered Work is indicated on the Drawings, furnish and set all wood nailing strips, blocking, sheathing, rough framing and other members required for the securing and backing of the copper covered Work. For shapes, spacing and locations of the rough carpentry Work, see Detail Drawings.

H. Where batten seam copper roofing is indicated on Drawings, furnish and install all required wood battens and nailing sleepers together with all other required wood blocking, nailing strips, ridge strips, and other members, as indicated on the Details. The wood nailing sleepers, to receive the wood battens shall be nailed to sleeper clips which shall be embedded in the sloping concrete roof slab as shown on Detail, spaced as indicated.

The sleeper clips shall be 9 gage galvanized wire floor sleeper clips and shall be spaced 16" o.c. The top surface of nailing sleepers shall be set level and true by using wood or metal leveling strips. Wood batten shall be secured to the nailing sleepers with proper size nails by toe nailing at each bearing or as will be directed.

I. Furnish and install all required wood nailing sleepers of the required size under all standing and transverse seams of copper roofing together with all wood blocking, nailing strips, ridge strips, and other to properly install and receive the copper roofs, gutters, eaves, and other items as indicated on the Drawings. Verify locations of nailing strips.

3.11 PROTECTION OF STONEWORK

A. The top surfaces, projections, door jambs, sills, steps, ornamental work, of exterior stonework, where liable to damage, shall be protected by temporary boxing. Furnish and set boxing, using only galvanized nails, as soon as the stonework is set and maintain the boxing until the stonework is cleaned down. No material shall be used which will stain or damage the stonework.

3.12 ROUGH HARDWARE

A. Furnish and install all rough hardware, such as nails, bolts, buck anchors, clips, (including expansion and carriage bolts for wall seats, wardrobe brackets, etc.), and all other rough hardware required to secure the carpentry work in place, unless otherwise specified.

END OF SECTION

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SECTION 06 2000

FINISH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all finish carpentry Work as indicated on the Drawings and as specified herein, including, but not limited to the following:

1. Interior wood finish and trim, including, but not limited to: Door casings; window casings, stools, aprons and plywood paneling (where indicated)
2. Window Trim
3. Chair Rail
4. Door Holder Blocks
5. Seating Strips
6. Hook Ladders
7. Bench Strips
8. Tool Board
9. Mounting Board
10. Exercise Barre

1.02 INTENTIONALLY LEFT BLANK

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Architectural Woodwork Institute (AWI)

   Architectural Woodwork Quality Standards

2. American Society for Testing and Materials (ASTM)

   E84 Standard Test Method for Surface Burning Characteristics of Building Materials

3. American National Standards Institute (ANSI)

   ANSI A108.1

4. Underwriter's Laboratories, Inc. (UL)

1.04 SUBMITTALS

A. Product Data

Submit manufacturer's or supplier's product data for each product and process specified as work of this Section and incorporated into items of finish carpentry.

B. Quality Certification

Submit woodwork Manufacturer's (Fabricator's) certification, stating that fabricated woodwork complies with AWI quality grades and other requirements indicated herein.

C. Wood Treatment Data

Submit chemical treatment manufacturer's instructions for handling, storing, installation, and finish of treated material.

D. Fire-Retardant Treatment

Provide certification by treating plant that treated materials comply with requirements. Submit certification of approval by NYC Board of Standards and Appeals (BSA) or Materials and Equipment Acceptance (MEA).

E. Shop Drawings

Submit Shop Drawings showing location of each fabricated item, dimensioned plans and elevations, large scale details and profiles, attachment devices and other components.

1. Identify woodwork item using same identification system shown on Architectural Drawings.

2. Coordinate details and cut-outs to accommodate accessories specified under other Sections.

F. Samples:

1. Wood Trim: 12" length of each type and finish (e.g., base, casings, stools, aprons, chair rail, exercise barre).

2. Plywood Paneling: 12" x 12" for each type and finish.

G. Low Emitting Materials Compliance Submittals

1. Provide documentation for each adhesive and glue to be used on site, indicating that the adhesives comply with low V.O.C. requirements as stated in the Specifications

H. Sustainable Submittals:

1. Submit manufacturer's documentation that composite wood products, including plywood, that are used are manufactured without the use of any added urea-formaldehyde. This requirement includes binders, and laminating adhesives used in the field or shop. Submit manufacturer's documentation of the resin(s).

1.05 QUALITY ASSURANCE

A. AWI Quality Standard

Comply with applicable requirements of the AWI "Architectural Woodwork Quality Standards", except where indicated otherwise.

B. Fabrication and Installation Qualifications

Firm which can demonstrate a minimum of 5 years of successful experience in fabricating and installing woodwork items similar in type and quality to those required for this project.

C. Submit name of firm to the Facility for approval.

D. Regulatory Agencies:

1. NYC Board of Standards and Appeals (BSA)

2. NYC Materials and Equipment Acceptance (MEA)

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not deliver woodwork until operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If woodwork must be stored, store only in areas meeting requirements and conditions specified for installation areas.

1.07 PROJECT CONDITIONS

A. Conditioning

Woodwork Installer shall advise the Facility's Representative of temperature and humidity requirements, in writing for woodwork installation and storage areas. Do not install woodwork until required temperature and relative humidity have been stabilized.

B. Maintain temperature and humidity conditions in installation area as required to maintain moisture content of installed woodwork within 1.0 percent of optimum moisture content as follows:

1. Optimum moisture content of wood: 5-10%

2. Relative humidity required to be maintained in installation and storage areas: 25-55%

PART 2 - PRODUCT

2.01 MATERIAL

A. General

1. All interior wood finish shall be made up of thoroughly seasoned, kiln dried woods of the kinds specified.

2. All material shall be clear on all exposed faces and edges, free from checks, cracks or other blemishes that would mar the appearance of the finished wood.

3. In assembling interior woodwork, arrange so that variations in grain pattern are kept to a minimum.

4. All material shall be product of one mill.

B. Species and Grades (Lumber)

1. Plain Sawn Appalachian Red Oak, AWI Grade I (for transparent finish): interior wood finish throughout, except as otherwise specified or shown on Drawings.

2. Red or White Birch, AWI Grade II, (for opaque finish): Interior window trim, all wood finish in Lunch Room Rest Rooms, Toilets, Store Rooms, Supply Closets, all units in Receiving Room, Equipment Store Room.

   Option: Maple, Yellow Poplar, or Basswood: AWI Grade II.

3. White Birch, AWI Grade I (for transparent finish): Platform.

Note: Stair treads and risers at Auditorium Platform: Oak, unless indicated otherwise on the Drawings.

C. Species, Grades, Types (Plywood)

1. Veneer: Oak and White Birch, as specified herein, AWI Grade I.

2. Grain Appearance: Running Match.

3. Core: Particleboard or fiberboard, medium density, fire-retardant.

4. All plywood and laminating adhesives used shall contain no added urea- formaldehyde

2.02 FABRICATION, GENERAL

A. Wood Moisture Content

Comply with requirements of referenced quality standard for moisture content of lumber at time of fabrication and for relative humidity in installation areas. (See Art. 1.07).

B. Fabricate woodwork to dimensions, profiles, and details indicated.

C. Complete fabrication, assembly, finishing, and other work before shipment to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary, provide ample allowance for scribing, trimming, and fitting.

D. Pre-Cut Openings

Provide woodwork with pre-cut openings, where possible, for hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutouts.

E. Measurements

Before fabrication of woodwork to be fitted to other construction, obtain field measurements and verify dimensions and shop drawings detail as required for accurate fit.

1. Where field measurements before fabrication would delay the project, fabricate without field measurements and provide ample borders and edges to allow for scribing and trimming of woodwork.

2.03 FIRE-RETARDANT MATERIALS

A. Where fire-retardant treated lumber, plywood, and panel products are required by Building Code or indicated on the drawings, provide materials which are pressure impregnated with fire-retardant chemicals and comply with the following requirements:

1. Fire-Retardant Chemicals: Use chemicals which do not bleed through or otherwise adversely affect adhesives or finishes. Do not use colorants to distinguish treated lumber and panels from untreated lumber and panels.

B. Fire-Performance Characteristics

Provide materials which are identical to those tested in accordance with ASTM methods and time periods indicated, are listed for fire performance characteristics by Underwriter's Laboratories, Inc., or other testing agency acceptable to authorities having jurisdiction.

1. Marking: Identify treated lumber with separable paper classification marking of inspecting and testing agency.

2. Surface Burning Characteristics: Not exceeding values indicated below, tested in accordance with ASTM E84 for 30 minutes which no evidence of significant combustion.

a. Flame Spread: 25.

b. Smoke Developed: 50.

C. Kiln-dry woodwork after treatment to levels required for non-fire-retardant woodwork materials. Maintain moisture content required by kiln drying, before and after treatment. Do not use treated lumber which does not comply with requirements of referenced woodworking standard.

D. Where fire-retardant particleboard and fiberboard are used, provide panels with fire-retardant chemicals to achieve surface-burning characteristics of

20 for flame spread and 25 for smoke developed when tested in accordance with ASTM E84.

Comply with ANSI A108.1 for Grade 1-M-1 panels with density of 45 lbs./cu. ft. for thickness of 3/4" and less and 44 lbs./cu. ft. for thickness of 13/16" to 1 1/4".

Linear expansion: 0.35% for 45 lb. density and 0.50% for 44 lb. density.

Screw-holding capacity, face and edge: 300 lbs. and 250 lbs., respectively, for 45 lb. density, and 250 and 175 lbs., respectively, for 44 lb. density.

2.04 LUMBER THICKNESS

A. Finish thicknesses of members, and tolerances permitted:

Comply with AWI-100-S-2.

2.05 GLUING

A. Gluing for wood member thickness and for wood member width

Comply with AWI-100-S-2.

B. All glues shall comply with V.O.C. requirements

2.06 WINDOW TRIM

A. Trim wood windows in accordance with Drawing Details.

B. Secure stop beads on all double-hung windows with screws and slotted washers set 3" from the ends and not more than 16" on centers.

2.07 CHAIR RAIL

A. Provide chair rail of birch with continuous kerfing where required by Room Finish Schedule. Chair rails shall be painted; not stained or varnished.

2.08 DOOR HOLDER BLOCKS

A. Blocks of same wood species as trim shall be furnished and set where required to receive door holders. See Drawing Details.

2.09 HOOK LADDERS

A. Hook ladders, complete with tracks and all fixtures, shall be provided in rooms where indicated on the Drawings.

B. The ladders shall be made of straight grained oak and be 16" wide outside. Sides shall be 13/16" x 3 3/4" and steps 13/16" x 4 1/4", with edges rounded, connected with four plated screws at each step. Dado steps into sides 1/8". Ladders shall have a turned rung at top and be braced by four 1/4" plated rods with washer and hexagonal nuts.

C. Sandpaper wood smooth, then fill with paste wood filler and apply one coat of shellac and one coat of varnish.

D. Equip top fixtures with approved hook slide. Bottom fixtures shall be made of heavy stamped steel case with 4" wheel, fitted with a heavy rubber tire.

E. Tracks shall be open seam steel tubing with malleable iron brackets, which engages the inner contour of track. Type of bracket shall suit shelving or cabinet.

2.10 MOUNTING BOARD

A. Provide a 1" thick board backing in recess for Fire Alarm Box. See Drawings Details.

2.11 FINISHING (SHOP APPLIED)

A. Finishing shall be as specified in Section 09000 - Painting

PART 3 - EXECUTION

3.01 CONDITION OF SURFACES

A. Examine all grounds, stripping and blocking, to secure paneling and other items provided under this Section.

B. Do not install until all defects are corrected.

3.02 INSTALLATION

A. Install woodwork plumb and level without distortion.

B. Shim as necessary with concealed shims.

C. Accurately scribe and closely fit all face plates, filler strips and trim strips to irregularities of adjacent surfaces.

D. Do all Work in strict accordance with the details for the various portions of the Work.

E. For adjoining pieces of hardboard, carefully select to match the color and grain as closely as possible.

F. Interior finish

High-speed machine work, free from planing machine marks, sandpapered smooth, ready to receive paint or varnish.

G. Carefully fit woodwork and secure with finishing nails; countersink nails.

H. Do not allow kerfing on faces of trim or moldings.

I. Properly house stiles and rails into framework and properly nail and glue all parts together.

J. Miter, with miters doweled or clamped, all trim joints except window trim.

K. For joining of window trim, see Details.

L. Round base and all other moldings on walls at all salient angles; where columns occur in partitions, follow contour.

M. Carefully cut and fit wood trim at convectors.

N. Install all trim, when applied to a surface less than 13 feet in length, in one length: no piecing will be accepted. Provide bevel joints, where joints are required; no butt joints will be accepted.

O. In addition to machine sanding, sand all interior woodwork by hand with 00 sandpaper to give trim a smooth surface for finishing.

3.03 APPLYING HARDWARE

A. Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.

1. Where finish carpentry materials are exposed in areas of high humidity, provide fasteners and anchorages with hot-dip galvanized coating complying with ASTM A 153/A 153M.

B. Apply all miscellaneous hardware not specified to be installed under Section 08710, Section 06410 and other Sections.

END OF SECTION

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SECTION 06 4100
CUSTOM CASEWORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide wood casework, cabinets and shelving as indicated on the Drawings and as specified herein, including, but not limited to the following:

1. Architectural Cabinets - Wood cabinets and wood shelving in Classrooms and other Rooms of Instruction, except Science Rooms, Home Economics Rooms, Art Rooms, Music Rooms and Shop Rooms. All casework shall have wood finish except where laminate cladding is indicated on the Drawings.

2. Architectural Cabinets - Laminate clad,

3. Cabinet Tops

4. Fixed Panels - Plywood paneling in conjunction with cabinets.

5. Pegboard Wall Surfaces.

6. Rolling Trucks.

7. Bookcases and Miscellaneous Cases and Cabinets.

8. Wood Convector Enclosures.

9. Hardware and accessories.

10. Louvered Panels for Cabinet Doors.

11. Installation Materials

1.02 NOT USED

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Architectural Woodwork Institute (AWI):

   Architectural Woodwork Quality Standards

2. American Society for Testing and Materials (ASTM)

3. American National Standards Institute (ANSI):

   ANSI 156.9 B43161

4. National Electrical Manufacturers Association (NEMA):

   NEMA LD3 High-Pressure Decorative Laminates

5. American Wood Preservers' Association (AWPA).

   Standard C2 (Lumber and Timber)

   Standard C9 (Plywood)

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each product and process specified as work of this Section and incorporated into items of the casework.

B. Manufacturer's AWI Certifications: Submit casework manufacturer's (fabricator's) certification, stating that fabricated casework complies with AWI quality grades and other requirements indicated herein.

C. Wood Treatment Data: Submit chemical treatment manufacturer's instruction for handling, storing, installation, and finish of treated material.

D. Fire-Retardant Treatment: Certification by treating plant stating treated material complies with specified standards and treatment will not bleed through specified finishes. Submit BS/A and MEA approval certification.

E. MEA/BSA Certification: For each manufactured item. Submit certification of approval by NYC Board of Standards and Appeals (BS/A) or Materials and Equipment Acceptance (MEA).

F. Hardware (for each type): Name, manufacturer, type, style, size, function, finish, and information about fastenings.

G. Metal Louver Data

H. Shop Drawings: Submit Shop Drawings showing location of each item, dimensioned plans and elevations, large scale details and profiles, attachment devices, hardware and other components.

1. Identify casework using same identification system shown on Architectural Drawings.

2. Coordinate details and cut-outs to accommodate accessories specified under other Sections.

I. Samples: Submit the following samples representative of quality to be provided in finished work:

1. Wood trim, 12" length by specified width of each type and finish.

2. Hardwood veneer plywood.

3. Plastic laminate, 8" x 10" for each type, color, pattern and surface finish.

4. Hardware, one of each type and finish of each item to be used.

5. Counter tops and exposed shelving, 12" x 12" with wood edge and/or laminate edge as shown.

6. Stain Colors for selection

7. One Unit of Cabinet Work Each Shipment (If Requested)

J. Name of Cabinet Mfr/Fabricator of cabinetwork

K. Low Emitting Materials Compliance Submittals

1. Provide documentation for each adhesive to be used on site, indicating that the adhesives comply with low V.O.C. requirements as stated in Specifications.

L. Sustainable Submittals:

1. Submit manufacturer's documentation that composite wood products, including plywood, that are used are manufactured without the use of any added urea-formaldehyde. This requirement includes binders, and laminating adhesives used in the field or shop. Submit manufacturer's documentation of the resin used in lieu of urea-formaldehyde in binders and laminating adhesives.

1.05 QUALITY ASSURANCE

A. AWI Quality Standard: Comply with applicable requirements of the AWI "Architectural Woodwork Quality Standards", except where indicated otherwise.

B. Fabrication and Installation Qualifications: firm which can demonstrate a minimum of 3 years of successful experience in fabricating and installing casework items similar in type and quality to those required for this project.

C. Submit name of firm to the Facility for approval.

D. The Facility reserves the right to select at random one unit of cabinetwork in each shipment and to dismantle and examine it for determination of compliance with the Specifications.

If, after examination, it is found that the unit does comply, the cost of the replacement unit will be paid for by the Facility. If, after examination, it is found that the unit does not comply, the entire shipment shall be removed from the Project Site and cabinetwork complying with the Specifications shall be provided. Expense of removal and replacement shall be borne by the Contractor.

E. Obtain each type of hardware from a single manufacturer.

F. Fire-Retardant Treated Material: Accredited testing agency mark on each piece of wood indicating compliance with the fire hazard classification.

G. Regulatory Agencies:

1. NYC Board of Standards and Appeals (BS/A).

2. NYC Materials and Equipment Acceptance (MEA).

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect casework during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not deliver casework, until operations which could damage, soil or deteriorate casework have been completed in installation areas. If casework must be stored, store only in areas meeting requirements specified for installation areas.

1.07 PROJECT CONDITIONS

A. Casework Manufacturer and Installer shall advise the Facility's Representative of temperature and humidity requirements in writing for casework installation and storage areas. Do not install casework until required temperatures and relative humidity have been stabilized.

B. Maintain temperature and humidity in installation area as required to maintain moisture content of installed woodwork within 1.0 percent of optimum moisture content as follows:

1. Optimum Moisture Content of Wood: 5-10%

2. Relative humidity required to be maintained in installation and storage areas: 25-55%

1.08 COLOR SELECTIONS

A. Stain colors and plastic laminate colors, patterns and textures: selected by the Project Architect.

PART 2 – PRODUCTS

2.01 FABRICATION, GENERAL

A. Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber and plywood at time of fabrication and for relative humidity in installation areas.

B. Fabricate casework to dimensions, profiles, and details indicated with openings and mortises precut, where possible, to receive hardware and other items and work.

C. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary, provide ample allowances for scribing, trimming, and fitting.

D. Pre-Cut Openings: Provide casework with pre-cut openings, where possible, for hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutouts and, where located in countertops, seal edges of cutouts with a water-resistant coating.

E. Measurements: Before fabrication of casework to be fitted to other construction, obtain field measurements and verify dimensions and shop drawing details as required for accurate fit.

1. Where field measurements before fabrication would delay the project, fabricate without field measurements and provide ample borders and edges to allow for scribing and trimming of casework.

F. Cabinet work and paneling construction shall comply with the requirements of AWI Architectural Cabinets and Paneling, Premium Grade, except where indicated herein and on the Drawings for more stringent requirements.

2.02 WOOD SPECIES AND GRADES

A. Solid Wood and Hardwood Plywood Veneer:

1. Where exposed to view, interior finish throughout Building, except as indicated in 2. below, and except as indicated otherwise on the Drawings: Plain Sawn Red Oak, AWI Grade I.

2. Kindergartens, Early Childhood Rooms and Auditorium Platforms: White Birch, AWI Grade I.

3. Plywood not exposed to view (tops and backs): AWI Grade II.

4. Grain appearance: Running match; grain consistent for each cabinet.

5. Provide same species of veneer on both sides of plywood.

6. Shelving in Cabinets (exposed) and Backs of Open Book Shelves and Magazine Racks: Plain Sawn Red Oak, AWI Grade I for Oak Units; White Birch, AWI Grade I for Birch units. Solid wood shelving edge (Oak or Birch, to match cabinet species).

7. Shelving in Cabinets (unexposed): White or Red Birch, AWI Grade II, with solid wood edge (Oak or Birch, to match cabinet species).

2.03 TYPES OF PANELS

A. Particleboard and Fiberboard: medium density (37 to 50 pounds per cubic foot) shall not be permitted for shelving.

B. Particleboard core plywood: medium density particleboard core, with face and back veneers and crossbandings (5-ply). Use only where covered by plastic. Not permitted for shelving.

C. Veneer Core Plywood: core of odd number of veneer plies, with face and back veneers. Use veneer core plywood for all casework, except that other panel types are permitted for certain components where covered by plastic laminate. Use veneer core plywood, exterior grade, for all cabinet tops with sinks.

D. All plywood, composite wood products and laminating adhesives used shall contain no added urea-formaldehyde.

2.04 TEMPERED HARDBOARD

A. Manufacturers:

Masonite Corp.	Towanda, PA 18848
ABT Building Products Corp.	Alpena, MI 49707
Forestex Co.	Forest Grove, OR 97116

B. Type: solid or perforated (holes spaced evenly at 1" o.c. in both directions, with even borders around edges), as indicated on the Drawings.

C. Thickness: as indicated on the Drawings.

2.05 HIGH PRESSURE DECORATIVE PLASTIC LAMINATES

A. Manufacturers:

1. Formica Corp.
2. Micarta Div., Westinghouse Corp.
3. Nevamar Corp.
4. Ralph Wilson Plastics Co.
5. Pionite Division of Panolam Industries

B. Adhesives: as recommended by plastic laminate Manufacturer.

2.06 GENERAL NOTES

A. Provide 24 gage stainless steel channel edging strips for exposed edges for sink top and splash back unless otherwise indicated. See Drawing Details. Provide plastic laminate covered splash backs at sides of sink cabinets where they abut walls, cabinets, and at other abutments.

B. Certain cabinets shall have stainless steel channel edging. Tops of movable units shall have hardwood edges securely glued to plywood as indicated on the Drawing Details.

C. Provide continuous neoprene and aluminum weather-stripping at top, bottom and hinge side of door openings and on edge of one door of each metal lined cabinet in shops of Intermediate and High Schools where indicated on Drawings. Weatherstripping at top, bottom and hinge side of door openings shall be Catalog No. 50M; weather-stripping at edge of door shall be Catalog No. 53M, both as manufactured by Zero Weatherstripping Company, Inc. or equivalent by Reese Enterprises Inc. Weatherstripping on meeting edge shall be let into door as indicated on Details.

D. Provide the tempered hardboard materials for sliding doors and backs of certain cabinets at locations indicated on the Drawings. Doors and backs of certain cabinets shall be perforated or solid tempered hardboard of thickness indicated.

E. Provide birch shelf cabinet in Helps' locker rooms. Top shall be covered with plastic laminate as specified herein, finished with stainless steel edging. See Drawing Details.

F. Provide the steel plates for tapered wood legs at movable storage cabinets. See Drawing Details.

G. All book cabinets, book and magazine racks and all other cabinets shall be provided under this Section of the Work in accordance with Detail Drawings.

H. Exposed edge treatment not otherwise specified: Solid wood matching face for species and cut.

I. Where structural columns occur between cabinets in line, wood paneling or cabinet shall be carried across the face of column same height as adjoining cabinet groups, where so indicated on the Drawings.

2.07 ARCHITECTURAL CABINETS - WOOD

A. Comply with AWI requirements for Section 400A Wood Cabinets, Premium Grade, for transparent finish, except provide more stringent requirements, where indicated.

1. See Art. 2.02 for wood species and grades.

2. Thickness of Cabinet components (minimum) other than doors:

a. Ends, Divisions, Bottoms, Tops: Panel 3/4"

b. Rails — Lumber or panel 3/4

c. Shelves — Lumber 3/4" for spans to 36";
1-1/16" for spans to 48"

Veneer Core Plywood Panel 3/4" for spans to 36"

Veneer Core Plywood Panel 1" for spans to 48"

d. Backs — Panel 1/2" nominal

e. Drawer Sides, Backs & Subfronts — Lumber 1/2"
Veneer Core Panel 1/2"

f. Drawer Bottoms — Panel 1/4", 3/8" and 5/8" nominal

g. Drawer Fronts — Lumber 3/4"
Panel 3/4"

3. Size and Thickness for Hinged Cabinet Doors:

Minimum Thickness of Door	Maximum Size Width	Height
3/4"	30"	60"
1" to 1 1/4"	36"	72"

4. Size and Thickness for Sliding Cabinet Doors:

a. Size and Thickness for Sliding Cabinet Doors: For particle board or fiberboard core material:

	Minimum Thickness of Door	Maximum Size Width	Height
Top Suspension	3/4"	30"	72"
Bottom Track	3/4"	24"	32"

Top Suspension	1" to 1 1/4"	36"	84"
Bottom Track	1" to 1 1/4"	30"	36"

5. Size and Thickness for Stile and Rail Doors with Glass or Wood Panels:

Thickness Stiles and Rails Intermediate Rail	Minimum Width of without		Maximum Size Intermediate Rail	Maximum Size with
3/4"	2 1/2"	24" wide,	24" wide, 30" high	48" high
1 1/8"	2 1/2"	30" wide,	30" wide, 48" high	76" high
1 1/4"	2 1/2"	30" wide,	30" wide, 60" high	76" high

6. Edge Treatment of Exposed and Semi-exposed Components, including Doors:

   a. Comply with the requirements of AWI 400A-S-6 Premium Grade, except as follows:

      1) Solid edge 1" depth, of same species as cabinet veneer.

7. Drawer Construction and Assembly:

   a. Comply with the requirements of AWI 400A-S-7, Premium Grade, except as indicated otherwise, in the following:

      1) Exposed Fronts: match adjacent exposed components.

      2) Sides, Backs and Semi-exposed Fronts: Hardwood or softwood lumber.

      3) Bottoms: Plywood core plywood:

For bottoms 12" wide or less: 1/4" thick

For bottoms 12" to 30" wide: 3/8" thick

For bottoms over 30" wide: 5/8" thick

8. Joinery and Fastening of Case Body Members:

   a. Comply with the requirements of AWI 400A-S-8, Premium Grade, except as indicated otherwise herein.

9. Fitting of Case Doors and Drawers:

   a. Comply with the requirements of AWI 400A-T-1, Premium Grade.

10. Joint Tolerances:

   a. Comply with the requirements of AWI 400A-T-2, Premium Grade.

11. Flatness of Wood Doors:

   a. Comply with the requirements of AWI 400A-T-4, Premium Grade.

12. Flushness Between Factory-Assembled Joints:

   a. Comply with the requirements of ASWI 400A-T-4, Premium Grade.

13. Smoothness of Surfaces (min. requirements):

   a. comply with the requirements of AWI 400A-T-5, Premium Grade.

B. Thickness for Stile and Rail Doors

Minimum Width:

Minimum Total	Minimum Width of	Maximum Size	Maximum Size

Thickness	Stiles and Rails	without Intermediate Rail	Intermediate with Rail
3/4"	2 1/2"	24" wide, 30" high	24" wide, 48" high
1 1/8"	2 1/2"	30" wide, 48" high	30" wide, 76" high
1 1/4"	2 1/2"	30" wide, 60" high	30" wide, 76" high

2.08 ARCHITECTURAL CABINETS - LAMINATE CLAD

A. Comply with AWI requirements for Section 400B- Laminate Clad Cabinets, Premium Grade.

B. Laminate Cladding: High pressure decorative laminate complying with the requirements of NEMA LD3:

1. Colors, Finishes, Patterns: as selected by the Project Architect.

2. Surfaces, Grades and Thicknesses:

a. Horizontal surfaces other than tops: GP-50, nominal thickness 0.050".

b. Tops: GP-50, nominal thickness 0.050".

c. Post-formed Surfaces: PF-42, nominal thickness, 0.042".

d. Vertical Surfaces: GP-28, nominal thickness 0.028".

e. Edges: GP-50, nominal thickness 0.050".

C. Surface Material of Panels:

1. Exposed surfaces (other than edges): Grade II.

2. Semi-Exposed surfaces (other than edges): Grade III.

3. Edges: Grade II.

D. Types of Panels:

See Art. 2.03.

E. Wood Laminate Grains:

1. Long direction of panel, unless indicated otherwise on the Drawings.

F. Grades of Semi-exposed Components:

1. Comply with AWI 400A-S-3, Premium Grade, unless indicated otherwise on the Drawings.

G. Materials and Minimum Thickness for Cabinet Components

1.	Body members:	Panel	3/4"
2.	Rails:	Panel or Lumber	3/4"
3.	Shelves:	Veneer Core Plywood Panel for spans to 39" 1" for spans 39" to 48"	3/4"
4.	Backs:	Panel	1/2"
5.	Drawer Sides,	Lumber Veneer Core Panel Particleboard Panel	1/2"
6.	Drawer Bottoms:	Plywood Core Plywood:	

For bottoms 12" wide or less: 1/4"

For bottoms 12" to 30" wide: 3/8"

For bottoms over 30" wide: 5/8"

7. Drawer Fronts: Panel 3/4"

H. Core materials and Thickness for Hinged Cabinet Doors

1. Particleboard: 3/4" 30" width, 60" height

1" 36" width, 72" height

I. Core Materials and Thickness for Sliding Cabinet Doors:

Size and Thickness for Sliding Cabinet Doors: For particleboard or fiberboard core material:

	Minimum Thickness of Door	Maximum Size Width	Height
Top Suspension	3/4"	30"	72"
Bottom Track	3/4"	24"	32"
Top Suspension	1" to 1 1/4"	36"	84"
Bottom Track	1" to 1 1/4"	30"	36"

J. Edge Treatment of Exposed and Semi-exposed Components

1. Body Members and Shelves: Match face laminate

2. Doors: Match face laminate.

3. All edges: banded; pressure-glued.

K. Construction: Comply with the following AWI requirements:

1. Drawer Construction: 400 B-S-7, Premium Grade.

2. Joinery and Case Body Member Fastening: 400B-S-8; 400B-S-9; 400B-T-1; 400B-T-2; 400B-T-3; 400B-T-4. Comply with Standards for Premium Grade.

L. All plywood, composite wood products, glues and laminating adhesives used as part of the cabinet construction shall contain no added urea-formaldehyde.

2.09 CABINET TOPS

A. Comply with the requirements of AWI Section 400C, for Premium Grade.

B. Solid Laminated Wood Tops:

The tops of cases and counters, when built up, shall be grooved and splined and glued or other approved method of joining, cleated on underside where so shown, secured in place with concealed screws and washers, hand scraped and left perfectly true and smooth.

Length in one piece: 10'
Thickness of Top: 1 1/8" minimum

C. High Pressure Decorative Laminate Tops:

Width: if exceeds 60", shop assembled.
Length in one Piece: 12'
Thickness of Top: 3/4" minimum.
Balancing Sheet Requirements: Standard 0.02" backup sheet wherever unsupported area exceeds 4 sq. ft. and core is 3/4" thick; 6 sq. ft. and core is 1" thick; 8 sq. ft. and core is 1 1/8" thick or thicker.

D. All laminating adhesives used for cabinet tops shall contain no added urea-formaldehyde.

2.10 FIXED PANELS

A. Wood paneling areas adjacent to cabinetwork and paneling at walls in other areas:

1. Comply with the requirements of Sections 500 and 500A, Premium Grade.

2. Wood Species: Plain Sawn Red Oak, AWI Grade I.

2.11 FIRE-RETARDANT TREATMENT

A. Where lumber is indicated or required to be fire-retardant treated, provide "FR-S" lumber, complying with AWPA Standards for pressure impregnation

with fire-retardant chemicals to achieve a flamespread rating of 25 or less, when tested in accordance with UL Test 723, ASTM E84 or NFPA Test 255.

1. Where treated items are indicated to receive a transparent or paint finish, use a fire-retardant treatment which will not bleed through or adversely affect bond of finish.

2. Provide UL label or identifying mark on each piece of fire-retardant lumber.

3. Redry treated items to maximum moisture content of 19 percent after treatment.

B. Fire-retardant Treated Plywood

Comply with APA requirements.

2.12 PEGBOARD WALL SURFACES

A. Provide all hardboard materials for pegboard wall surfaces, sliding doors, and storage units at locations indicated on the Drawings.

2.13 ROLLING TRUCKS

A. Provide in classrooms and rooms of instruction where indicated on the Drawings, rolling trucks complete with fixed and adjustable shelves and four ball-bearing swivel casters minimum capacity 100 pounds each, two of which shall be lockable; see Drawing Details.

2.14 BOOKCASES AND MISCELLANEOUS CASES AND CABINETS

A. Bookcases, cabinets, special cabinets, and other casework and cabinets shall be provided in all rooms where so indicated on the Drawings or specified herein.

Provide all doors, cupboards, drawers, counters and shelves, hardware and other accessories and components in connection therewith.

2.15 WOOD CONVECTOR ENCLOSURES

A. Provide wood convector enclosures where indicated on Drawings. Convector enclosure shall be lined with an approved fire-resistant material, installed in a neat workmanlike manner with internal and external corners accurately fitted to receive metal lining specified in Section 07600 "Flashing and Sheet Metal". See Drawing Details.

2.16 COMPUTER COUNTERTOPS

A. Provide Computer Countertops as indicated on the Drawings:

B. High-Pressure Decorative Laminate

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As selected by Architect from manufacturer's full range.

D. Edge Treatment: edge for transparent finish matching wood species used on cabinet surfaces]

E. Core Material: Exterior-grade plywood

F. Backer Sheet: Provide plastic-laminate backer sheet, Grade BKL, on underside of countertop substrate.

G. Supports: Minimum 3/4" plywood with plastic laminate faced sides and exposed edge.

H. Grommets for Cable Passage through Countertops: 1-1/4-inch molded plastic grommets and matching plastic caps with slot for wire passage.

1. Product: Subject to compliance with requirements, provide grommets by Doug Mockett & Company, Inc. or equal

D. All plywood, composite wood products and laminating adhesives used for computer countertops shall contain no added urea-formaldehyde.

2.18 HARDWARE - GENERAL

A. Manufacturers (or approved equal):

1. Cylinders for Drawers, and Book cabinets

    a. Sargent
    b. Russwin
    c. Corbin

2. Cabinet Hardware

    a. Ives
    b. Stanley

3. Door Pulls

    a. Ives
    b. Stanley

4. Drawer Pulls

    a. Ives
    b. Stanley

5. Progressive Drawer Slide

    a. Grant
    b. Knape & Vogt

6. Hinges

    a. Ives
    b. Stanley
    c. Lawrence
    d. McKinney

7. Shelf Standards and Supports

    a. Knape & Vogt
    b. Parker

8. Elbow Catch

a. Ives
b. Knape & Vogt

9. Sheaves for Sliding Cabinet Doors and Sliding Cork Display Boards

a. Knape & Vogt
b. Grant

10. Bottom Track for Sliding Cabinet Doors and Sliding Cord Display Boards

a. Knape & Vogt
b. Grant
c. Stanley

11. Top Track for Sliding Cabinet Door

a. Garcy
b. Grant
c. Stanley

12. Finger Pull for Sliding Hardboard Door

a. Knape & Vogt
b. Ives

13. Flush Pull for Sliding Cabinet Door

a. Ives
b. Rockwood

14. Coat, Hat and Umbrella Hooks

a. Ives
b. Stanley
c. Rockwood

B. Screws

1. Secure hardware with suitable screws and bolts of same material and finish as hardware items unless otherwise specified. Provide Phillips head screws unless otherwise indicated.

2. Manufacturer of each hardware item shall provide the fastenings required for the installation of that item.

C. Hardware Finish:

Hardware finishes shall comply with requirements of U.S. Bureau of Standards for the following:

U.S. - DESCRIPTION

USP - Primed for Painting
US1D - Dull Black
US2C - Zinc Plated, Commercial
US3 - Bright Brass
US4 - Satin Brass
US5 - Satin Brass, Oxidized
US7 - Brass, Nickel oxidized, Bright Relieved
US9 - Bright Bronze
US10 - Satin Bronze
US10A - Antique Bronze, lacquered
US10B - Antique Bronze, oiled
US11 - Satin Bronze, oxidized
US14 - Bright Nickel Plated
US15 - Satin Nickel Plated
US15A - Nickel Oxidized Relieved
US17A - Half Polished Iron, Smooth
US20 - Statuary Bronze, Light
US20A - Statuary Bronze, Dark
US26 - Bright Chromium
US26D - Satin Chromium
US32 - Polished Stainless Steel
US32D - Satin Stainless Steel

2.19 HARDWARE REQUIREMENTS

A. Pin Tumbler Cylinder Lock for Drawers in Tables, Book Cabinets, Bookcases, Supply Cabinets, and other locations indicated:

Bronze.

B. Pin Tumbler Cylinder Lock for Doors in Book Cabinets, Bookcases, Supply Cabinets, and other locations indicated:

Cast bronze lock, size 2" x 1-5/8", with 3/16" x 7/8" bolt of not less than 1" throw, Sargent 1654.

Lock for Sliding Doors shall be cylinder push lock.

C. Cylinders:

Cylinders of locks shall be of proper length to fit doors or drawers for which they are intended. Cylinders shall be solid brass with common standard diameter rotating plug. The keyway shall be paracentric type of single section with seven pins or multiple (four or more) sections with six pins capable of being masterkeyed and grand masterkeyed as specified without duplications or interchanges.

D. Magnetic Catches:

For doors over 3'-0" in height: Aluminum Case. Dual triple pole with self-aligning magnets. Conform to ANSI 156.9 B43161. Ives Heavy Duty Magnetic Catch No. 327.

For doors 3'-0" and under in height: Aluminum Case. Dual double pole with self-aligning magnets. Conform to ANSI 156.9 B43161. Ives Heavy Duty Magnetic Catch No. 326.

E. Elbow Catch on Inactive leaf of Doors Under 3'-0" in Height:

Cast brass elbow catch with spring on plate not less than 2-1/2" x 1", strike plate not less than 1-1/2" x 1/2", six screws. Conform to ANSI 156.9.

F. Hinges for laminate clad doors with particleboard cores:

Provide Blum Modul Series hinges as manufactured by Julius Blum Inc. or equivalent by Sugatsune America Inc. Provide quantity of hinges for door size and weight as recommended by the hinge manufacturer, as a

minimum. Provide at least 3 hinges for doors less than 5'-0" and at least 4 hinges for doors between 5'-0" and 6'-0".

G. Door to Bookcases and Supply Closets:

Solid standard pattern cast-bronze pull with clear finger space 3-1/2" x 7/8", weight.

H. Drawer Pulls:

Approved cast-bronze, secured by two concealed screws. Clear finger space not less than 11/16" x 2-5/8", and 4-1/8" over all. Weight not less than 2 ounces. Unless otherwise specified, provide two pulls for drawers 20" wide or over and one pull for drawer less than 20" wide.

I. Progressive Slides:

Grant No. 527. Provide for each drawer.

J. Cabinet Shelf Rests:

Rests shall be of gray-plate metal supported by gray plate metal standards. Four (4) rests for each shelf. Provide rests for adjustable wood and metal shelves in cases and cabinets indicated on Drawings.

K. For Glass SS Shelves and Free Standing Adjustable Shelving to conform to ANSI/BHMA A156.9:

Knape & Vogt 186-187 Heavy-Duty Brackets, Type 304 stainless steel.

Knape & Vogt 87 Heavy-Duty Standards, Type 304 stainless steel installed in accordance with manufacturer's installation instructions.

Adjustable shelving on pegboard shall be as part of work of Section 06200.

L. Screw Hooks for Umbrellas

Ives No. 581 MB26D hook for umbrella hooks in Teachers'closets or wardrobes.

N. Hardware for Doors in Tables, Cases, Cabinets:

1. Hardware for doors to display cases and display cabinets in corridors indicated on Drawings are provided with cases or cabinets. See Section 10415.

2. Butts for cabinet doors: Wrought Bronze, 3" x 3" fast pin for 1-1/4" doors, 3" x 2-1/2" fast pin for 1-1/8" doors, 2-1/2" x 2-1/2" butts for small doors under counter shelves in cupboards, and 2" x 2" butts for 13/16" doors.

3. Hinges for laminate clad doors with particle board cores shall be Blum Modul Series by Julius Blum Inc. or equivalent product by Sugatsune America Inc. Provide number of hinges for door size as recommended by hinge manufacturer, as a minimum. Provide at least 3 hinges for doors less than 5'-0" and at least 4 hinges for doors between 5'-0" and 6'-0".

O. Doors for Cabinets Over 3'-0" in Height:

Fast Pin Wrought Bronze Butts shall be 3" x 2-1/2" and 3" x 3", 0.092 gage. Each hinge shall have 6 screws. Provide 4 butts for doors 5'-0" to 6'-0" in height, 1- 1/4" thick or less.

Pin tumbler cylinder lock for bookcases, book cabs, and supply cabinets: Cast bronze lock, size 2" x 1-5/8", with 3/16" x 7/8" bolt of not less than 1" throw, Sargent 1654.

Pulls shall be solid standard pattern cast-bronze pull with clear finger space 3-1/2" x 7/8", weight not less than 3-1/2 ounces, secured with 4 screws.

Surface bolts shall be Ives No. 43, 6" long at top and bottom of inactive leaf of double doors. Approved magnetic catch at top or bottom of doors.

P. Small Cupboard Doors, Doors under Counter Shelves, Counters including Storage Cabinets at Science Room and Prep Room Windows:

Fast Pin Wrought Bronze Butts, 3" x 2-1/2" and 3" x 3", 0.092 gage. Each hinge shall have 6 screws. Lock: Cast bronze locker lock, size 2" x 1-5/8", with 3/16" x 7/8" bolt of not less than 1" throw, Sargent 1654. Lock for Sliding Doors shall be cylinder push lock.

Ives Elbow Catch No. 2 MB-26D at top or bottom of inactive leaf of double doors, approved knob pulls, approved magnetic catch at top or bottom of active doors.

Q. Sliding Cabinet Doors in Wood Frames:

Two (2) 400A Knape & Vogt sheaves, Garcy No. 123 top track, Knape & Vogt 467 bottom track for each pair doors, Ives No. 22 flush pulls.

R. Hinged Doors for Wall Cabinets over Sinks:

Fast Pin Wrought Bronze Butts, 3" x 2-1/2" and 3" x 3", 0.092 gage. Each hinge shall have 6 screws. Magnetic catch, no knobs or locks required.

2.20 LOUVERED PANELS FOR CABINET DOORS

A. Provide steel louvers for doors where indicated on Drawings, constructed as indicated on the Drawing Details and as specified herein. Cold rolled steel with baked enamel factory primer finish. Mitered and welded corners. Spanner head security fasteners, countersunk.

B. Fixed Blade Design - Anemostat Door Products model AFDL; modified to have 16 ga. frame and 16 ga. vision-proof louver blades.

2.21 INSTALLATION MATERIALS

A. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.

2.22 FACTORY FINISHING

A. Finish for Wood Cabinetwork: Comply with AWI Section 1500 - Factory Finishing (1500-G-7) System #5 Catalyzed Polyurethanes, Satin-medium rubbed sheen, as follows for Premium grade:

Oak: Filler, washcoat, stain, sealer, sand (220 grit stearated paper), topcoat.

Birch and Maple (and other closed grain woods): washcoat, stain, sealer, sand (220 grit stearated paper) topcoat.

2.23 KEYING FOR CABINETWORK

A. All casework/millwork – doors and drawers shall have locks and keys.

B. All casework/millwork in a room shall be individually keyed, mastered by room and grand mastered.

D. Provide three (3) keys for each lock and three (3) master keys.

PART 3 - EXECUTION

3.01 PREPARATION

A. Examine all areas to receive Work of this Section and correct conditions as required to accommodate the Work.

B. Do not deliver and install Work of this Section until wet work such as plastering, painting and other finishes is completed; the HVAC system shall be operating and maintaining proper temperature and humidity conditions.

C. Condition cabinetwork and paneling to the average ambient humidity conditions prior to installation.

D. Verify the location and condition of concrete inserts, and other built-in anchoring devices.

3.02 INSTALLATION

A. Install cabinetwork and paneling plumb, true, level and without distortion. Shim as needed with concealed wood or hard plastic shims.

Tolerances: 1/8" in 8'-0" for plumb and level (including tops); allow no variation in flushness of adjoining surfaces.

B. Scribe and cut cabinets and paneling to fit adjoining Work. Refinish cut surfaces to match adjacent surfaces; repair damaged finishes.

C. Provide filler strips; trim strips to irregularities of adjacent surfaces.

D. Secure and anchor fixed cabinetwork to substrates with concealed devices and fasteners of sufficient sizes and strengths to support fully-loaded cabinets.

E. Anchor tops to cabinets with concealed fasteners.

F. Secure paneling to substrates or supports with concealed fasteners, where possible; where nails are required, use countersunk finishing nails.

G. Adhesives used in field assembly shall comply with requirements for V.O.C. requirements.

3.03 HARDWARE INSTALLATION

A. Secure hardware with screws, bolts and fasteners of the proper sizes, with finish to match hardware.

B. Secure hardware to metal with suitable tap screws.

C. Shop install hardware.

3.04 ADJUSTMENT, CLEANING, FINISHING, AND PROTECTION

A. Adjust cabinetwork units as required for proper and uniform appearance.

B. Clean and lubricate hardware; adjust hardware for proper operation.

C. Clean woodwork and glasswork on both exterior and interior surfaces.

D. Touch-up shop-applied finishes where damaged or soiled, to obtain a finished appearance to match that of adjacent surfaces. If not possible to obtain a suitable finish, provide a new surface or component.

3.05 CLEANING AND ADJUSTING

A. Clean hardware items thoroughly and adjust for proper operation.

3.06 KEY OPERATION AND INSPECTION

A. Upon completion of the building and after locks have been secured in proper positions, keys belonging thereto shall be fitted and made to work freely in respective locks in the presence of the Facility's Representative.

END OF SECTION

SECTION 07 2100

MISCELLANEOUS BUILDING INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all miscellaneous insulation (thermal and/or acoustic, rigid, blanket, or batt) not explicitly specified in other Sections.

B. Provide miscellaneous building insulation where indicated on the Drawings, where required for proper completion of the Work, and at the following locations:

1. see plans

1.02 NOT USED

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

B. American Society for Testing and Materials (ASTM)

C. New York City Board of Standards and Appeals (BSA) approvals, or New York City Materials Equipment Acceptance (MEA) approvals.

1.04 SUBMITTALS

A. Samples

1. Submit 12" x 12" sample of each type of insulation.

2. Sample shall clearly indicate manufacturer's label and material designation.

B. Manufacturer's Catalog Information

Provide current manufacturers' catalog information and data sheets on each type of insulation furnished.

C. Certificate

When the miscellaneous building insulation is a component of a fire-rated assembly, or is required by local regulations to meet certain characteristics, furnish New York City BSA or MEA resolution of approval of material.

D. Sustainable Submittals:

1. Submit Contractor's Sustainable Materials Form with complete information on recycled content for materials provided under the work of this section in accordance with Section S01352, Sustainability Requirements. Include cost of materials and percentage, by weight, of materials that have post-consumer or pre-consumer recycled content for the following:

   a. Extruded foam insulation (if containing recycled content).

   b. Mineral fiber blanket and batt.

2. Submit documentation of recycled content in extruded foam and fiber insulation materials – product data, mix design information, or manufacturer's statement.

3. Submit documentation of regional materials – product data, mix design information, or manufacturer's statement.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be properly identified with manufacturer's name and, where required, BSA or MEA approval number.

B. Store materials on the site in a dry area protected from the weather.

C. Protect moisture sensitive insulation materials with polyethylene film or waterproof covering. Do not leave foam plastic insulation exposed to direct sunlight.

D. Do not leave exposed in areas where traffic might cause mechanical damage to product.

PART 2 – PRODUCTS

2.01 MANUFACTURER (or approved equal)

A. Dow Chemical U.S.A

B. UC Industries, Inc.

C. Thermafiber Corporation

D. Owens – Corning

E. CertainTeed

F. Roxul, Inc.

2.02 MATERIALS

A. Rigid Insulation

1. Extruded polystyrene, rigid, ASTM C578 Type IV with R-value (aged) of 5.0/inch at 75°F mean temperature when tested in accordance with ASTM C518.

   a. Minimum compressive strength: 25 psi in vertical direction when tested in accordance with ASTM D1621.

   b. Maximum water absorption: 0.1% by volume when tested in accordance with ASTM C272.

   c. Surface Burning Characteristics in accordance with UL tests): Flame Spread - 5, Smoke Developed - 165.

2. Provide Styrofoam Brand square edge by Dow Chemical. Product shall not be produced with or contain any of the U.S. EPA regulated CFC compounds which are listed in the Montreal Protocol.

   Panel thickness: as shown on the Drawings.

3. Adhesive: Type recommended by insulation manufacturer.

B. Mineral Fiber Blanket or Batt (ASTM C665)

1. Sound Attenuation: Type I, thickness as indicated on the Drawings. Density: 2.5 lbs./cubic foot minimum. Thermafiber, Corp.; Roxul, Inc.

2. Foil-backed insulation: Type III, Class A, thickness and R-value as indicated on the Drawings. Density: 3 lbs./cubic foot minimum. R-value: 3.7 min. per inch of thickness. Foil backing shall be omitted from blankets in assemblies indicated to include other vapor retarding materials. Thermafiber, Corp.

3. Blanket and batt insulation units shall be manufactured with a minimum of 20% of pre-consumer content materials.

4. Fungi Resistance: Insulation and facing shall be fungi resistant when tested in accordance with ASTM C1338-00

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are free of defects or protrusions and ready to receive insulation. Do not begin installation until defects are remedied.

3.02 INSTALLATION

A. Install insulation as shown on Drawings and in accordance with manufacturer's instructions.

B. Butt units tightly.

C. Shape insulation around obstructions by means of saw, knife, or other sharp tool.

D. Where insulation is part of the exterior envelope of the building, install insulating material to form a continuous building enclosure without gaps.

END OF SECTION

SECTION 07 9000
JOINT SEALERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all joint sealer Work as indicated on the Drawings, as required for the completed Work, and as specified herein. This Section includes joint sealants for the following applications:

1. Exterior joints in the following vertical surfaces and horizontal nontraffic surfaces:

a. Construction joints in cast-in-place concrete.

b. Control and expansion joints in unit masonry.

c. Joints in dimension stone cladding.

d. Joints between metal panels.

e. Joints between different materials listed above.

f. Perimeter joints between materials listed above and frames of doors, windows and louvers.

g. Control and expansion joints in soffits and other overhead surfaces.

h. Other joints as indicated.

2, Exterior joints in the following horizontal traffic surfaces:

a. Joints between different materials listed above.

b. Other joints as indicated.

3. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:

a. Control and expansion joints on exposed interior surfaces of exterior walls.

b. Perimeter joints of exterior openings where indicated.

c. Tile control and expansion joints.

d. Vertical joints on exposed surfaces of interior unit masonry concrete walls and partitions].

e. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.

f. Joints between metal display boards, display cases, electric panel boards and partitions or other facing materials.

g. Control and expansion joints in ceilings and other overhead surfaces.

h. Joints between plumbing fixtures and adjoining walls, floors, and counters.

i. Other joints as indicated.

4. Interior joints in the following horizontal traffic surfaces:

a. Isolation joints in cast-in-place concrete slabs.

b. Control and expansion joints in tile flooring.

c. Other joints as indicated.

B. The work of this section shall not take place until all paint (as designated by the Facility) has been removed in accordance with specifications

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work

1. American Society for Testing and Materials (ASTM)

1.03 SUBMITTALS

A. Product Data

Catalog sheets, specifications, and installation instructions for each product specified except miscellaneous materials.

B. Samples for Initial Selection:

1. For general purpose use around windows and at relieving angles, Colors of Exposed Joint Sealants: Match Architect's samples. Provide custom colors as specified.

2. For all other uses: provide Manufacturer's color charts consisting of strips of cured sealants showing the full range of Manufacturer's standard colors available for each product exposed to view.

C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-(13-mm-) wide joints formed between two 6-inch-(150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants

D. Quality Control Submittals

1. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

2. Installer's Qualifications Data: Affidavit required under Quality Assurance Article.

3. Company Field Advisor Data: Name, business address, and telephone number of Company Field Advisor.

4. Test Results

a. Sealant manufacturer's test reports certifying compatibility with all contiguous materials.

b. Sealant manufacturer's test reports certifying that the sealant will not stain contiguous materials.

c. The results of field adhesion testing.

1.04 QUALITY ASSURANCE

A. Installer's Qualifications

The persons installing the sealants and their supervisor shall be personally experienced in the installation of sealants and shall have been regularly employed by a company engaged in the installation of sealants for a minimum of two years.

1. Furnish a letter from the sealant manufacturer, stating that the Installer is authorized to install the manufacturer's sealant materials.

B. Container Labels

Include manufacturer's name, trade name of product, kind of material, federal specification number (if applicable), expiration date (if applicable), and packaging date or batch number.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle joint sealer materials as recommended by the Manufacturer, to protect from damage.

1.06 PROJECT CONDITIONS

A. Environmental Requirements

1. Temperature: Unless otherwise approved or recommended in writing by the sealant manufacturer, do not install sealants at temperatures below 40 degrees F or above 85 degrees F.

2. Humidity and Moisture: Do not install the Work of this Section under conditions that are detrimental to the application, curing, and performance of the materials.

3. Ventilation: Provide sufficient ventilation wherever sealants, primers, and other similar materials are installed in enclosed spaces. Follow manufacturer's recommendations.

4. Do not proceed with installation of joint sealants under the following conditions

a. When joint substrates are wet.

b. Where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

c. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.

d. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

e. Surfaces are frozen.

f. Surfaces are superheated by the sun.

B. Protection

1. Protect all surfaces adjacent to sealants with non-staining removable tape or other approved covering to prevent soiling or staining.

2. Protect all other surfaces in the Work area with tarps, plastic sheets, or other approved covering to prevent defacement from droppings.

3. Protect any painted surfaces which are not included in the Work from impact or damage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. General Electric Co., Waterford, NY 12188

B. Dow Corning Corp., Midland, Michigan 48686

C. Pecora Corp., Harleyville, PA

D. ChemRex Inc. - Sonneborn, Shakopee, MN 55379

E. Tremco Sealing and Coatings,Wading River, NY 11792

F. Bostik, Midland, MA 01949

G. Protective Treatments, Inc.(PTI), Dayton, OH 45413

H. Products Research & Chemical Corp., Gloucester City, NJ 08030

I. Sika Corporation, Lyndhurst, NJ 07071

J. Mameco International, Inc./RPM , Cleveland, Ohio 44128

2.02 SEALANTS

A. Type 1 Sealant (for use in vertical expansion joints where movement occurs; for general purpose use around windows, door frames, louvers, and other junctures).

1. One-part low-medium modulus silicone sealant (plus or minus 50% movement); ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, and A:

General Electric Silpruf, Dow Corning's 791, Pecora's 864, Sonneborn's Omniseal, Tremco Spectrem 2 or Sika SikaSil C-955.

Silicones shall meet the following requirements:

- ASTM C719 - Low-Medium Modulus (+ or - 50%). Sealants shall not exhibit any cracking or surface degradation after 5000 hours exposure in the Atlas Twin Arc Weatherometer.

- ASTM C661 - Shall not incur a durometer increase greater than 10 points.

- Sealants shall contain zero parts of toxic isocyanurate ingredients.

Provide custom colors for use around window perimeters, to match window frame or masonry, or other colors as determined by the Architect.

Thoroughly clean surfaces on which sealant is to be applied and prime surfaces as recommended by Manufacturer before applying sealant.

Type 1C Sealant - For general use around windows, door frames, louvers, cast stone copings and other junctures.

One-part silicone sealant; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, A and O: Pecora 890; Tremco Spectrum-1 or Sika's SikaSil WS 295.

Provide custom colors for use around window perimeters, to match window frame or masonry, or other colors as determined by the Architect.

D. Type 1D Sealant (use at interior wet areas only-- Toilets areas)

One-part, mildew resistant silicone sealant; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G and A: Dow Corning's 786, General Electric's Sanitary 1700, Bostik's Silicone Rubber Bathroom Caulk, or Tremco Proglaze.

E. Type 2 Sealant (for joints & cracks 1/4" or less in width)

One-part acrylic polymer sealant; Pecora's 60+ Unicrylic, PTI's 738, or Tremco's Mono.

F. Type 2A Sealant (joints & cracks 1/4" or less in width).

One-part clear acrylic sealant for sealing small joints; PTI's 200 or Tremco's 830.

G. Type 3 Sealant (for concealed bedding only).

One-part butyl rubber sealant; Pecora's BC-158, PTI's 707, Bostik's Chem-Calk 300, or Tremco Butyl.

H. Type 4 Sealant (use at high temperature applications, e.g., flues)

One-part silicone sealant for high temperature; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, and A: Dow Corning's Silastic 726 RTV, General Electric's RTV 106, or Tremco Spectrem 1.

I. Type 5 Sealant (use at relieving angles - between brick and stainless steel sealant edge).

One-component polyurethane sealant; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, and A, Federal Specification TT-S-00230C: Tremco Dymonic, Sikaflex-15LM, Pecora Dynatrol I-XL

Provide custom colors for use at relieving angles.

J. Pre-formed Sealant

Bitumen impregnated flexible polyurethane foam precompressed to 20% of its uncompressed length such as Progress Unlimited's Compriband.

K. For sealants used on site and within the weatherproofing/waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.

2.03 JOINT FILLERS

A. Elastomeric Tubing Sealant Backings: (for precast panel joints not compatible with Silicone Sealants): Neoprene, butyl or EPDM tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

ASTM D 1056, Class SC (oil resistant and medium swell), 2 to 5 psi compression deflection.

B. Expanded Polyethylene Joint Filler (for existing joints)
Flexible, compressible, closed-cell polyethylene of not less than 10 psi compression deflection (25 percent).

C. Closed-Cell Polyurethane or Closed-Cell Expanded polyethylene Joint Filler (for all cast-in-place concrete work).

Resilient, compressible, semi-rigid; W.R. Meadow's Ceramar; A. C. Horn's Closed Cell Plastic Foam Filler, Code 5401; Sonneborn's Sonoflex F.

D. ASTM D1056, Class RE41 (for masonry joints) where shown on the Drawings.

E. Filler Sealant (for Parapet Expansion Joints)

Polybutylene impregnated compressible polyurethane foam precompressed to 50% of its uncompressed length: "Polytite" by Polytite Manufacturing Corp. and distributed by W.R. Grace Co.

2.04 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.

1. For primers used on site and within the weatherproofing/waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.

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.

1. For cleaners used on site and within the weatherproofing/waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.

C Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

D. Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

1. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin)], O (open-cell material)] or B (bicellular material with a surface skin, as approved in writing by joint-sealant manufacturer for joint application indicated, and of

size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

E. Bond Breaker Tape

Polyethylene or other plastic tape as recommended by the sealant manufacturer; non-bonding to sealant; self-adhesive where applicable.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine all joint surfaces for conditions that may be detrimental to the performance of the completed Work. Do not proceed until satisfactory corrections have been made.

3.02 PREPARATION

A. Clean joint surfaces immediately before installation of sealant and other materials specified in this Section.

1. Remove all loose materials, dirt, dust, rust, oils and other foreign matter that will impair the performance of materials installed under this Section.

2. Remove lacquers, protective coatings and similar materials from joint faces with manufacturer's recommended solvents.

3. Use methods such as grinding, acid etching or other approved and manufacturer's recommended means, if required, to clean the joint surfaces, assuring that the sealant materials will obtain positive and permanent adhesion.

B. For Pavements, Walks, and Curbs

1. Set joint fillers at proper depth and position as required for installation of bond breakers, backer rods, and sealants. Do not leave voids or gaps between the ends of joint filler units.

a. Smooth Edged Joints: For joints between two concrete slabs or where new concrete abuts smooth-edged materials, use either cork joint filler or closed cell polyurethane joint filler.

b. Irregular Edged Joints: For joints where new concrete abuts granite curbs or other irregular edges, use closed cell polyurethane joint filler.

c. Priming Joint Surfaces:

1) Prime joints which are to receive Type 1A and 1B Sealants.

2) For joints of friable (crumbly, chalky) masonry surfaces and other surfaces which are to receive Type 1 Sealant, prime as recommended by Manufacturer.

3) Prime joints other than those above if so recommended by the manufacturer's printed instructions.

4) Do not allow the primer/sealer to spill or migrate onto adjoining surfaces.

3.03 JOINT BACKING INSTALLATION

A. Install bond breaker tape in relaxed condition as it comes off the roll. Do not stretch the tape. Lap individual lengths.

B. Install backer rod of sufficient size to fill the joint width at all points in a compressed state. Compress backer rod at the widest part of the joint by a minimum of 25 percent. Do not cut or puncture the surface skin of the rod.

3.04 SEALANT INSTALLATION

A. Except as shown or specified otherwise, install sealants in accordance with the manufacturer's printed instructions.

B. Install sealants with ratchet hand gun or other approved mechanical gun. Where gun application is impracticable, install sealant by knife or by pouring, as applicable.

C. Finishing

Tool all vertical, non-sag sealants so as to compress the sealant, eliminating all air voids and providing a neat smoothly finished joint. Provide slightly concave joint surface, unless otherwise indicated or recommended by the manufacturer.

1. Use tool wetting agents as recommended by the sealant manufacturer.

3.05 FIELD QUALITY CONTROL

A. Field Adhesion Testing of Sealants - Test completed elastomeric joints as follows:

1. Extent of Testing: Test completed elastomeric sealant joints as follows:

   a. Perform 10 tests for the first 1000 feet of joint length for each type of elastomeric sealant and join substrate.

   b. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.

2. Test Method – Test joints by hand pull method described below:

   a. Make knife cuts from one side of the joint to the other, followed by two cuts approximately 2 inches long at sides of joint and meeting cross cut at one end. Place a mark 1 inch from cross-cut end of 2 inch piece.

   b. Use fingers to grasp 2 inch piece of sealant between cross-cut end and 1" mark, pull firmly at a 90 degree angle or more in direction of side cuts while holding a ruler along sides of sealant. Pull sealant out of joint to the distance recommended by the sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension, hold this position for 10 seconds.

   c. For joints with dissimilar substrates, check adhesion to each substrate separately. Do this by extending cut along one side, checking adhesion to opposite side.

3 Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.

4. Inspect tested joints and report on the following:

   a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

   b. Whether sealants filled joint cavities and are free of voids.

   c. Whether sealant dimensions and configurations comply with specified requirements.

5. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.

6. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

7. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.06 CLEANING

A. Immediately remove misapplied sealant and droppings from metal surfaces with solvents and wiping cloths. On other materials, remove misapplied sealant and droppings by methods and materials recommended in writing by the manufacturer of the sealant material.

B. After sealants are applied and before skin begins to form on sealant, remove all masking and other protection and clean up remaining defacement caused by the Work.

END OF SECTION

SECTION 08 1100
STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide steel doors and frames as indicated on Drawings and specified herein.

B. The following Section contain requirements that relate to this Section:

Thresholds, weatherstripping and Seals...Section 08 4100

1.02 NOT USED

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Underwriters' Laboratories, Inc. (UL)

2. American Society for Testing and Materials (ASTM)

3. National Fire Protection Association (NFPA)

4. Steel Door Institute (SDI)

5. Hollow Metal Manufacturers Association (HMMA)

6. Interteck.

1.04 SUBMITTALS

A. Product Data

Manufacturer's catalog sheets, specifications, and installation instructions.

B. Shop Drawings:

1. Show details of each frame type, elevation and construction for each door type, conditions at openings, location for each door type, location and installation requirements for finish hardware (including cutouts and reinforcements), details of connections, and anchorage and accessory items.

2. Include a schedule of doors and frames using the same reference numbers for details and openings as those on the Contract Drawings.

3. For sound rated assemblies, provide drawings indicating interface of sound rated doors and frames with adjacent construction. Include details of each frame type, cam hinge (when used), sound seals, door bottom, threshold, and door. Indicate location and installation requirements of door and frame hardware and reinforcements. Indicate glazing materials and details for glazed assemblies.

C. Samples

1. Frames: Corner sample of each type, 18" x 18" with mortises and reinforcements, shop primed.

2. Doors: Corner sample of each type showing construction, 18" x 18", with mortises and reinforcements, shop primed.

3. Louver panel.

D. Certificates

1. Include approval data and acceptance by a New York City Building Department approved testing agency for all fire-rated assemblies.

2. Provide certification glazing meets safety impact requirements of CPSC 16 CFR 1201.

3. Provide certification for oversized assemblies as described in Quality Assurance.

4. Letter from manufacturer certifying that exterior opaque doors are insulated to achieve a "U" Factor no greater than 0.60 when tested in accordance with ASTM C1363.

E. Warranties

Provide manufacturer/installer warranty.

1.05 QUALITY ASSURANCE

A. Provide doors and frames complying with ANSI/SDI A250.8 and as herein specified.

B. Fire Rated Assemblies

Wherever fire resistance classification is shown or scheduled for steel doors and frames, provide fire rated units that have been tested as fire door assemblies and comply with National Fire Protection Association (NFPA) Standard No. 80, are tested in accordance with NFPA 252 or UL 10B/UL 10C and UL 1784 as required by the NYC Building Code and comply with these Specifications. Identify each door and frame with metal UL, or Warnock Hersey labels indicating applicable fire class of the unit. Rivet or weld labels on the hinge edge of door and jamb rabbet of frame.

1. Oversize Assemblies: Whenever fire rated assemblies are larger than size limitations established by NFPA, provide manufacturer's certification that they have been constructed with materials and methods equivalent to requirements for labeled construction.

2. See Door Schedule in the Drawings for Label Requirements (Class) for respective openings.

C. Regulatory Requirements

Not withstanding the requirements for fire-rated assemblies noted above, all fire-rated doors and frames shall be approved for use in New York City.

Provide evidence of acceptance by an approved testing agency. Provide permanent labels on doors and frames as required by the New York City Building Code. Labels shall be applied at the factory or where fabrication and assembly are performed.

1.06 WARRANTY

A. Submit warranty signed by manufacturer and installer, agreeing to replace assemblies which fail in materials, performance or workmanship within the specified warranty period.

1. Warranty Period: 1 year from date of Substantial Completion.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store doors and frames on raised platforms in vertical position with blocking between units to allow air circulation.

B. During delivery, storage and handling, protect doors and frames from water damage.

C. Provide delivery, storage and handling in such manner to prevent damage to products.

1.08 FIELD EXAMINATION

A. At the Site, before door installation, the Facility reserves the right to select at random one or more doors for examination by cutting a portion of such size to reveal the construction of the particular door.

1. If the examination finds that the doors examined do not comply with requirements of the Specifications, all doors shall be removed from the Site and new doors shall be provided. Costs of examination and replacement of rejected doors shall be borne by Contractor.

2. If the examination finds that the doors do comply with the requirements of the Specifications, the cost of the examination and the cost of the replacement of the examined doors will be borne by the Facility.

1.09 GAGE STANDARDS

A. Gages specified are based on U.S Standard Gauge for hot rolled and cold rolled steel sheets.

B. The allowable tolerances for steel sheet thicknesses shall be in accordance with HMMA Standards.

PART 2 - PRODUCTS

2.01 MANUFACTURERS (or approved equal)

A. General Fireproof Door Corp., Bronx, NY 10474

B. Acme & Dorf Door Corp., Clifton NJ 07011

C. Ceco Door Products Div., Brentwood, TN 37027

D. Acme Steel Door Co., Brooklyn, NY 11222

E. Curries Company, Mason City, IA 50401

F. Metallines Fire Door Co., Bronx, NY 10457

G. Long Island Fireproof Door, Port Washington, NY 11050

H. Michbi Doors Inc. Brentwood, NY 11717

2.02 MATERIALS

A. Hot-Rolled Steel Sheets and Strip

Commercial quality carbon steel, pickled and oiled, complying with ASTM A1011 and ASTM A568.

B. Cold-Rolled Steel Sheets

Commercial Quality carbon steel complying with
ASTM A366 A1008 and ASTM A568.

C. Galvannealed Steel Sheets

Carbon steel sheets of commercial quality complying with ASTM A653 Doors and frames shall have A60 zinc-iron coating, mill phosphatized, complying with
ASTM A653

D. Anchors and Supports

Fabricate of gages indicated on and of not less than 16 gage sheet steel, unless otherwise indicated, on the drawings

1. Galvanized Units: Galvanized anchors and supports used with galvanized frames, complying with
ASTM A153, Class B.

E. Anchorage Devices, Bolts, and other Fasteners

Manufacturer's standard units unless otherwise indicated on the Drawings.

1. Galvanized Units: Galvanized items used with galvanized frames complying with ASTM A153, Class C or D as applicable.

2.03 FABRICATION

A. Fabricate hollow metal work accurately and assemble neatly to ensure work smooth and free from dents, tool marks, visible waves, warp, buckles and conspicuous joints.

B. Align lines straight and true with arises and angles as sharp as practicable. Miter corners in true alignment and join similar abutting profiles accurately.

C. Assemble all joints to form imperceptible intersections when finished.

D. Form each member, such as jamb and head, from a single piece of metal, unless otherwise shown or approved.

E. Fasten all members together to provide rigid construction in assembled work. Weld all connections except those for removable members such as glazing beads.

F. Weld, dress smooth and flush joints on exposed faces.

G. Clearances

Fabricate doors for their respective frames within the following clearances:

1. Jambs and Head: 3/32" to 1/8".

2. Meeting Edges of Pairs: 1/8" to 3/16".

3. Bottom (no threshold or carpet): 3/8", maximum.

4. Bottom (at threshold or carpet): 1/4", maximum.

H. Work showing defects or blemishes will be rejected, and rejected work shall be replaced with satisfactory work.

2.04 DOORS

A. General

1. Provide steel doors of types and styles indicated on drawings or schedules. Comply with ANSI/SDI A250.8 requirements unless more restrictive requirements are specified herein.

2. Design and Thickness: Flush design doors, seamless vertical edges, hollow construction,
1-3/4" thick unless specifically noted otherwise.

3. Sound Deadening (ASTM E90): Minimum Sound Transmission Class (STC) of 30.

4. Door Edges: Bevel lock stile edge of single acting hinged doors 1/8" in 2". Double acting doors shall have rounded edges, approximately
2¼" radius. Meeting stiles of pairs of single acting doors shall be "V" beveled or rounded as detailed on the Drawings or required.

5. Glazing Stops and Beads: Fixed steel stops, formed integral with door unless otherwise approved by the Facility, on the outside of exterior doors and on the secure side of interior doors. Removable steel beads, of tubular steel of gage indicated on the Drawings or solid bar stock, on the other side of doors secured with machine screws. Form corners with butted hairline joints. Coordinate width of rabbet between fixed stop and removable bead and depth of rabbet with type of glass and glazing required.

6. Astragals: Steel, spot-welded to inactive door for exterior doors, as indicated on the Drawings.

7. Glazing:

   a. Non-rated doors - 1/4" thick minimum laminated glass meeting safety impact requirements of CPSC 16 CFR 1201.

   b. Fire-rated doors – Fire Protection rated glazing meeting safety impact requirements of CPSC 16 CFR 1201.

   Size and location of vision panels shall be as indicated on the drawings.

B. Interior Doors

1. Fabricate interior doors with 2 outer stretcher-leveled, steel sheets of 16 gage unless indicated otherwise on the Drawings. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces and stile edges, except around glass and louver panels. On mortise face of door, vertical joints shall be welded, filled and ground smooth. For all toilet room, locker room, mechanical room, food service area doors and other doors indicated on the door schedule, all

outer sheets of the door shall be galvannealed and welds shall be coated with zinc rich primer.

2. Provide surface sheet reinforcement for surface sheet, edge, hardware, stops and other provisions, of size and gage as detailed on Drawings.

3. Provide 16 GA top and bottom channels and closures as detailed on the Drawings.

4. For Dutch doors, provide metal shelf as detailed on Drawings.

C. Louvered Panels for Doors

1. Provide steel louvers for doors where indicated on Drawings and as specified herein. Cold rolled steel with mitered and welded corners and factory-applied baked enamel primer finish. Spanner head security fasteners, countersunk.

2. Fixed Blade Design - Anemostat Door Products model AFDL or approved equal, modified to have 16 gage frame and 16 gage vision-proof louver blades.

3. Fire Rated Design - Anemostat Door Products model FLDL-UL or approved equal, 16 gage frame and blades, fusible link release mechanism. Comply with requirements of NYC Building Code. The assembly shall be acceptable by a New York City Building Department approved testing agency.

2.05 FRAMES

A. General

1. Provide steel frames for doors, transoms, sidelites, borrowed lites, and other openings where shown, of size and profile as indicated on Drawings.

2. Construction: Full-welded unit construction, with corners mitered and continuously welded full depth and width of frame, unless otherwise indicated. Knock-down type frames will not be accepted.

a. Fixed Stops: Integral 5/8" stop unless otherwise indicated. Construct jambs and heads from one piece of metal each; rabbeted and flanged as required for the various types of openings, and neatly mitered or interlocked and welded together. Provide channel, angle and bent plate reinforcing as indicated on approved Shop Drawings or otherwise required. Provide reinforcing in the heads of frames where shown or required.

3. Frame Material

   a. Exterior Frames: 12 gage Galvannealed steel sheet unless indicated otherwise on Drawings.

   b. Interior Frames: 14 gage Galvannealed steel sheet unless indicated otherwise on Drawings.

4. Provide frames for masonry openings with adjustable Underwriter's type masonry anchors to suit conditions of installation, using not less than three (3) at each jamb, in addition to floor anchors.

5. Provide frames with calking stops, filler pieces and trim where indicated on Drawings or required; integrally formed as part of the frame wherever possible. Applied calking stops, filler pieces, and other members as indicated, shall be neatly attached by spot welding. All welds at galvannealed frames shall be painted with zinc-rich primer.

6. Equip sound-proof frames with adjustable door stops and continuous rubber seals. Fill frames solidly with sound-deadening material.

7. At butts, cut back jamb the thickness of one leaf of butt.

8. Drill and tap reinforcement to template.

9. Spot weld 20 gage plaster guard to frame at latch cutouts, if applicable. Paint all welded areas with zinc-rich primer.

10. Provide reinforcement for hardware as indicated on Drawings and as required for proper hardware installation. Refer to Section 08710 - Finish Hardware.

11. Provide frames for other openings as indicated on the Drawings.

12. Provide cutouts and reinforcing for security devices as required.

2.06 SHOP PAINTING

A. All doors shall be delivered to the site with a full shop coat. Doors not fully shop coated shall not be accepted.

B. Chemically wash, rinse, and dry exposed and concealed surfaces of fabricated units.

C. Apply one coat of rust-inhibiting primer (Carboline "Carbozinc 11 HS" or approved equal) to all exposed surfaces of ungalvannealed doors and frames. Use the same paint to touch up all welded areas of galvannealed doors and frames. Apply primer per the manufacturer's recommendations

D. Units shall pass the following tests:

1. Salt Spray Test complying with ASTM B117 for 120 continuous hours.

2. Water fog Test Complying with ASTM D1735 for 240 continuous hours

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions

Examine substrate and conditions, under which the frames are to be installed, for defects which will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install steel doors, frames, and accessories in accordance with the Drawing Details, approved Shop Drawings, and the manufacturer's printed instructions, except as otherwise indicated.

B. Frame Installations

Place frames accurately in position; plumb, align, and brace securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreader bars, leaving surfaces smooth and undamaged.

1. At in-place concrete and in-place masonry construction, place frames and secure in place with anchorage devices. Set anchorage devices opposite each anchor location, in accordance with details on approved Shop Drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.

a. Anchor frames as detailed on the Drawings.

2. Place fire rated frames in accordance with NFPA Standard No. 80.

3. Provide necessary field splices in frames as detailed on approved Shop Drawings, welded and finished to match factory fabrication.

4. Extend jambs to structural floor slab and securely anchor in place.

C. Door Installation

1. Install doors accurately in their respective frames within the clearance specified in Part 2.

2. Place fire rated doors with clearances as specified in NFPA standard No. 80.

D. Drill and tap doors and frames to receive surface applied hardware.

3.03 ADJUSTING

A. Prime Coat Touch-up

Immediately after installation, sand smooth and clean rusted and damaged areas of shop prime coat and apply touch-up of original primer.

B. Final Adjustments

Check and adjust operating finish hardware items prior to final inspection. Leave work in complete and proper operating condition.

3.04 CLEANING

A. Clean doors, frames, and accessories, leaving free of dirt and other foreign material after completion of installation.

END OF SECTION

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SECTION 08 4100 - ALUMINUM ENTRANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. General Contract Provisions and Sections of this Division 1 apply to work of this Section.

1.02 DESCRIPTION OF WORK:

A. Furnish and install exterior aluminum entrances including aluminum & glass doors and adjacent window walls, all anchors and trim as required by the Drawings and as specified herein.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

A. Section 08 7100: Finish Hardware

1.04 QUALITY ASSURANCE:

A. Design Criteria:

1. Designs and specifications are based on the products of Amarlite Architectural Products. Equal products of Kawneer, Tubelite and Vistawall (or approved equal) will be acceptable.

B. Performance: Entrances and Window walls shall meet or exceed the following values. Test reports indicating compliance shall be submitted for approval.

1. Entrance Swing Doors:

a. Structural: Resistance to corner racking shall be tested by the Dual Moment Load Test and Test Section shall withstand a load of 270 pounds on the lever arm before reaching the point of failure, which shall be considered a rotation of the lever arm in excess of 45°.

b. Air Infiltration (Exterior Entrance Doors): Air infiltration shall be tested in accordance with ASTM E 283, at a pressure differential of 1,567 P.S.F. A single 3'-0" x 7'-0" entrance door and frame shall not exceed .50 CFM per linear foot of perimeter crack.

1.05 SUBMITTALS:

A. Manufacturer's Data: Submit 2 copies of manufacturer's data, recommendations, and standard detail for aluminum doors, frames, including fabrication, finishing, hardware, accessories and other components.

B. Shop Drawings: Submit shop drawings for the fabrication and installation of exterior and interior doors and frames, and associated components of the work. Include wall elevations at 1/2" scale, one half-size detail sections of every typical composite member. Show anchors, joint system, expansion provisions, flashings and other components not included in manufacturer's standard data. Include glazing details.

C. Samples: Submit three (3) samples of required aluminum finish, on 12" long extrusions of the alloy to be used for the work.

1. Architect reserves the right to require samples of typical fabricated sections, showing joints, exposed fastenings (if any), quality of workmanship, hardware and accessory items, before fabrication of the work proceeds.

1.06 GUARANTEE:

A. Submit 2 (2) copies of written guarantee signed by the Manufacturer, Installer, and Contractor, agreeing to replace aluminum doors and frame assemblies which fail in materials or workmanship within 3 years of the date of acceptance. Failure of materials or workmanship shall include (but not be limited to) failures in operation of doors and hardware, excessive leakage or air infiltration, excessive deflections, deterioration of finish in excess of normal weathering, and defects in accessories, weatherstripping, and other components of the work.

PART 2 - PRODUCTS

2.01 ALUMINUM SWING DOORS:

A. Extrusions shall be 6063-T5 alloy and temper. Fasteners, where exposed, shall be aluminum, stainless steel or plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be EPDM elastomeric extrusions. Major portions of the door stiles shall be .125" in thickness and glazing molding shall be .050" thick.

B. Fabrication:

1. The door stile and rail face dimensions of the door shall be as follows:

   a. Vertical stiles: 3½"
   b. Top rail: 3½"
   c. Bottom rail: 6½"

2. Corner construction shall consist of mechanical clip fastening, SIGMA deep penetration and fillet welds. Glazing stops shall be snap-in type with EPDM glazing gaskets.

3. The exterior door weathering on a single acting offset pivot and frame (single or pairs) shall be manufacturer's special weathering consisting of a dense, semi-rigid polymeric material, which shall remain resilient and retains its weathering ability under temperature extremes.

C. Hardware:

1. Hardware for Aluminum & Glass doors as scheduled herein is based on products as manufactured by the Kawneer Company Inc.

   a. Hardware shall be factory applied and locks shall be capable of being grand master keyed with the keying system of the building.

D. Schedule:

a. Typical hardware all doors

1. Pivots: Cast aluminum top offset pivot, intermediate pivot and bottom offset pivot. Finish shall be a thermosetting polyester powder coated finish to match door finish.

2. Locks: Controller locking system with a Adams Rite MS-1850A Deadlock or approved equal keyed both sides.

3. Push-pulls: Push bar shall be "CPII" & pull (1) CS-9 with a 15" centerline dimension. Push-pulls shall have a nylon coated finish, color as selected by Architect.

4. Thresholds

b. Specific Hardware

1. Doors 176 and 177

a. Closer (basis of design): Kawneer "Husky & Sam II" concealed overhead closer w/ 100% hold open.

2.02 FINISH:

A. Finishing of all exposed aluminum framing including doors, shall consist of a factory applied spray coating, finish same as aluminum window interior and exterior finishes. Pretreatment of aluminum shall be accomplished in strict accordance with the procedures recommended by the manufacturer of the coating and shall be pretreated by a 9 step system to insure proper preparation of surfaces.

B. Color shall match color at exterior. All finishes shall meet the high performance requirements of AAMA605.2-1980.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Comply with manufacturer's specifications and recommendations for the installation of aluminum doors, and frame assemblies.

B. Set units plumb, level and true to line, without wrap or rack or frames, assemblies and doors. Anchor securely in place. Separate aluminum and other corrodible metal surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

C. Set exterior sill members and other exterior members in a bed of compound as shown, or with joint fillers or gaskets as shown to provide weathertight construction. Refer to Section 07920 -Sealants for components, fillers, and gaskets to be installed after the installation of frame assemblies.

D. All joints between framing and the building structure shall be sealed in order to secure a watertight installation.

E. Refer to Section 088100 - Glazing for installation of glass shown to be "Glazed" into

doors and framing assemblies.

F. Clean aluminum surfaces promptly after installation of frames and doors. Remove excess glazing and sealant compounds, dirt and other substances.

G. Advise the Contractor of protective treatment and other precautions required through the remainder of the construction period, to ensure that frames and doors will be without damage or deterioration at the time of acceptance.

END OF SECTION 084100

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SECTION 08 7100
FINISH HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide finish hardware as indicated on Drawings, as specified herein and as needed for complete hardware requirements.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American National Standards Institute (ANSI).

2. National Fire Protection Association (NFPA).

3. Door and Hardware Institute (DHI).

4. Underwriters Laboratories (UL).

1.03 SUBMITTALS

A. Manufacturer's Technical Product Data: Submit for each hardware item type, including cuts, specifications and characteristics, instructions for installation, operation, and maintenance.

B. Samples: Prior to submittal of the final hardware schedule and prior to delivery of hardware, submit one (1) sample of each typical exposed lockset unit. The sample will be reviewed by the ARCHITECT for design, color and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor. Samples approved by the Architect shall be turned over to the Facility for attic stock.

C. Hardware Schedule

NOTE: Provide Schedule for entire Project in one submittal, unless otherwise directed. Submit Hardware Schedule in book form (8½" x 11" pages), indicating the following for each item. No continuous computer printout permitted.

1. Locations of hardware, with cross-reference to schedules and other indications on Drawings.

2. Name, manufacturer, type, style, size, function, and finish.

3. Information for fastenings.

4. Mounting Locations.

5. Materials and sizes of doors and frames.

6. Explanation of abbreviations and symbols.

At time of submittal of Hardware Schedule, furnish hardware templates to fabricators of other factory-prepared work necessary for installation of hardware.

D. Templates

E. Key Schedule

1. Consult with the Facility prior to preparing a keying schedule in order to confirm the required keying scheme.

2. Submit Hardware Key Schedule, prepared by hardware supplier, to the Facility within forty-five (45) days after starting date of Contract.

3. Stamp top face of each key with letter and number using keyset symbols as set forth in the BHMA handbook. Tag each series of keys.

4. Stamp face of each cylinder with the same corresponding keyset symbols.

5. Locks shall be made up on combinations as specified.

F. Furnish schedule of keys in quadruple indicating keyset symbol of each key and number of rooms, cases, lockers, and other locations for which the keys are intended. Submit schedule for approval before making keys.

G. Deliver to the Facility the required number of keys for each lock, properly marked

H. Key Cabinet Schedules

I. Key Machine, Key Blanks and Attic Stock

Furnish the following in accordance with Article 4.02E:

1. Automatic key cutting machine.

2. 300 of each manufacturer's cylinder key blanks.

3. 10% attic stock of manufacturer's cylinders with keys.

J. Warranties

Furnish Warranties as specified in Article 1.08

1.04 QUALITY ASSURANCE

A. Hardware Supplier

Finish hardware shall be furnished by those having a minimum 3 years of builders hardware experience and shall have in their employ at least one certified Architectural Hardware Consultants (AHC) to correctly interpret the plans, detailed drawings and specifications.

B. Manufacturer

1. Manufacturer shall have minimum of three (3) years successful experience manufacturing types and sizes of Hardware specified herein.

2. Obtain each hardware type from a single manufacturer.

C. Minimum Quality Requirements

The manufacturer shall certify that the Hardware items to be furnished shall be of quality specified herein, and meet the requirements of the applicable ANSI A156 Grade 1 standard for each item.

D. Fire-rated Openings

Provide hardware in compliance with NFPA Standard No. 80 and NYC Building Code requirements, tested and listed by UL for types and sizes of doors, and in compliance with requirements of door frame and door labels.

1.05 SHIPPING, STORAGE, AND HANDLING

A. Package and ship hardware to prevent damage. Properly identify and tag each item. Sort, package and mark hardware with set numbers.

B. Inventory hardware immediately upon delivery.

C. Provide secure (locked) storage area for hardware until installed.

1.06 PROJECT CONDITIONS

A. Coordinate hardware with other work. Tag each item or package separately, with identification related to the final hardware schedule and include basic installation instructions in the package. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated and as necessary for proper installation and functions. Deliver packaged hardware items to the proper locations for installation.

B. Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware.

1.07 CONSTRUCTION KEYING

A. All new buildings, additions or phased modernization projects must utilize a Construction Master Key System. This system is to insure the integrity of the keys and the security of the building. This system must be utilized throughout the construction period. Upon acceptance of Project by the Facility, the temporary construction cores must be removed and replaced with permanent cores before the 'Building Turnover'.

1.08 WARRANTIES

A. The hardware manufacturers shall provide full replacement warranty as listed below. Replacement warranty shall include material and labor cost.

-Exit Devices	3 years.
-Locksets, etc.	1 year.
-Hinges	1 year.
-Balance of hardware	1 year.

B. Closers shall be warranted to properly operate door, free from mechanical defects for ten years from date of substantial completion of the Work. Closers which fail to meet specified requirements shall be replaced or repaired and made to operate properly by Contractor without additional expense to the Facility.

PART 2 - PRODUCTS

2.01 MANUFACTURERS OR APPROVED EQUAL

A. Butts

1. Stanley
2. McKinney
3. Hager
4. Bommer
5. Lawrence

B. Continuous Hinges

1. Markar
2. McKinney
3. Ives

C. Locksets, Passage Sets (Lever Type) (Double cylinder is required for the intruder function.)

1. Yale SL 8800 FL Series mortise lock with JSL Jefferson Lever trim in satin stainless steel finish (US32D). Model 8818-2 for security intruder with visual indicator.

2. Sargent 8200 Series mortise lock with LW1B trim in satin stainless steel finish (US32D). Model 49-8238 for security intruder with visual indicator

3. Schlage L9000 Series mortise lock with 07 lever and N escutcheon. Provide security function with XL12-751 Security Indicator, in satin stainless steel finish (US32D).

4. Marks BE101 5000-BL Series US 32D finish.

5. Best Access Systems 45H series mortise lock with 15J trim US 32D finish. INL–Intruder for intruder function with visual indicator.

6. Corbin Russwin ML2002 for intruder function with visual indicator.

D. Rim Latch

1. Yale
2. Segal

E. Cylinders

1. Sargent
2. Corbin Russwin
3. Schlage
4. Marks
5. Yale
6. Falcon

F. Exit Devices

1. Von Duprin 99 Series
2. Precision APEX 2100 and 2200 Series
3. Sargent 8700 and 8800 Series
4. Falcon 25 Series

G. Pulls

1. Rockwood
2. Ives

H. Push Plates

1. Rockwood
2. Ives

I. Door Closers (non-ADA)

1. LCN
2. Norton
3. Sargent
4. Yale
5. Dorma
6. Falcon

J. Door Closers (for-ADA)

1. LCN 1461 DEL
2. Norton 8501 BF DA
3. Dorma 8616AF86P by FCOB
4. Yale 3501 BF DA

5. Falcon SC81 DEL

K. Stop and Holder

1. Glynn Johnson
2. Architectural Builders Hardware
3. Rixson (Heavy-Duty 8HD Series)

L. Electro-Magnetic Door Holder/Closer

1. Rixson
2. LCN

M. Surface Bolts

1. Ives
2. Rockwood
3. Securitech

N. Flush Bolts

1. Ives
2. Rockwood
3. Glynn Johnson

O. Mortise Privacy Door Bolt

1. Ives
2. Sargent

P. Security Locks

1. Sargent
2. Yale
3. Securitech
4. Secur-A-Door, Inc.

Q. Wall Bumpers, Floor Stops

1. Ives

R. Sliding Door Hardware

1. Grant

2. Stanley

S. Cardholders

1. Rockwood

T. Kick plates

1. Ives
2. Rockwood

U. Coat and Hat Hooks

1. Ives
2. Stanley
3. Rockwood

V. Tool Hooks

1. Stanley
2. Ives

W. Letter Box Plate

1. Ives
2. Parker

X. Silencers
1. Ives
2. Rockwood

2.02 MATERIALS AND FABRICATION

A. General

1. Hardware: Heavy duty cast or forged (.080 min.) bronze with satin chromium finish U.S. 26D, except as otherwise specified.

2. Interior Door Holders: Steel, satin chromium U.S. 26D finish.

3. Door closers: As specified herein.

4. Interior butts and horizontal releases: As hereinafter specified with chrome finish.

5. Surfaces of castings shall be true, smooth and free from burrs. Lock mechanism and accessory components in contact with or bear upon other parts shall be dressed to a true, smooth surface.

6. Items of cast iron shall be annealed.

7. Whenever weight is specified, it shall mean actual weight of casting without screws, washers and accessories.

8. Do not use products with manufacturer's name in an exposed location, except name on rim of lock cylinders.

9. Backset: 2-3/4" for locksets and latchsets unless indicated otherwise.

B. Screws

1. Secure hardware with suitable screws and bolts of same material and finish as hardware items unless otherwise specified. Screws for strike and face plates, hinges, transom hardware, half-mortise brass locks, pulls, coat and hat hooks, overhead door holders, and door checks and brackets for these items shall be flat-headed counter-sunk screws. Screws for other exposed hardware shall be oval-headed. Screws for butts for exterior aluminum doors shall be stainless steel. Screws for other entrance door butts, closers, and holders shall be machine screws. Screws shall be countersunk unless expressly specified otherwise. Provide Phillips head screws unless otherwise indicated.

2. Hardware for metal frames and doors shall be secured with suitable machine screws, mill screws and bolts.

3. Manufacturer of each hardware item shall provide the fastenings required for the installation of that item.

4. Self-tapping or TEK screws are not permitted.

5. Wood screws for securing door butts shall be at least two inches long to secure butts through jamb and into wood stud behind jamb and blocking.

C. Hubs

Hubs for lever spindles: Sintered steel, copper infiltrated.

2.03 GENERAL HARDWARE REQUIREMENTS

A. Hardware Schedule is intended to guide Contractor in preparing the Schedule for Work of this Section. It shall not relieve Contractor from the necessity of examining Specifications, Drawings and Details, and providing everything necessary to properly complete hardware installation.

B. Hardware used on hollow metal doors, transoms, sash or jambs, shall be made to templates and packed with machine screws or other fastenings recommended by the manufacturer for the particular application scheduled.

C. Hardware items not described shall be equal in grade, workmanship, and other particulars to similar items of hardware described.

2.04 FINISHES

A. Hardware finishes shall comply with requirements of U.S. Bureau of Standards for the following:

U.S. - DESCRIPTION

USP - Primed for Painting
US1D - Dull Black
US2C - Zinc Plated, Commercial
US3 - Bright Brass
US4 - Satin Brass
US5 - Satin Brass, Oxidized
US7 - Brass, Nickel oxidized, Bright Relieved
US9 - Bright Bronze
US10 - Satin Bronze
US10A - Antique Bronze, lacquered
US10B - Antique Bronze, oiled
US11 - Satin Bronze, oxidized
US14 - Bright Nickel Plated
US15 - Satin Nickel Plated
US15A - Nickel Oxidized Relieved
US17A - Half Polished Iron, Smooth
US20 - Statuary Bronze, Light
US20A - Statuary Bronze, Dark
US26 - Bright Chromium
US26D - Satin Chromium
US32 - Polished Stainless Steel

US32D - Satin Stainless Steel

In addition, the following finish symbols are used for door closers:

AL - Manufacturer's standard aluminum lacquer
BL - Manufacturer's standard brown, bronze or gold lacquer

2.05 HARDWARE TYPE REQUIREMENTS:

A. Locks and Latches

1. Main Entrance Doors:

Provide exit devices with following features:

a. Non-handed, or field-reversible touch bar type.

b. Full reversible rim lock.

c. Field sizable.

d. 3/4" throw, anti-friction latch bolt.

e. ANSI Function: 03.

f. U.L. Label as indicated on Drawings.

g. Standard accessories.

h. Latch Bolt: Not less than 3/4" x 1", full-throw, anti-picking, easy spring type, constructed to operate by slight pressure on horizontal touch bar, regardless of amount of pressure against door.

i. Latch Operation: With horizontal touch bar inside and by key outside. Latch capable of being locked back with Allen wrench.

j. Precision 2103 x 1703A

2. Storerooms, Closets and Janitor's Sink Closets:

Electro-bronze plated case not less than 2-3/8" x 3-1/2" with heavy strike to suit conditions at jamb. Latch bolts not be less than 1" x 1/2", full 1/2" throw.

3. Offices, and other locations indicated (Cylinder Lockset with intruder function):

   a. Type: mortise, double cylinder. Easy spring cylinder lock with latch bolt and guard bolt.

   b. Case: 5-5/8" high, 4" wide, 3/4" thick. Steel, with zinc dichromate finish.

   c. Backset: 2-3/4"

   d. Hub: sintered steel, copper infiltrated.

   e. Front: 8" high x 1-1/4" wide stainless steel, adjustable, protected, attached to case by machine screws.

   f. Levers: solid stainless steel, secured to 5/16" square, hardened steel spindles.

   g. Stainless steel visual indicator on inside to confirm whether the door is secure or not. Indicator attached to door by machine screws.

   h. Operation: From inside by lever at all times. Outside lever can be locked/unlocked from inside. Outside lever operated by key or made stationary, as desired. Guard bolt, working on closed strike plate, automatically locks latch bolt to prevent it from being forced back when closed.

   i. Secure locksets to doors with Phillips Head screws unless otherwise indicated.

4. Passage Set for locations indicated:

   Similar to Lockset described in Article 2.05, Subparagraph A.5, except latch bolt operable by lever from both sides and no cylinder.

5. Cylinders:

   Cylinders of locks shall be of proper length to fit doors for which they are intended. Cylinders shall be solid brass with common standard diameter rotating plug. The keyway shall be paracentric type of single section with seven pins or multiple (four or more) sections with six pins capable of being masterkeyed and grand masterkeyed as specified without duplications or interchanges.

   Provide cylinders with removable cores.

a. Removable Cores: Core insert, removable by use of a special key; for use only with core manufacturer's cylinder.

6. Strikes:

Strikes for latches shall project sufficiently to properly protect trim. Slots in strike plates shall not be more than 1/4" longer than bolts. Metal between slots for latch and bolt shall not be less than 1/4".

Strikes used with hollow metal jambs shall be of box type with closed back.

7. Latch Bolts:

Latch bolts shall be constructed so that they will not work loose. Where washer is riveted to latch spindle, rivet head shall be full and machine upset. Latch and lock bolts not otherwise specified shall be cast bronze.

8. Receiving Room Doors:

a. For double doors with active leaf a dutch door:

1. For upper part of active leaf provide four point surface mounted dead-bolt, interior thumb turn, exterior cylinder operation with a steel guard plate.

2. For lower part of active leaf provide two point mortise lockset with a primary and bottom bolt, modified storeroom function and a ridge exterior trim

3. For inactive leave provide surface mounted two-point top and bottom bolt. Function of lock is to be control by a cylinder from the interior only no outside control.

4. For both doors including top and bottom leaves of dutch door provide stationary bolt mounted on hinge side of doors.

B. Bolts and Catches

1. Extension Bolt for Large Double Interior Doors:

Face Plate: Cast bronze, not less than 1" x 6-3/4" x 1/8" (A.S.A.), recessed, with large thumb piece secured with 4 screws. For wood doors, set face plate flush. For hollow metal doors, set face plate on surface with edges rounded or beveled.

Bolt: 1/2" square, full 3/4" throw, bolt carriage smoothly fitted with strong guide posts and heavy spring.

Guide Plates: Heavily flanged

Strike: Composition or concrete floor shall have 3" deep strike with flange not less than 1/4" at top and well-grouted in position. For wood floor, strike shall be flanged back full 1/2" and secured with 2 screws.

2. Surface Bolts for Double Doors:

Surface bolts shall be Ives No. SB453, 8" long top and bottom of inactive leaf of double doors.

C. Door Pulls

1. Main Entrance Doors without exit devices:

Heavy pattern, cast bronze store door handle and plate. Handle secured to plate by through bolts. Plate shall be not less than 3" x 15", raised 1/4" with recessed back, beveled or rounded edges, having four lugs on back to receive bolts from escutcheon plate on opposite side of door. Lock cylinders shall be fitted through plate. Plate and handle, without cylinder or screws, shall weigh not less than 2 pounds 10 ounces, and shall be secured by 6 screws.

2. Entrance Doors without exit devices:

Heavy pattern-cast bronze pull bolted to heavy cast-bronze plate with beveled or rounded edges, having four lugs cast on back to receive bolts from escutcheon plate on opposite side of door. Weight of handle and plate not less than 20 ounces.

3. Vestibule and Other Interior Doors without latching devices:

Standard, pattern cast-bronze pulls Rockwood 130 Pulls shall have lugs on underside to receive heavy machine screws running through door. Screws exposed on back of door shall be of brass, with countersunk brass washers not less than 1/2" diameter. Heads of screws concealed by push plates and other

hardware items shall be round-headed steel machine screws with flat washers, let into door sufficiently to clear head.

NOTE: Where two pulls are specified for a door, the pull used on closet, space or room side of door shall be the same type of pull secured with three screws. Pulls shall be Rockwood 130.

For small access doors to pipe spaces, provide flush finger pulls, Rockwood 94P x 94L.

4. Pulls for Wood Doors:

Pulls shall be solid standard pattern cast-bronze pull with clear finger space 3-1/2" x 7/8", weight not less than 3 1/2 ounces, secured with 4 screws.

5. Small Doors:

For non-ADA applications: Small wrought-bronze round knob, not less than 1" in diameter.

D. Door Holders and Stops

1. Overhead Door Stop and Holder:

Holder shall be combined door stop and holder with attachment for releasing holding device so that apparatus can be used either as door stop and holder or as door stop. Holder shall be of sufficient length to extend more than one-half the width of door measured from hinge side secured to jamb head with four (4) No. 14, 2-1/2" wood screws or four (4) No. 14-20 hardened steel machine screws. Secure bracket on door with four (4) 1/4" through-bolts, heads concealed with buttons or caps, except on hollow metal doors, where brackets shall be secured with machine screws. Stops and holders for interior doors shall be bronze. Finish of door stops and holders for interior doors shall match door hardware. Holders/Stops shall be Glynn Johnson 81 series.

2. Overhead Door Stop and Holder. (Interior wood Doors):

Holders shall be approved type of such length and design that door end of holder can be secured to door at a point more than one-half the width of door away from edge of hinge stile. Secure holders to wood jamb head with four (4) 1/4" wood screws 3" long, and to door with two (2) 1/4" carriage bolts and nuts concealed by bronze buttons or caps. Secure to hollow metal door frame with screws as recommended by manufacturer. Holders shall hold door open at approximately 90

degrees, and release when door is sharply pulled to close it. Fit holders with approved type shock absorber to relieve strain on door butts. Holders/Stops shall be Glynn Johnson 81 series.

3. Door Holders and Door Stops:

Doors swinging in an arc of not more than 100 degrees against flat wall surfaces, cabinets, or similar installation, unless otherwise specified, shall be provided with WS11 wall stop or FS13 floor stop. Other doors, unless otherwise specified, shall be provided with Glynn Johnson 81 Series holder. Omit holder feature on hollow metal doors.

4. Door Stops for Hollow Metal Doors:

Hollow metal doors shall be provided with stop to suit condition except where otherwise specially indicated. Hollow metal doors shall be provided with overhead stops similar to Glynn Johnson 81 Series without holder feature.

5. Door Holders (Double Doors):

Door holders for Supply Closet double doors in Corridors shall be provided for one door only, unless otherwise specified.

E. Door Closers

All surface closers shall exceed ANSI A156.4 Grade 1 requirements in all aspects as called for below. All closers shall have certification by an independent testing laboratory of 10,000,000 cycles without failure.

1. Door closers shall have cast iron cases treated to overcome porosity, arms of malleable iron, and connecting rods of high carbon steel.

2. Door closers shall be full rack-and-pinion hydraulic type. Hydraulic fluid shall be non-gumming and non-freezing. Closer shall have multi-size spring power adjustment to permit setting of spring power. Closer shall have two non-critical valves, hex key adjusted to independently regulate sweep and latch speed. Closer shall have adjustable back-check controlled by a hex key adjusted valve.

a. For Disabled Accessible Doors:

Provide delayed-action type closer which permits door to close slowly. Closers shall be preset at factory for approximately 15 seconds, and able

to be adjusted on job for up to one minute. Sweep period of closer shall be adjusted so that from an open position of 70°, door will take at least 3 seconds to move to a point 3" from latch to leading edge of door.

Door opening Force for Hinged Interior Door: 5 lbs., except for fire-rated doors which shall comply with the minimum force allowable for designated rating.

3. Door closers shall be of size shown in the following schedule except where otherwise specified:

a.	Interior doors up to and including 32" wide	No. 2
b.	Other interior doors, except vestibule doors	No. 3
c.	Exterior and vestibule doors	No. 4
d.	Soundproof doors	No. 4

4. Closers on wood doors shall be through-bolted with sex bolts.

5. Closers described in Par. E.1 shall be equipped with valve control back check for opening.

6. Corner brackets are not permitted

7. Provide plastic covers for closers.

8. Provide no closers on Hollow Metal access doors, unless otherwise specified.

9. Closers on doors in entrance hall or lobby shall be on room side of doors.

10. All closers shall be of one manufacturer's products.

11. All closers shall be inspected after installation by a factory representative to insure proper adjustment and operation. A report shall be filed with the Architect after visit has been made.

12. Closers are not required on wardrobe and closet doors.

F.Butts and Hinges

1. Extra Heavy Wrought Bronze Butts: Ball bearing, self-lubricating butts, with inner edges of leaves beveled, three to each door unless otherwise specified. Fast pin for outside doors and loose pin for inside doors. Fast pin butts shall have stainless steel pins, stainless steel set screw in barrel, stainless steel balls and raceways. 8"x6" butts shall be 0.203 gauge and 6" x 5" butts shall be 0.190 gauge with 8 or 10 screws each butt. Butts shall have flat button tips stamped with classification number and trade name or trademark of manufacturer.

2. Fast Pin Butts:

   Fast Pin Wrought Bronze Butts shall be 3" x 2-1/2" and 3" x 3", 0.092 gage. Each hinge shall have 6 screws. Doors 5'-0" or over in height shall have 3 butts to each door.

3. Wrought Bronze Butts (Interior Doors):

   a. Interior doors, unless otherwise specified, shall have wrought bronze butts, five knuckle, ball or oilite bearing. Full mortise type for hollow metal doors and half surface for wood doors 32" or wider.

   b. Butts shall be of cold rolled bronze with inner edges of leaves beveled to form close fitting joints. Outer edges shall be true, corners square, surfaces finely finished and highly polished.

   c. Pins shall be of cold drawn stainless steel wire grooved to hold lubricant.

   d. Balls and raceways shall be stainless steel.

   e. Tips shall be bronze of flat button type, with shoulders flush with barrels.

   f. Butts shall have classification number and trade name or trademark of manufacturer stamped on tips.

   g. Where wrought bronze butts as described in F.3 are specified in Hardware Schedule, Contractor may substitute ball or oilite bearing, flat button tip, wrought steel butts.

   h. Each butt shall have two (2) permanently attached ball or oilite bearing washers, enclosed in solid bronze casing, consisting of hardened steel raceways and hardened tool steel balls.

   i. Hollow metal steel doors shall be provided with full mortise loose-pin butts except open out doors to closets, storerooms and supply rooms shall have

fast-pin butts. Fast-pin butts shall have pins fastened to knuckle by a set screw not accessible when door is closed.

4. Spring Butts: Two (2) single acting. McKinney 1502 4"x 4".

5. Quantity of hinges shall be provided to conform to the following:

-Doors up to 60" in heights : 2 hinges
-Doors 60" to 90" in height : 3 hinges
-Doors over 90" in height : 1 hinge every 30" or part thereof

6. Full Mortise Anchor hinge set: Shall be of 0.190 gauge, steel or wrought bronze butts, five knuckle, ball or iolite bearing type. Right or left hand as specified.

7. Size of wrought steel or bronze butts shall be in accordance with the following schedule:

DOOR TYPE	BRONZE NO.	STEEL NO.	BUTT SIZE
Exterior Entrance Doors to 36" wide	Stanley FBB199	(NONE)	6" x 5"
	or		
	McKinney T4B3386		6" x 5"
Sound Proof Doors	Stanley FBB199 or	Stanley FBB168 or	6" x 5"
	McKinney T4B3386	McKinney T4B3786	6" x 5"
Doors to Stairs 1-3/4" thick up to 42" wide	Stanley FBB212	Stanley FBB222 or	5"x4-1/2"
		McKinney TA392 or	
		McKinney TA792	5"x4-1/2"
1-3/4" thick HM doors Over 42" wide and subject to heavy use and abuse	Stanley FBB212	McKinney TA792 or	5"x4-1/2"
		McKinney TA392 or	
		Stanley FBB222	5"x4-1/2"
Doors 1-7/8" to 2-1/4" thick up to 37" wide and for use in existing frame	McKinney T6B3386	McKinney T6B3786	8"x6"
1-3/4" thick to 37" wide HM	Stanley FBB191	Stanley FBB179	4-1/2"x4-1/2"
	Or	or	
	McKinney TB2314	McKinney TB2714	4-1/2"x4-1/2"
1-3/4" wood Doors	None	McKinney TA2772 x Back Plate	4-1/2"x4-1/2"
		Or	
		Stanley FBB173 x Back plate	
			4-1/2"x4-1/2

DOOR TYPE	BRONZE NO.	STEEL NO.	BUTT SIZE
Wire mesh doors	Stanley BB191	Stanley BB171	4"x4"
H.M. Access doors	McKinney TB2314	McKinney TB2714	4"x4"

G. Continuous Hinges

1. Full height piano-type hinge providing full height door support.

2. Shall support weights up to 600 lbs. 4'-0" maximum door width.

3. Material shall be 14 gauge, 304 stainless steel.

4. Barrel Type: Exterior barrel diameter .438 (7/16), with .25 diameter 304 stainless steel pin.

5. Each knuckle shall be 2", including self lubricated twin nylon bearing at each separation.

6. Hinges shall meet ANSI/BHMA Standard A156.26 Grade 2.

7. Fasteners: provide #10 x 1/2" self drilling Tek screws, and #10 x 1" wood screws standard. If security fasteners are required, they must be specified.

8. Provide 1-3/8" Adjusta-Screw or Adjusta-Stud type fastener with 10-32 internal thread. Hex adjustment must be supplied.

9. Hinge Series:

   a. Markar: FM300

   b. Ives 700 series stainless steel pin and barrel hinges

   c. Mckinney MCK-FM300

H. Padlocks

1. Type "C" Padlocks:

   Padlock case shall be of 1-3/4" extruded brass, cornered elliptical shape. Ridge of case shall be 1-3/4", depth 1-19/32" and thickness 13/16". Shackle shall be 11/32" diameter, of cadmium plated hardened steel, and shall lock at both toe and heel. Width of opening of shackle from top of case to inside of shackle shall be 29/32".

2. Type "D" Padlocks:

Padlock case shall be of 1-1/2" extruded brass, cornered elliptical shape, 1-1/2" wide, 1-1/4" deep, and 21/32" thick. Shackle shall be 1/4" diameter, of cadmium plated hardened steel, and shall lock at both toe and heel. Width of opening of shackle from top of case to inside of shackle shall be 5/8".

3. Both Type "C" and "D" padlocks shall have cylinders capable of being keyed individually, keyed alike, masterkeyed in sets and grandmasterkeyed, as scheduled.

4. Padlocks shall have 14 gage steel wire chains 9" long attached to lock and riveting pins with rivets and clevis. Chains, rivets, clevis and riveting pins shall be hot dip galvanized or cadmium plated.

5. Provide Type "C" padlocks described in H.1 for outside gates, and at other locations indicated on Drawings or specified. Set up locks alike and provide five (5) keys for each lock.

6. Provide Type "D" padlocks described in H.2 for outside and inside window guards in Stair Enclosures and Corridors above street level, hinged fresh air intakes, and other locations indicated on Drawings. Set up locks alike and provide five (5) keys for each lock. Provide no padlocks on outside and inside wire mesh window guards (except those in Stair Enclosures, at roofs and in Corridors).

7. Stamp or cast manufacturer's name and the words, "Property of the NYCDDC" on padlocks.

I. Magnetic Catches:

For doors 3'-0" and under in height: Aluminum Case. Dual double pole with self-aligning magnets. Conform to ANSI 156.9 B43161. Ives Heavy Duty Magnetic Catch No. 326.

2.06 MISCELLANEOUS HARDWARE

A. Card Holder

Heavy cast-bronze, to receive 2" x 3-1/2" card. Secure with 4 counter-sunk screws. Place holder on stile of door above door lever with bottom of holder 5' above floor.

B. Plastic and Stainless Steel Kick Plates and Stretcher plates

1. Kick plates shall be 16" in height, full width of doors between stops except when used on doors with 1/2 surface hinges. Kick plates for doors with half surface hinges shall be 6" shorter than the width of the door and centered on the door. All kick plates shall be secured with flush countersunk screws. Double swing doors shall have plates on both sides, single swing doors, unless otherwise specified, shall have plates only on the side opposite the pull. Kick plates are not required for wardrobe doors.

2. Plastic kick plates, Ives 8400, 16" high, shall be fabricated of high impact polyethylene or plastic conforming to ANSI J106. Plastic plate shall be 1/8" thick, black color with satin matte finish both sides, edges beveled, holes (maximum of 8" centers) drilled and countersunk for No. 6 oval head screws.

3. Stainless steel kick plates, Ives 8400 S32D, 16" high, 0.050" thick, edges beveled, secured with oval head countersunk stainless steel screws approximately 4" apart.

4. Stainless steel stretcher plates, Ives 8400 S32D, 12" high and full width of door, .050" thick, edges beveled, secured with oval head countersunk stainless steel screws approximately 4" apart.

C. Bronze Kick Plates

Polished bronze, 16 gage, 16" high and full width of door, secured with oval head countersunk brass screws approximately 4" apart. Bevel or round exposed edges.

D. Push Plates

Stainless steel plates, Rockwood 71C, 4" x 16", full 1/16" thick with beveled edges 4 sides and secured with 6 stainless steel screws. When used as escutcheon, plate shall be pierced on centerline, to suit lock with which it is used.

E. Coat and Hat Hooks

1. Ives No. 571 (cast brass) 26D ANSI A156.16. Provide hooks for back of doors in Principal's Toilet and Medical Toilet, and other locations indicated on Drawings. Provide two (2) No. 10 screws each hook.

2. Aluminum hat hooks for aluminum hat and coat racks are furnished and installed under Section 05700.

F. Door Stops for Doors to Toilet Rooms, Rest Rooms, Locker Rooms and Stairs

Cast-bronze flange and rubber socket bumper with 1" diameter rubber secured with pin. Secured flange with 3 bronze screws to wood block. Ives No. 447, B26D, weight 8 ounces and projection 3".

G. Letter Box Plate

Provide wrought bronze letter box plate for door to Facility management office, Ives No. 620-B26D.

H. Sliding Hardboard Doors

Knape & Vogt finger pull 803NP, one on each door.

No knobs or lock required.

I. Sliding Cork Display Boards

Knape & Vogt 402 sheaves, Knape & Vogt 455 bottom track, 2-1/8" x 1" approved aluminum angle pull for each door.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide complete installation of finish hardware items as indicated on Drawings and as specified herein.

B. Mount hardware as recommended by respective manufacturer.

C. Mount door (room) hardware items at heights and locations on doors and frames in accordance with "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by Door and Hardware Institute, except where specifically indicated otherwise.

D. Set hardware items plumb and level and secure with proper fasteners.

3.02 TRAINING

A. After delivery of, but before installation of the hardware, the General Contractor shall coordinate and schedule hardware installation training. The training will be conducted on the installation of locksets, door closers, exit devices, overhead stops and electromechanical hardware conducted by the manufacturer's representative for each of the product categories. The training shall be conducted on the job site with the installers of

wood, hollow metal and aluminum doors in attendance. Any installer working with low voltage wiring of electromechanical hardware shall be in attendance.

3.03 APPLYING HARDWARE

A. Hardware specified in this Section shall be fitted, installed and adjusted.

B. Use screws and/or bolts furnished by the manufacturer of the hardware item and install in accordance with the manufacturer's instructions and templates and as required. Install full complement of screws and/or bolts.

C. Self-tapping or TEK screws are not permitted except when used for continuous hinges.

D. At completion of Project, leave hardware in perfect condition, free from stains, varnish, scratches and mars. Half-surface butts shall be bolted on doors with nuts on hinge side of doors.

E. Card holders shall be installed on doors as indicated on Drawings with bottom of holder 5' above floor.

F. No surface hardware, except butts and pivots, shall be installed before final coat of paint or varnish has been applied.

3.04 CLEANING AND ADJUSTING

A. Clean hardware items thoroughly and adjust for proper operation.

3.05 KEY OPERATION AND INSPECTION

A. Upon completion of the building and after locks have been secured in proper positions, keys belonging thereto shall be fitted and made to work freely in respective locks in the presence of an Facility's Representative. The required number of keys for each lock, properly marked, shall be delivered to the Facility, who will give a receipt of such delivery.

3.06 EXISTING BUILDING MODIFICATION

A. Existing Doors Modified for Disabled

Provide the following:

1. Remove existing locksets and replace with new locksets as scheduled below.

2. Add kick plates as described in Art. 2.06,B. to push side of wood doors.

3. Replace existing door closer with new closer as specified in Art. 2.05, Subpara. E.,2.,a. herein.

B. Removals

1. Where doors are designated to be removed as part of Contract, locksets, knobs, closers, butts and other hardware shall be removed from the doors and shall remain the property of the Facility.

2. Where existing locksets are specified to be removed from existing doors to remain and replaced with new disabled locksets as part of Contract, locksets shall be removed from these doors and remain the property of the Facility.

3. Removed hardware shall be turned over to the facility / building management office

C. Contractor shall furnish the Central Shops with an itemized breakdown of removed hardware. A signed receipt shall be obtained from the Central Shops shall be submitted with request for final payment.

D. Unless otherwise specified, new locks for interior doors shall be masterkeyed in sets as hereinafter designated and grand masterkeyed for entire building.

E. Unless otherwise specified, all locks shall be provided with three (3) keys. Locks with double cylinders shall be provided with three sets of keys. (three keys for each cylinder). When record of existing keying is available, Keying for new locks shall be incorporated into keying system of the existing building.

F. Where rooms have two entrances from corridor or adjoining rooms, locks for these doors shall be keyed alike.

PART 4 – SCHEDULES AND KEYING

4.01 FINISH HARDWARE SCHEDULE

A. Provide hardware for each door, each pair of doors, and each set of doors, in compliance with "Hardware Set Numbers" indicated in Door Schedule on Drawings, and as specified herein.

Manufacturer's names and product designations for hardware types are listed for the purpose of establishing minimum requirements. Provide the product specified or comparable product of other manufacturers listed in Art. 2.01 for each hardware type.

B. All wood doors, except wardrobe doors shall have stainless steel kick plates whether or not included in Hardware Sets listed below. Hollow metal doors do not require kick plates unless expressly specified otherwise.

C. All door frames located in smoke partitions and fire-rated partitions shall be provided with continuous smoke seals at jambs and head, whether or not listed in Hardware Sets below. Manufacturer/model: Pemko S44D; McKinney S44D.

Item	Quantity	Mfr. & Cat. No.

SEE PLANS FOR HARDWARE SETS

4.02 KEYING

A. General Keying Requirements

1. Unless otherwise specified, locks for exterior doors shall be master keyed to a single exterior door master and subject to a great grand master key only. Furnish three keys for each lock.

2. Unless otherwise specified, locks for interior doors shall be master keyed and grand master keyed in sets as hereinafter designated and great grand master keyed for the entire building. Unless otherwise specified, furnish three keys for each lock. For intruder function locks with double cylinder, furnish three sets of keys for each lock.

3. For existing buildings, when record of existing keying is available, incorporate keying for new locks into existing keying system. When new keying system is required to be added to existing building, provide separate master keys and grand master keys.

4. For existing buildings being totally renovated, the contractor shall provide new locks into keying system as described herein.

5. For building additions of greater than twenty new spaces:

   a. The Contractor shall integrate new locks and hardware into existing keying system.
   or
   a. The Contractor shall provide new locks and hardware for the addition with new keying system as described herein. The keying system for the addition shall be independent of the keying system of the existing building. The

building will require two sets of great grand master keys, one for the existing system and another for the new addition.

or

a. The Contractor shall provide new locks and hardware for the addition and new locks for the existing building using one integrated keying system as described herein.

6. For free standing building annex:

The Contractor shall provide new locks and hardware for the annex with new keying system as described herein. The keying system for the annex shall be independent of the keying system of the primary building.

B. Keying Schedule

1. Boiler Room, Switchboard Room, Pipe and Duct Spaces, Fan Room, refuse and recycling room:

Separate combinations for each room. Master keyed in one set.

2. Administrative: Office, Toilet, and Closet, General Office and Switchboard, data closet, File and Duplication Room, Sound System Control Closet, bicycle storage, Unisex shower and changing area:

Separate combination for each room, master keyed in one set.

3. Janitors Office, workshop and Store Room:

One combination.

4. Receiving Room:

a. All locks keyed alike. Furnish 5 keys

5. Offices:

a. All offices to be individually keyed. For double cylinder locks with intruder function, key inside and outside the same. The key to interior divided offices(s) shall open the entry door from the corridor. However, the corridor entry key shall not open the interior space(s). This pertains to spaces like the office suite, Etc.

6. Staff Only Spaces:

Toilet, staff workrooms (AKA staff lounges), staff dining room, etc.

a. All of these staff only spaces, no matter what floor they are on, shall be operated with the same key. These doors should be operable with the door key, department master, grandmaster and great grand master key.

b. Locks to staff toilets must remain in the locked position whenever the key is removed from the door lock. Privacy locks must be provided in all staff toilets. These doors should be operable with the door key, grandmaster and great grand master key.

6. Toilets:

a. Male and Female toilets should be keyed separately by sex, but by the same use group. These toilet rooms must be capable of being operated as locked or unlocked spaces. The corridor doors should be operable with the door key, grandmaster and great grandmaster key.

b. Staff Toilets

See above

c. Public Toilets with privacy compartments

Public toilets, marked as such, are to be capable of being left in a locked or unlocked position. These corridor doors should be operable with the door key, and great grand master key.

7. Janitorial Spaces:

a. All janitor sink closets should be operable with the same key.

b. All Janitorial spaces should be treated as a department.

c. All doors to operate with the door key, Janitor's master, grandmaster and great grandmaster.

8. Receiving Room:

a. All locks keyed alike. Furnish 5 keys

E. Turnover of a New Building or Modernization Phase

At least sixty days prior to turnover, the principal and members of the cooperating agencies (The NYCDDC and the contractor) must initiate the key management system turnover process. This process consists of five parts:

1. Key Management System:

45 days prior to turnover of a new building or a phased modernization, the contractor is to have a key management system in place and operable.

The system shall include:

a. Key Cabinets with a printed schedule. The schedule shall include the following column headings: Room Number, Hook Number and Coded Key Number.

The Key Cabinets shall accommodate all keys furnished by the contractor, as well as all keys furnished for loose furniture and equipment as provided by the DDC, plus 10% overage.

b. The top face of each key shall be stamped with the keyset symbol as established by the BMHA handbook.

c. Each Key shall be on a key ring and with a stamped brass tag attached, corresponding to its numbered hook in the Key Cabinet(s).

d. The face of each lock cylinder shall also be stamped with the keyset symbol. Where stamping a small cylinder is impractical (some casework), then a stamped brass tag shall be attached to the item, immediately adjacent to the cylinder.

e. Loose furniture and equipment keys: The keys from all NYCDDC supplied Furniture & Equipment, e.g., desks, file cabinets, storage cabinets, staff lockers, shop equipment etc. shall be collected, code stamped, added to the key management system and duplicated by the contractor.

f. The key cabinets and management system shall be similar in quality and specification to one provided under the TEL-KEY name.

2. Furnishing of Day One Key Rings:

a. The contractor shall furnish three sets of keys for each room in the building. This shall be in addition to the typical requirement of three keys per lock. The contractor will provide coded sets of keys, on rings with the room number stamped on a brass tag containing one each of the following keys:

- office key
- S toilet key
- Telephone Cabinet key
- Elevator key
- Staff only room keys
- Loose furniture & shop equipment keys

b. All other keys and all attic stock keys are to be placed in the key cabinets for distribution by school personnel.

3. Commercial Duty, Automatic, Key Cutting Machine with Blanks & Cylinders:

One month prior to turnover, the contractor shall supply to the principal:

a. One (1) commercial duty, automatic key cutting machine and a separate grinder with one wire wheel and one fine grinding wheel.

b. 300 of each manufacturer's cylinder key blanks for each type of cylinder keyway used in the building. This shall also include key blanks for loose furniture & equipment keys.

c. 10% attic stock of manufacturer's cylinders with keys for each type of different cylinder keyway used in the building.

4. Key Turnover:

a. Under no circumstance will loose, enveloped, bundled or unmarked keys be turned over to the school. All keys are to be turned over only to the school's custodian. The DDC shall obtain a signed receipt specifying precisely what keys are being turned over.

b. Master Keys, Grand Master Keys and The Great Grand Master Keys are to be sent certified mail, return receipt request with signature from the hardware vender, directly and only to the custodian. The hardware vendor or the contractor shall not furnish Master, Grand Master or Great Grand Master Keys to any party other than the custodian.

5. Building Turnover:

Immediately prior to the building turnover, the principal or his/her designee shall participate in "turning over" of the Room Keys. This will eliminate the use of the Construction Master System. The school will now operate only on its secure keying system. The contractor and the DDC shall not have any keys in their possession that will open any doors in the building after that time.

F. Key Operation and Inspection:

Upon completion of the building and after, locks belonging there to shall be fitted and made to work freely in respective locks in the presence of an Facility's Representative. The required number of keys for each lock, properly marked, shall be delivered to the Facility, who will give a receipt there of.

END OF SECTION

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SECTION 08 8100

MISCELLANEOUS GLAZING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Work of this Section includes all labor, materials, equipment and services necessary to complete the miscellaneous glass and glazing as shown on the drawings and/or specified herein, including but not limited to glazing of the following:

1. Interior translucent laminated safety glass

2. Wire glass at rated hollow metal doors and certain wood doors in hollow metal frames. Laminated wired glass for exterior door sidelights and transoms.

3. Miscellaneous clear tempered glass.

4. Miscellaneous float glass (non-tempered)

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Flat Glass Marketing Association (FGMA).

2. Underwriters Laboratories, Inc. (UL).

3. American National Standards Institute (ANSI).

4. Federal Specifications (FS).

5. ASTM E1886 Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

6. ASTM E1996 Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

7. Consumer Product Safety Standard (CPSC) 16 CFR 1201

8. American Society for Testing and Materials (ASTM)

1.03 SUBMITTALS

A. Product Data

Submit manufacturer's printed product data, specifications, standard details, installation instructions, use limitations and recommendations for each material used.

B. Samples

Glass: 12" x 12" pieces for each type of glass specified herein. All samples shall bear a label stating the name of the manufacturer, the product's brand name and thickness.

C. Quality Assurance

1. Provide test reports indicating products meet or exceed specified requirements.

2. Compatibility Test Report: From sealant manufacturer, provide test report indicating sealant compatibility with interlayer.

D. Warranties

Provide written warranties as specified herein.

1.04 QUALITY ASSURANCE

A. Compatibility of Materials

Components of glazing system shall be manufactured or recommended by one manufacturer to assure compatibility of materials.

B. Installer: A firm with a minimum of 3 years experience in type of work required by this Section and which is acceptable to manufacturers of primary materials; and with a successful record of in-service installations similar in size and scope to this Project.

C. Comply with recommendations in "Glazing Manual" and "Glazing Sealing Systems Manual" of Flat Glass Marketing Association except as shown or specified otherwise and specifically recommended otherwise by manufacturers of glass and glazing materials.

D. Safety Glazing Material (General)

Type indicated, meeting requirements of the Consumer Products Safety Commission and of ANSI Z97.1 with label on each piece.

E. Wire Glass

Provide products meeting the requirements of Underwriter's Laboratories (UL) classification marking for fire resistance.

F. Noise-Reducing Glass

Meeting the required STC rating by complying with ASTM E90.

G. Glass Thickness and Strength

Determine and provide size, thickness and strength (by heat treatment) of glass products that are certified to meet or exceed performance requirements specified in this Section. Provide units with proper thickness, edge clearance and tolerance to comply with recommendations of glass manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and products in unopened, factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and standards of good practice.

1. Protect materials from moisture, sunlight, excess heat, sparks and flame.

2. Sequence deliveries to avoid delays, but minimize on-site storage.

3. Protect glass from edge damage during handling, storage, and installation.

1.06 PROJECT CONDITIONS

A. Environmental Requirements

1. Comply with glazing materials manufacturer's written recommendations regarding environmental conditions under which glazing materials shall be installed.

2. Perform work of this Section only when existing or forecasted weather conditions are within limits established by manufacturers of materials and products used.

3. Install sealants only when temperatures are within limits recommended by sealant manufacturer, except, never install sealants when temperatures are below 40°F.

1.07 WARRANTY

A. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form, made out to Owner and signed by laminated-glass manufacturer agreeing to replace laminated-glass units that deteriorate within specified warranty period indicated below.

1. Warranty Period: five years from date of substantial Completion

2. Deterioration of Laminated Glass: Defects developed from normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

PART 2 –PRODUCTS

2.01 GLASS

A. Type A Glass

Transparent Float Glass; ASTM C1036, Type I, Class 1, quality q3.

1. Thickness: As indicated on Drawings.

B. Type B Glass

Clear Wired Glass; ASTM C1036, Type II, Class 1, Form 1, quality q6.

1. Thickness: 1/4".

2. Wire Mesh: Diamond welded, approximate 7/8" by $1^1/_8$" diamonds.

3. 1/2" thick (nominal) Laminated Wired Glass:

One sheet of 1/4" Clear Wired Glass and one sheet of 1/4" Transparent Float Glass permanently laminated together with minimum 0.060" thick sheet of clear plasticized polyvinyl butyral produced specifically for laminating glass.

C. Type C Glass

Tempered Float Glass; ASTM C1048, Kind FT, Condition A, Type I, Class 1, tempered by manufacturer's standard process (after cutting to final size).

1. Thickness: As indicated Drawings.

F. Type F Glass

Laminated Safety Glass, minimum 1/4" thick, two sheets of double-strength clear sheet glass; ASTM C1036 or ASTM C1048, Type I, Class 1, quality q3; permanently laminated together with minimum 0.060" thick sheet of clear plasticized polyvinyl butyral produced specifically for laminating glass. Laminated glazing must achieve an STC rating of minimum 35 when tested in accordance with ASTM E90.

2.04 GLAZING MATERIALS

A. Sealants – General

All sealants to be used on building interior shall be low V.O.C. in accordance with the requirements of Section G01600.

B. For Interior channel glazing:

Products: Pecora's AVW 920; Tremco's Spectrem 2 Silicone Sealant.

Type 1 Glazing Material: Acrylic Glazing Sealant; solvent-based, acrylic terpolymer, thermoplastic sealant; FS TT-S-00230C, Type II, Class B, 95 percent of solids acrylic; compounded specifically for glazing.

C. For interior glazing (option):

Type 2 Glazing Material: Acrylic-Latex Glazing Sealant: modified latex rubber and acrylic emulsion-polymer; compounded specifically as glazing sealant with permanent flexibility (non-hardening), non-staining and non-bleeding.

Products: Tremco's Tremflex 834.

D. For interior glazing (option):

Products: Pecora's BC-158 Butyl Rubber Sealant; Tremco's Butyl Sealant.

Type 3 Glazing Material: Butyl Rubber Glazing Sealant; polymerized butyl rubber compound with inert fillers and pigments; FS TT-S-001657, Type I; solvent-based with 75 percent solids, non-sag, tack-free within 24 hours, paintable, non-staining.

Type 4 Glazing Material: Silicone sealant; Single-Component Low Modulus, Neutral-Curing Silicone Glazing Sealant. Products: GE's SilPruf SCS2000, Pecora Corporation's 864; Tremco's Spectrem 3.

E. Setting Blocks

Neoprene, 70-90 Durometer hardness, proven to be compatible with sealants used. Provide 80-90 Durometer hardness for Hurricane Resistant Glazing.

F. Spacers

Neoprene, 40-50 Durometer hardness, proven to be compatible with glazing materials used.

G. Compressible Filler Rod

Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with glazing materials used, flexible and resilient, with 5-10 psi compression strength for 25 percent deflection.

H. Cleaners, Primers and Sealers

Type recommended by glazing material manufacturer. All materials to be used on building interior shall be low V.O.C. in accordance with the requirements of Section G01600.

I. Dense Elastomeric Compression Seal Gaskets:

Provide molded or extruded neoprene or EPDM gaskets, Shore A hardness of 75±5 for hollow profiles, and 60±5 for solid profiles, ASTM C864.

J. Cellular, Elastomeric Performed Gaskets:

Provide extruded or molded closed cell, integral-skinned neoprene, Shore A 40±5, and 20% to 35% compression, ASTM C509.

K. Preformed Glazing Tape:

Provide solvent-free butyl-polyisobutylene rubber with 100% solids content complying with AAMA 804.3 with integral continuous EPDM shim. Provide preformed glazing tape in extruded tape form. Provide Tremco "Polyshim II" or approved equal.

L. Edge Blocks:

Provide neoprene or silicone as required for compatibility with glazing sealants. Provide blocks with Shore A hardness of 55±5.

L. Miscellaneous Glazing Materials:

Provide sealant backer rods, primers, cleaners, and sealers of type recommended by glass and sealant manufacturers.

M. Safety Marking Decals:

Opaque decals, 4" diameter, color as selected by the Authority from manufacturer's standard colors.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clean glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings not firmly bonded to substrate. Remove lacquer from metal surfaces wherever elastomeric sealants are used.

B. Inspect each piece of glass immediately before installation, and eliminate pieces with damage or face imperfections.

C. Apply primer or sealer to joint surfaces wherever recommended by sealant manufacturer.

3.02 INSTALLATION (GENERAL)

A. Each installation shall withstand normal temperature changes, wind loading, and impact loading (for operating sash and doors) without failure of any kind including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects.

B. Install glass in accordance with standards detailed in "Glazing Manual' and "Glazing Sealing Systems Manual" of Flat Glass Marketing Association except as shown and specified otherwise, and where specifically recommended otherwise by manufacturers of glass and glazing materials.

C. Glazing channel dimensions shown are intended to provide for necessary minimum bite on glass, minimum edge clearance and adequate glazing material thickness, with reasonable tolerances. Provide correct glass size for each opening, within acceptable tolerance and necessary dimensions. Provide minimum 1" edge engagement for Hurricane Resistant Glass.

D. Unify appearance of each series of lights by setting each piece to match others as closely as possible. Inspect each piece and set with pattern, draw and bow oriented in same direction as other process.

E. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

F. Glazing channel dimensions, as indicated on Shop Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thickness, with reasonable tolerances. Adjust as required by Project conditions during installation.

G. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

H. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

I. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

J. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

K. Provide spacers for glass lites where the length plus width is larger than 50 inches as follows:

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.

2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

L. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

M. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

N. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

O. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.03 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Where framing joints are vertical, cover these joints by applying tapes to heads and sills first and then to jambs. Where framing joints are horizontal, cover these joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until just before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant as recommended by glass manufacturer or glass frame manufacturer.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape where noted on approved shop drawings.

3.04 DRY GASKET GLAZING

A. Fabricate compression gasket in lengths recommended by gasket manufacturer to fit openings exactly, with stretch allowance during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Install gaskets so they protrude past face of glazing stops.

3.05 WET SEALANT GLAZING

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.10 MARKING DECALS

A. Install two (2) marking decals on each transparent glass door, and each transparent glass sidelight wider than 20" between stiles. Locate decals midway between stiles 34" and 64" above floor.

END OF SECTION

SECTION 09 26 00
GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all materials, labor and equipment to properly install the following Work:

1. Gypsum wallboard.

2. Abuse and impact resistant gypsum board.

3. Gypsum board ceilings and soffits.

4. Tile backer board.

5. Non-load-bearing steel framing.

6. Insulation

7. All accessory components.

1.02 INTENTIONALLY LEFT BLANK

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

B. American Society for Testing and Materials (ASTM), latest editions.

A641 Zinc-Coated (Galvanized) Carbon Steel Wire.

A653/ General Requirements for Steel Sheet, Zinc A653M Coated (Galvanized) by the Hot-Dip Process

C11 Standard Terminology Related to Gypsum and Related Building Materials and Systems

C36 Gypsum Wallboard

C442 Gypsum Backing Board

C473 Standard Test Methods for Physical Testing of Gypsum Panel Products

C475 Joint Treatment Materials for Gypsum Wallboard Construction

C630 Water Resistant Gypsum Backing Boards

C645 Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board

C665 Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing

C754 Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard, Backing Board or Water Resistant Backing Board

C834 Standard Specification for Latex Sealants

C840 Specification for Application and Finishing of Gypsum Board

C919 Practices for Use of Sealants in Acoustical Applications

C1002 Steel Drill Screws for the Application of Gypsum Board

C1047 Standard Specification for accessories for Gypsum Wallboard and Gypsum Veneer Base

C1278 Standard Specification for Fiber-Reinforced Gypsum Panel

C1325 Standard Specification for Non-Asbestos Fiber Mat Reinforced Cement Interior Substrate Sheets

C1388 Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings

C1396 Standard Specification for Gypsum Board

D2020 Standard Test Methods for Mildew (Fungus) Resistance of Paper and Paperboard

D3273 Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

E84 Surface Burning Characteristics of Building Materials

E119 Fire Tests of Building Construction and Materials

G21 Standard Practice for determining Resistance of Synthetic Polymeric Materials to Fungi

C. Gypsum Association

GA-600 Fire Resistance Design Manual

GA-214 Levels of Finishes

GA-216 Recommended Specifications for the Application and Finishing of Gypsum Board

GA-505 Gypsum Board Products - Glossary of Terminology

D. Underwriters Laboratories Inc. (UL)

Fire Resistance Directory

E. Tile Council of America

Handbook for Ceramic Tile Installation

F. International Code Council, ICC-ES (Evaluation Service)

AC86 - Acceptance Criteria for Cold-Formed Steel Framing Members – Interior Non load-bearing Wall Assemblies.

G. American Iron and Steel Institute (AISI)

AISI S905 – Test Methods for Mechanically Fastened Cold-Formed Steel Connections

AISI Standard for Cold-Formed Steel Framing - General Provisions

AISI NASPEC

1.04 SUBMITTALS

A. Product Data

Submit manufacturers' product information, specifications, and installation instructions for the following products: mold and moisture resistant gypsum board, abuse and impact resistant gypsum board, tile backer board, joint compounds, acoustical sealants, insulation, deck flute closures, fasteners, trim, control joints, joint reinforcing, metal furring members, metal studs, tracks, runners, resilient clips, steel grounds, and all related accessories.

Submit limiting height tables for metal stud framing based on testing and engineering analysis in accordance with ICC-ES Acceptance Criteria AC86.

B. Shop Drawings

Submit drawings indicating sizes and locations of steel grounds for attachment and support of signs, other accessories, fixtures, furnishings, finishes, and equipment.

C. Samples

Submit samples of the following materials:

1. Wallboard, each type: 12" square.

2. Metal studs and track: 12"

3. Accessories: 12", outside corner bead.

4. Deck flute closures: 2

5. Screw, each type: 2

D. Materials Certificates and Acceptances

1. Submit certificates from the manufacturers of the specified materials stating compliance with the applicable requirements set forth for all materials specified in this Section.

2. Submit certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the NYC Building Code are acceptable for the intended use. When test methods are stipulated in the NYC Building Code, the tests utilized shall be stated

in the certification. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

3. Submit written acceptances from the wallboard manufacturer and metal stud manufacturer accepting the type of metal studs, tracks, and fasteners to be used for each type of wallboard.

E. Low Emitting Materials Compliance Submittals.

1. Provide documentation for each sealant to be used indicating that the sealants comply with V.O.C. requirements as stated in Specifications.

1.05 QUALITY ASSURANCE

A. Qualifications

Submit affidavit certifying that installer is a firm with not less than 3 years of experience relevant to the installation of specified materials.

B. Regulatory Requirements

1. Building Code: Work of this section shall conform to all requirements of N.Y.C. Building Code.

2. New York City Board of Standards and Appeals (BSA), and New York City Materials Equipment Acceptance (MEA) approvals are acceptable for materials and assemblies conforming to current NYC Building Code requirements.

3. Fire-Resistance Ratings

Comply with fire-resistance ratings as indicated and as required by governing authorities and codes. Provide certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the NYC Building Code are acceptable for the intended use.

Provide materials, accessories and application procedures which have been listed by UL or tested in accordance with ASTM E119 for the type of construction shown. Provide materials and construct assemblies which qualify for required fire resistance classifications in accordance with the Gypsum Association "Fire Resistance Design Manual" as referenced in the Building Code of the City of New

York, or in accordance with the acceptance requirements of the New York City MEA or BSA.

C. Industry Standards

1. Comply with applicable requirements of ASTM C840, except where more detailed or more stringent requirements are indicated, including the recommendations of the manufacturer.

2. Acoustical Ratings: Comply with acoustical ratings as required and based on type of construction indicated on the Drawings. Provide materials, accessories, including fasteners, seals, sealants and application procedures which have been listed by manufacturer or tested in accordance with ASTM E90 for the type of construction shown.

D. Company Field Advisor

Secure the services of a Company Field Advisor of the gypsum board manufacturer for a minimum of 2 working hours. The Field Advisor shall be certified in writing by the manufacturer to be technically qualified in design, installation, and servicing of the required products. The Field Advisor shall be present at the beginning of the actual gypsum board installation for the purpose of:

1. Rendering technical assistance to the Contractor regarding installation procedures of the system.

2. Familiarizing the Facility's Representative with all aspects of the system including inspection techniques.

3. Answering all questions which might arise.

E. Single Source Responsibility

Obtain all steel studs and other metal framing components and accessories from a single manufacturer.

F. Field Samples

The first completed gypsum board installations of each type shall serve as field samples for inspection of installation and finishing work by the Architect. These installations, when approved by the Architect, will become the benchmark for workmanship for the rest of the installation. The Contractor shall notify the Architect when such field samples are ready for review.

One field sample shall be a corridor wall at least 30 feet long, or a location of equal or greater size, as selected by the Facility's representative. Provide lighting at the time of inspection, equivalent to the lighting to be in place upon project completion. The sample will be inspected by the Architect for proper level of finish. Inspections will occur before and after painting the sample, with the final evaluation occurring after painting.

1.06 PROGRESS INSPECTIONS

A. The Facility will retain a Special Inspector to perform progress inspections for all gypsum board assemblies in accordance with all specifications, and NYC Building Code Section BC 109.3.4 for fire resistance rated partitions, floors, ceilings, and shafts.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer.

B. Store all materials inside, under cover, in a manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards to prevent sagging. Do not store at temperature exceeding 125°F.

C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal framing members, corner beads, and trim from being bent or damaged.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements, provide products of a specified manufacturer or approved equal.

Products which vary slightly from specified criteria will be considered for acceptance upon submission of a written explanation and complete technical data to the Facility. Written authorization from the Facility is required prior to installation of such materials whether or not the manufacturers are listed herein.

A. Gypsum board and related products

Gypsum board shall be mold and moisture resistant.

1. SHEETROCK brand Mold Tough Gypsum Panels, USG Corporation

2. SHEETROCK brand Mold Tough Gypsum Liner Panels, USG Corporation

3. DensArmor Plus Interior Guard Panels, Georgia-Pacific Gypsum Corporation, Atlanta, GA

4. DensGlass Ultra Shaft Liner Panels, Georgia-Pacific Gypsum Corporation, Atlanta, GA

5. Gold Bond brand XP Fire-Shield Wallboard, National Gypsum Company, Charlotte, NC

6. Gold Bond brand 1" Fire-Shield Shaftliner XP Gypsum Panels, National Gypsum Company, Charlotte, NC

7. Mold Defense Type X panels, Lafarge North America Incorporated.

8. Mold Defense Shaftliner Type X panels, Lafarge North America Incorporated.

9. Weather Defense Platinum Shaftliner Type X, Lafarge North America Incorporated.

B. Abuse and impact resistant gypsum board and related products

Manufacturers of products proposed as equal to specified products must demonstrate equivalent abuse and impact resistance in testing subject to the Facility's approval, including erection of sample comparison panels, at no cost to the Facility.

1. FIBEROCK brand VHI (Very High Impact) Abuse-Resistant Panels – USG Corporation

2. SHEETROCK brand Mold Tough VHI (Very High Impact) FIRECODE Core Gypsum Panels, USG Corporation

3. Fire-Shield Hi-Impact brand XP Wallboard Panels – National Gypsum Company

4. Protecta HIR 300 Type X With Mold Defense panels, Lafarge North America Incorporated.

C. Tile backer board and related products

1. DUROCK Brand Cement Board Next Gen - USG Corp., Chicago, IL

2. PermaBase Brand Cement Board - National Gypsum Co., Charlotte, NC

D. Metal Support Materials

1. Marino\Ware, South Plainfield, NJ

2. ClarkDietrich Building Systems, West Chester, OH

3. Super Stud Building Products Inc., Edison, NJ

4. United States Gypsum Co., Chicago, IL

E. Insulation – Sound Attenuating Blankets

1. Thermafiber Sound Attenuation Fire Blankets – Thermafiber Inc., Wabash, IN

2. Roxul Acoustical Fire Batts – Roxul Inc., Milton, Ontario

2.02 MATERIALS

A. Metal Framing

1. Steel Studs

In compliance with ASTM C645, provide galvanized steel, C-shaped members as specified and as shown on the Drawings of sizes indicated below:

a. Stud depth: $3\frac{5}{8}$" unless indicated otherwise on the Drawings.

b. Stud thickness: 0.0296 inch minimum thickness of base metal or 20 gage min., for all wall framing members unless otherwise indicated.

1) Alternative thickness studs:

a) Alternative thickness studs may be used in lieu of 0.0296" thick studs, and shall be 20 gauge equivalent or heavier gauge, evaluated in accordance with ICC-ES AC86 Acceptance Criteria, latest edition, with partition heights limited by the following:

i) Deflection: L/240. L/360 for partitions with ceramic tile finish.

ii) Loads: All loads to which the assembly is subjected including wall mounted equipment and furnishings. Not less than 5 psf uniform transverse load. Framing shall support all loads without exceeding the allowable stress of the steel.

iii) Brand and type of wallboard used, and number of layers, extending full height of partition.

b) Pull-out strength for #6 screws in 20 ga. equivalent studs shall be at least 45 lbs. in accordance with AISI S905 test method.

c) Use of alternative thickness studs is subject to the written acceptance of the wallboard manufacturer.

d) Conform to all requirements indicated on the Drawings and specified herein, including fire resistance ratings of assemblies.

c. Stud thickness: 0.0428 inch min. thickness of base metal or 18 gage min., unless otherwise indicated, for use at all framed openings, with double studs at each door jamb and as wall framing members in areas where cementitious tile backer board is indicated.

d. Stud thickness: 0.0677 inch min. thickness of base metal or 14 gage min., unless otherwise indicated, for use behind wall hung toilet partitions, and at interior window guards.

2. Runners

In compliance with ASTM C645, provide galvanized steel runners to match applicable assembly specified, to match wall framing members, unless indicated otherwise.

3. Furring Members

In compliance with ASTM C645, provide galvanized cold rolled steel, 0.0296" minimum thickness of base metal or 20 gage min., screw type hat shaped channels; 7/8" depth, width approx. 2¾", hemmed edges.

a. Where furring channels are used in conjunction with resilient sound isolation clips, width of channel shall be coordinated with clip configuration to ensure proper fit.

4. Furring Members for Shaft Walls

Provide galvanized steel C-H studs, J-Runners or other stud shapes indicated on Drawings, 0.0346 inch minimum design steel thickness or 20 gage minimum.

5. Steel Grounds

Provide galvanized steel grounds 20 gauge minimum thickness, minimum 8-inches wide by minimum 24-inches long, for installation directly to steel studs to provide support for wall mounted equipment, fixtures, furnishings, accessories, panels, and all other items of work to be attached to walls. Provide grounds for each room name sign and other signs indicated to be located on drywall partitions. Provide grounds of greater size and thickness as required for secure installation of grab bars and other weight bearing items, and heavy items. Comply with manufacturers' recommendations. Refer to Section 10840 for requirements for grab bar anchor plates (grounds).

a. Where steel grounds are attached to channels that are mounted to resilient clip, the size of the ground shall be extended to span a minimum of 3 furring channels.

6. Horizontal Bracing

Provide 3/4 inch galvanized cold rolled steel channels, or steel studs, fastened to webs in a horizontal position. Angle or channel shaped galvanized horizontal bracing that is fixed in place without fasteners may be used subject to written acceptance of the steel stud manufacturer and meeting all required partition ratings and performance criteria; 0.0296" minimum base metal thickness, 7/8" x 7/8" minimum size angle or equivalent channel shape. Comply with ASTM C645, ASTM C754.

7. Protective coating of framing shall conform to ASTM A653/A653M - G40 minimum, or shall be a protective coating with equal or better corrosion resistance.

8. Fasteners for Metal Framing

Provide fasteners of type, size, style, grade, holding power, class, and other properties required for secure installation of framing and furring. Galvanize all

fasteners and accessories. Powder actuated fasteners shall not be used during official facility hours and shall not be used in occupied areas of a building.

All devices, other than bolts, used to interconnect ceiling members are required to be certified and listed by an Approved Agency in accordance with NYC Department of Buildings rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

B. Gypsum Board

1. General: Panels shall be mold and moisture resistant, meeting a minimum average panel score of "10" in accordance with ASTM D3273. Provide in dimensions resulting in the minimum number of joints. Long edges tapered. Panels shall not contain asbestos.

2. Paper faced gypsum board

a. Gypsum wallboard: 5/8" thick, Firecode Core (Type X). Comply with ASTM C1396.

b. Shaft wall liner panel: 1" thick, fire resistance type X. Comply with ASTM C1396.

c. Gypsum board shall be manufactured with a minimum of 90% pre-consumer content materials.

d. Fungi Resistance: Paper facing shall be fungi resistant when tested in accordance with ASTM D 2020-03 or D3273.

3. Glass mat faced gypsum board (glass mat facings front and back)

a. Gypsum wallboard: 5/8" thick, Type X Core. Comply with ASTM C1396 and ASTM C1177.

b. Shaft wall liner panel: 1" thick, fire resistance Type X. Comply with ASTM C1396.

c. Gypsum board shall be manufactured with a minimum of 90% pre-consumer content materials.

d. Fungi Resistance: Facing shall be fungi resistant when tested in accordance with ASTM G 21-02 or D3273.

C. Abuse and Impact Resistant Gypsum Board

1. General: Provide reinforced abuse and impact resistant gypsum board, consisting of gypsum, or gypsum and cellulose fiber, with fiberglass mesh reinforcement. Weight of 5/8" thick panel approximately 2.8 psf. Surfaces shall be true, free from imperfections, and suitable for use with or without decoration. Provide in 48" widths and in such lengths as will result in the minimum number of joints. Provide 5/8" thick panels generally, unless indicated otherwise on the Drawings. Panels shall not contain asbestos. Panels shall be mold resistant, meeting a minimum average panel score of "10" in accordance with ASTM D3273.

2. Reinforcement: Fiberglass mesh embedded in the back of full panel.

3. Meet or exceed criteria when tested in accordance with ASTM C473, or ASTM C1396:

Thickness of panel:		5/8"
a.	Flexural Strength, both directions (lbf)	195
b.	Humidified Deflection (eighths of inch)	2
c.	Core, End and Edge Hardness (lbf)	40
d.	Nail Pull Resistance (lbf)	210
e.	Fire Resistance, Type X	1-2 Hrs.
f.	Flame Spread (face), max.	15
g.	Smoke Developed, max.	5

4. Abuse and impact resistant gypsum board shall be manufactured with a minimum of 6% of pre-consumer content materials.

D. Tile Backer Board for Wet Locations

1. General: 5/8" thick. Comply with ANSI A118.9. Fire resistance testing in accordance with ASTM E119. Noncombustible ASTM E136. Composed of Portland cement, aggregate and fiberglass mesh reinforcement. Provide in

dimensions resulting in the minimum number of joints. Panels shall not contain asbestos. Provide this type of panel where ceramic tile finish is indicated at wet locations such as shower rooms, locker rooms, kitchen and servery areas, multi-occupant toilet rooms. Panels shall be mold resistant, meeting a minimum average panel score of "10" in accordance with ASTM D3273.

2. Meet or exceed the following criteria:

   a. Flexural strength: Min. 750 lb./in^2 in accordance with ASTM Test reference C947.

   b. Water absorption: Max. 15% by weight in 24 hrs. in accordance with ASTM C473.

   c. Indentation strength: 1250 psi min. in accordance with ASTM D2394.

   d. Nail Pull Resistance: 90 lb. min. in accordance with ASTM C473 or D1037.

   e. Surface Burning Characteristics: Flame spread-5, Smoke Density-0, in accordance with ASTM E84.

3. Tile backer board shall be manufactured with a minimum of 10% of pre-consumer content materials.

E. Furring Anchorages

1. In compliance with ASTM A641, provide 16 gage galvanized wire ties, manufacturers standard wire-type clips, bolts, or screws as recommended by furring manufacturer.

2. All devices, other than bolts, used to interconnect ceiling members are required to be certified and listed by an Approved Agency in accordance with NYC Department of Buildings rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

F. Trim Accessories

1. General: Comply with ASTM C1047, standard accessories as recommended by gypsum board manufacturer. Where exposed to view provide accessories recommended for level-5 finish. Metal trim shall be formed of galvanized or zinc-coated steel. Provide paper faced metal trim where recommended by board manufacturer. Designed for concealment of paper or metal flanges in joint

compound. Provide corner beads, L-type edge trim beads, V-type edge trim beads, and control joint beads.

2. Corner Reinforcement, provide for all outside corners:

   a. Sheetrock Brand paper faced metal outside corner, tape-on bead, model B1W; U.S. Gypsum Company.

      1) Where covered by thinset ceramic tile provide model B1W-NB.

   b. No-Coat UltraCorner Brand Structural Drywall Corner.

G. Joint Treatment Materials

1. Jointing System - typical: Comply with ASTM C475. Type recommended by the manufacturer for the application indicated, to prevent cracking, and to meet fire resistance requirements where applicable. Reinforcing tape and compound shall be designed as a system to be used together.

2. Provide setting type or ready-mixed drying type joint compound as recommended by the board manufacturer for each type of board, for joints, fastener heads and cut edges of board.

3. Skim coat: For final coat of Level 5 finish, use type recommended by manufacturer.

4. Jointing compound shall be asbestos free.

5. For tile backer board provide tile backer board manufacturer's recommended fillers, tapes and other materials.

H. Insulation: Comply with ASTM C665, Mineral Fiber Blanket.

1. Sound attenuating blankets, Type I, Density: 2.5 lbs/cubic foot minimum. Thermafiber Inc., Wabash, IN, 888-834-2371; Roxul Inc., Milton, Ontario 800-265-6878.

2. Foil backed insulating blankets, Type III, Class A, by Thermafiber, Inc. Density: 3 lbs/cubic foot minimum. R-value: 3.7 min. per inch of thickness. Foil backing shall be omitted from blankets in exterior partitions indicated to have other vapor retarding materials as part of the wall assembly, such as vapor retarding air barrier systems, or tile backer board assemblies with polyethylene membrane.

3. Blanket and batt insulation units shall be manufactured with a minimum of 20% of pre-consumer content materials.

4. Fungi Resistance: Insulation and facing shall be fungi resistant when tested in accordance with ASTM C1338.

I. Miscellaneous Materials

1. General: Provide auxiliary materials for gypsum board work of the type and grade recommended by the gypsum board manufacturer.

2. Gypsum board Screws:

   a. Comply with recommendations of the wallboard and metal framing manufacturers and ASTM C1002.

   b. For fastening the gypsum board in place, specially designed for use with power-driven tools, of length recommended for application in board manufacturers printed instructions, but not less than 1-1/4" long, with self-tapping threads and self-drilling points. Screws shall be steel with rust inhibitive coating.

3. For tile backer board provide manufacturer's recommended screw fastening system.

4. Concealed Acoustical Sealant: Comply with ASTM C919; nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable sealant for concealed applications.

   a. All sealants used on site and within the weatherproofing/ waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.

5. Exposed Acoustical Sealant: Comply with ASTM C834; nonoxidizing, skinnable, paintable, gunnable sealant for exposed applications, either latex or acrylic based type or acrylic-latex type.

   a. For sealants used on site and within the weatherproofing/ waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.

6. Flexible Closures: For non-fire-rated Work, for filling gaps between steel deck flutes and tops of partitions. Closures shall be fabricated to conform to profile of deck.

Closed cell EPDM rubber, with adhesive. Houston Foam Plastics, Houston, TX, 800-231-1752.

7. Waterproof membrane: For cement-based tile backer board Work, 4-mil fire-retardant polyethylene film.

8. Resilient Clips: For STC rated partitions. Resilient clip consists of a galvanized steel clip for mounting onto furring channels and incorporating a solid neoprene washer designed to be screw attached to steel stud framing. Resilient clip shall be approved for use in New York City within fire resistance rated partitions. Clip shall be RSIC-1 Sound Isolation Clip as manufactured by PAC International, or IsoMax Resilient Sound Isolation Wall Clip as manufactured by Kinetics Noise Control Incorporated.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Inspection

1. Prior to installation of the Work of this Section, carefully inspect the installed Work of all other trades and verify that all such Work is complete to the point where this installation may properly commence.

2. Do not install gypsum board in any location where it may be directly exposed to water.

3. Installation shall comply with manufacturer's recommendations as approved by the Facility, with all pertinent codes and regulations as a minimum standard.

B. Coordination of Work

Coordinate Work of this Section with the Work of other Divisions which have items installed in, on or contiguous to gypsum board assemblies.

Refer to Section 05170 for support system for suspended ceilings.

C. Verification of Conditions

Start of Work constitutes acceptance of existing conditions, Contractor shall bring any discrepancies to the attention of the Facility prior to start of Work.

D. Construction Tolerances.

1. Do not exceed 1/8" in 8 feet variation from plumb or level in any exposed line or surface except at joints between boards. Do not exceed 1/16" variation between planes or abutting edges or ends. Shim as required to comply with specified tolerances. Variations shall not be visible in finished surfaces.

2. For soffits and ceilings verify that direct suspension system has been installed properly, that main runners are spaced evenly and have been leveled to a tolerance of 1/8" in 12 feet measured both lengthwise on each runner and transversely between parallel runners so that furring member installation may proceed accurately.

3.02 ENVIRONMENTAL REQUIREMENTS

A. General

Comply with requirements of all referenced application standards and manufacturers recommendations for environmental conditions before, during and after gypsum board application.

B. Environmental Conditions

1. Maintain continuous uniform building temperatures of not less than 55°F and not more than 90°F for a minimum of 48 hours prior to, during and following application of gypsum board and joint treatment materials and until joint and finishing compounds have dried.

Conform to more restrictive environmental conditions where required by the manufacturer.

2. Do not install gypsum board in any location where it may be exposed to moisture during the Construction Phase of the Project. Sources of moisture may include: rain, snow, groundwater, flooding and contiguous construction materials. Replace any gypsum board that has been exposed to moisture during the Construction Phase.

C. Ventilation

Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry hot weather to prevent too rapid drying.

D. Drying Time

Provide adequate drying time between coats of joint compound.

3.03 INSTALLATION - STEEL FRAMING

A. General

Comply with ASTM C754 and manufacturers installation instructions for all non-load bearing steel stud installations.

1. Extend all partitions to underside of roof and floor construction unless indicated otherwise. Brace laterally to building structure as required for stability.

2. Where fire-rated work is indicated on Drawings construct assemblies in accordance with the Article herein titled Quality Assurance, Paragraph titled Regulatory Requirements.

3. In kitchen areas, toilet rooms, shower rooms, gymnasium locker rooms, janitors' closet, and other such areas subject to water on the floors, provide a heavy coating of rust preventive paint, suitable for galvanized steel, on all surfaces of bottom runner tracks and the lower 3" of studs.

B. Steel Stud Installation

1. Where partitions abut ceiling or deck construction or vertical structural elements, provide slip or cushion type joint between metal framing and structure as recommended by manufacturer to prevent transfer of structural loads or movements to partitions, except as otherwise indicated. Maintain lateral bracing of partitions to building structure.

2. Accurately align top and bottom tracks. Secure runner tracks as recommended by the framing manufacturer for the upper and lower construction involved, except, do not exceed 24" on center spacing for power driven fasteners. Provide fasteners approximately 2" from corners and ends of tracks.

3. Position studs vertically and engage both floor and top tracks. Install studs at 16" on center maximum spacing unless closer spacing is indicated on the Drawings, or is required for height of partition or transverse loading in order to meet deflection requirements. Fasten studs to track flanges with screws, or as otherwise required to meet fire resistance ratings and code requirements.

a. Use full length studs between tracks wherever possible. If necessary, splice studs with a minimum 8" nested lap and fasten with 2 screws per stud flange.

b. Provide additional studs to support inside corners at partition intersections, and to support outside corners and terminations of partitions (and both sides of control joints).

4. Frame openings other than door openings to comply with details shown and manufacturers instructions. Provide full length studs adjacent to jambs and horizontal header and sill tracks. Extend studs to underside of roof or floor construction above.

5. Provide two 18 gauge studs at each door jamb unless heavier gauge studs are required by Drawings. Comply with stud manufacturers recommendations for the types of frames and weights of doors used in the project. Provide 14 gauge studs surrounding openings to receive interior window guards. Studs shall extend to underside of roof or floor construction above.

6. Construct fire rated partitions, vertical ductwork enclosures, column enclosures, etc. to meet or exceed the rating shown on the Drawings.

7. Where framing is in contact with an exterior masonry wall, install asphalt felt protection strip between metal and masonry.

C. Steel Ground Installation

1. Install steel grounds at all locations where wall hung or wall mounted items such as room signs and other signs, casework, cabinets, chalkboards, display boards, interactive whiteboards and projector brackets, pegboards, hook strips, grab bars, storage shelving, fixtures, toilet compartments, shower and dressing compartments, mirrors, toilet room accessories, lockers, panels, etc. are indicated.

2. Apply steel grounds horizontally to steel studs beginning with first stud beyond item being secured (both directions) prior to installation of gypsum board.

3. Install steel grounds behind top and bottom of each item to be installed, adding grounds as necessary at all points of attachment. Use suitable screws and/or bolts to anchor items. Follow manufacturer's recommendations for proper attachment methods.

4. At resilient clips, extend grounds to cover a minimum of 3 furring channels.

D. Furring Channel Installation

1. Attach hat-shaped metal furring channels to masonry or concrete surfaces; either vertically or horizontally, 16" maximum on center and within 2" of interior corners unless otherwise indicated on Drawings. Attach furring with hammer-set or power driven fasteners through alternate flanges spaced 24" on center. Provide metal furring channel clips.

2. Where furring channel is installed directly to a masonry exterior wall, install asphalt felt protection strip between furring channel and wall.

3. Where splices in channels occur, nest channels 8" at splices and anchor with two fasteners in each wing.

4. Where furring channels are attached to resilient clips, space clips in a pattern not to exceed 24 inches on center vertically and 48 inches on center horizontally, and as recommended by clip manufacturer for supported loads. Locate centerline of bottom channel a maximum of 3" above floor. Do not locate channel splices at clips. Anchor clips using manufacturer's recommended screw fasteners. Installation shall be in accordance with clip manufacturer's written instructions.

E. Running Channel Installation

Floor and top running channels or stud tracks shall be galvanized cold rolled steel with 1½" extended leg on top runner to allow movement (legs longer as recommended by manufacturer or as required to prevent transfer of structural loads or movements to partitions). Match gauge of studs indicated for assembly. Securely fasten to floor, roof or vertical structural elements with fasteners approved by manufacturer, spaced not more than 24" on center. Provide slip or cushion type joint between channel and structural elements as indicated in paragraph titled Steel Stud Installation, above. Maintain lateral bracing of partitions to building structure.

F. Horizontal Bracing or Stiffener Installation

Install metal stud bracing fastened to each partition stud with webs in a horizontal position, or horizontal bracing fixed to each stud in accordance with manufacturer's instructions. Provide continuous horizontal rows of bracing, spaced vertically 4'-0" on center maximum, unless otherwise indicated. The uppermost row shall be located 12 inches from the top of stud, or as otherwise recommended by the stud manufacturer. Provide additional bracing as recommended by stud manufacturer.

G. Furring Members for Shaft Walls

Install furring members, including C-H studs and J-Runners, according to stud manufacturers published instructions for required assemblies.

H. Chase Wall Erection

1. Align two parallel rows of floor and top runners spaced apart as detailed. Attach to concrete floor slabs with concrete stub nails or power-driven anchors 24" o.c. maximum, and to structure above in similar fashion.

2. Position steel studs vertically in runners, 16" o.c. maximum unless closer spacing is indicated on the Drawings, or is required for height of partition or transverse loading in order to meet deflection requirements. Position studs with flanges in the same direction, and with studs on opposite sides of chase directly across from each other. Anchor all studs to floor and ceiling runner flanges with fastener tool.

I. Tolerances

Do not exceed 1/8" in 8 feet variation from plumb or level in any exposed line or surface, except at joints between planes or abutting edges or ends. Shim as required to comply with specified tolerances. Variations shall not be visible in finished wall surfaces.

3.04 INSTALLATION - CEILING FRAMING

A. Metal Furring for Ceilings and Soffits

1. Install metal furring members to cold rolled running channels at right angles. Secure with metal furring clips in accordance with manufacturer's printed installation instructions.

2. Space furring at twelve inches (12") o.c. maximum, and within 4" of walls. Provide 1" clearance between furring end and abutting walls and partitions.

3. Install auxiliary framing at openings for light fixtures, ductwork grilles, access doors as specified. Where necessary, install additional cross-reinforcing to restore lateral stability of grillage.

4. Attach perimeter wall track, angle or trim wherever gypsum board meets vertical surfaces. Mechanically join support members to each other and butt-cut to fit into perimeter track, angle or trim piece.

3.05 INSTALLATION - PANELS

A. Applying and Finishing Panels, General

Comply with manufacturer's printed installation instructions and recommendations based upon Project conditions, ASTM C840, GA-216, and these Specifications, for all gypsum board application and finishing.

1. Provide wallboard panels of type, thicknesses, and number of layers indicated on the Drawings. Provide multi-layer assemblies using abuse and impact resistant gypsum board panels in conjunction with other types of panels where indicated on the Drawings.

2. Cement-based tile backer board Work shall comply with the same specified requirements as gypsum board Work where applicable. Install panels and treat joints in accordance with ANSI A108.11 and the tile backer board manufacturer's published instructions. Provide 4-mil polyethylene film membrane continuously over studs, between stud space and backer board.

   a. At exterior walls that include vapor retarding materials such as air barrier systems, the polyethylene film shall be installed with unsealed horizontal laps approximately two feet apart. Install film starting at bottom of wall, and lap each 2-foot high row of film over the row beneath it.

3. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.

4. Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.

5. Work shall be sealed at perimeters, at control and expansion joints, and at all penetrations with continuous beads of acoustical sealant, including a bead at both faces of partitions. Comply with ASTM C 919 and all manufacturers recommendations for beads, including sealing of partitions above ceilings. Close off sound-flanking paths around or through the Work. Firestopping required for fire-rated work shall be covered under the respective specifications.

6. For non-fire-rated work provide flexible EPDM rubber closures, securely held in place, to completely close all voids between metal deck and tops of partitions and other Work.

7. Where fire-rated work is indicated on Drawings construct assemblies in accordance with the Article herein titled Quality Assurance, Paragraph titled Regulatory Requirements.

8. Install the gypsum board with separate boards in moderate contact but not forced into place. At internal and external corners, conceal the cut edges of the board by overlapping covered edges of the abutting boards. Stagger the boards so that corners of any four boards will not meet at a common point except in vertical corners.

9. Extend all partitions to underside of roof and floor construction, unless indicated otherwise.

10. All interior partitions, unless otherwise indicated, shall have mineral fiber sound attenuating blankets, ASTM C665 Type 1, density 2.5 lbs./cubic foot minimum. Sound attenuating blankets shall be installed friction fitted between studs, completely filling solid the partitions for the full height of the partitions.

11. Where exterior walls are indicated on the Drawings to include insulation between studs, the insulation shall be foil backed mineral fiber insulating blankets, ASTM C665 Type III, Class A, density 3 lbs./cubic foot minimum, filling the space between studs. Foil backing shall be omitted from blankets in exterior walls indicated to have other vapor retarding materials as part of the wall assembly, such as vapor retarding air barrier systems, or tile backer board assemblies with polyethylene membrane.

12. Install ceiling board panels at right angles to framing, minimizing the number of abutting end joints and avoiding abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

13. Fit gypsum panels around ducts, pipes, and conduits.

14. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow space to properly install sealant or firestopping as applicable.

15. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments. Provide space to properly install sealant or firestopping as applicable between edges and abutting structural surfaces. Trim edges with U-bead edge trim where edges of gypsum panels are exposed.

16. Fasten the gypsum board with drywall screws as recommended by the gypsum board manufacturer. Drive the required screws with clutch-controlled power screwdrivers. Provide fasteners in gypsum panels according to referenced gypsum board application and finishing standard, manufacturer's written recommendations, and as required for fire-resistance-rated assembly. Maximum spacing shall be as follows:

    a. Maximum fastener spacing for abuse resistant gypsum board: 8" o.c., except where 12 inches o.c. is recommended by panel manufacturer.

    b. Maximum fastener spacing for other panels: 8 inches o.c.

17. Shaft Walls

    Construct with 1" liner panels inserted in C-H studs 24" o.c. maximum, with double layer 5/8" Firecode Core panels screw attached to C-H studs, or as otherwise indicated on the Drawings.

B. Panel Application

1. Single layer application on walls/partitions: install the gypsum board to studs at right angles to the furring or framing members, unless otherwise required for fire-resistance-rated assembly, minimizing end joints. Stagger abutting end joints not less than one framing member in alternate courses of board.

2. Multilayer application on partitions/walls: Apply board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

3. Make end and edge joints, where required, over furring or framing members. Position boards so that like edges abut, with tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

4. Cover both faces of steel stud partition framing with wallboard as indicated on the Drawings (including above ceilings). For panels manufactured with different textures on opposite faces, follow manufacturers recommendations, based on finish material, to determine which side shall face towards studs.

5. Multilayer application on ceilings: Apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 12 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
6. Multilayer fastening methods: fasten base layers and face layers separately to supports with screws unless otherwise indicated or required by fire-resistance-rated assembly.

C. Finishing and Joint Treatment

1. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

2. Prefill open joints and damaged surface areas.

3. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

4. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C840 and as indicated, for locations as follows:

   a. Concealed locations

      ASTM C840 - Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim in ceiling plenum areas, other concealed areas, and where panels are substrate for tile, unless a higher level of finish is required for fire-resistance rated assemblies.

   b. Exposed locations

      ASTM C840 - Level 5, with finished surfaces completely flat and uniform, with no visible irregularities or imperfections: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface at panel and trim surfaces that will be exposed to view.

5. Tile backer units: treat joints according to manufacturer's written instructions. Finished surface of tile backer board shall be smooth and free from any

imperfections, depressions, or raised areas that would inhibit the proper application of tile finish over the boards.

6. Outside Corners

   a. Install corner bead fitting neatly over the corner and apply compound to both sides of corner.

   b. Treat the corner with joint compound as recommended by accessory manufacturer, allowing compound to dry between coats. Final coat shall completely cover corner.

7. Inside Corners

   Treat as specified for joints, except that the reinforcing tape shall be folded lengthwise through the middle and fitted neatly into corner.

8. Properly prepare surfaces to receive painting, coating and tile finishes.

D. Other Trim

1. General: The Drawings do not purport to show all locations and all requirements for trim in connection with the Work of this Section. Carefully study the Drawings and the installation; provide in place all trim normally recommended by the manufacturer of the gypsum board used.

2. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound, except where semi-finished type is shown on the Drawings. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

3. Install L-type trim at bottom edge of wallboard in all Corridors, Lobbies and Vestibules, and as indicated on the Drawings. Bottom edge shall be held 1/2" above concrete slab in these areas.

4. Installation: Install the trim in strict accordance with the manufacturer's recommended methods of installation.

E. Control Joints

1. General

Provide control joints where indicated on the Drawings. If not indicated on the Drawings, provide control joints at spacing not exceeding the recommendations of the gypsum board manufacturer, and not more than 30'-0" apart.

Control joints shall be arranged neatly. If the pattern of control joints is not indicated on the Drawings, submit shop drawings illustrating the proposed location of all control joints for review by the Facility.

In fire-rated assemblies construct control joints in accordance with reports of fire tests of assemblies that have met the fire-rating requirements. Behind control joints provide gypsum board strips fastened to web of stud in accordance with Gypsum Association Fire Resistance Design Manual, or provide other configuration demonstrated by testing to maintain fire-rating.

2. Location of Control Joints in Vertical Surfaces (eg., Walls):

Unless otherwise unfeasible, control joints shall be aligned with the edges of openings in the partition (such as door frames, window frames, louvers, etc.)

Control joints shall extend from the finished floor through the entire height of the gypsum board.

3. Location of Control joints in Horizontal Surfaces (eg., Ceilings and Soffits):

Unless otherwise unfeasible, control joints shall be aligned with the edges of rectangular openings in the ceiling (such as light fixtures, grilles, louvers etc.) or on the centerline of round openings (such as sprinkler heads, speakers or round light fixtures).

3.06 CLEAN UP AND PROTECTION

A. In addition to the requirements of these Specifications, use all necessary care during execution of this portion of the Work to prevent scattering of gypsum board scraps and dust and to prevent tracking of joint and finishing compound onto floor surfaces. At completion of each segment of installation in a room or space, promptly pick up and remove from the working area all scraps, debris and surplus material of this Section.

END OF SECTION

SECTION 09 3100
CERAMIC TILE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all ceramic tile work indicated on the Drawings and as specified herein, including, but not limited to: glazed ceramic tile, unglazed quarry tile, ceramic mosaic tile, porcelain tile, all trim units, setting and grouting materials, waterproofing membrane for thin-set applications, and marble saddles.

1.02 NOT USED

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

B. ANSI A137.1 "American National Standard Specifications for Ceramic Tile".

C. Tile Council of America (TCA) Handbook for Ceramic Tile Installation. This includes ANSI A108/A118/A136 "Standard Specifications for the Installation of Ceramic Tile".

D. CDPH – SPTVOE: California Department of Public Health Standard Practice for The Testing Of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers; including Addenda.

E. SCAQMD: South Coast Air Quality Management District rules, including Amendments.

Rules #1113 and #1168.

1.04 SUBMITTALS

A. Product Data

Submit manufacturers' specifications and installation instructions for the following:

1. Each type of tile and trim unit specified.

2. Setting materials specified.

3. Grouting materials specified.

4. Waterproofing materials specified.

5. Sealer material specified.

B. Shop Drawings

Where the Drawings indicate tile pattern or joint locations, or where more than one type or color of tile is indicated, submit Shop Drawings showing tile pattern, colors, and types, as well as locations and widths of control and expansion joints in tile surfaces.

C. Samples

1. Initial Selection: Submit manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type of tile indicated. Include grout manufacturers standard range of colors for each grout type required.

2. Verification Samples:

a. Samples of each type of tile, color and pattern indicated, 12" x 12" sample with tile mounted on plywood or hardboard panels and grouted.

b. 12" long sample of marble saddle, beveled and finished.

c. Trim units: 2, each type, color and shape specified.

3. Field Samples: as specified.

D. Quality Control Submittals

1. Master Grade Certificate

a. Before setting any tiles, furnish to the Authority (for each shipment and type of tile) a certificate of grade, properly filled in on a Master Grade Certificate of the form approved in ANSI 137.1.

b. Certificate shall be signed by the manufacturer of the tiles and by the subcontractor for the Work, stating the grade, kind and full quantities of

tiles; and give identification marks for all packages of tiles furnished under this Contract.

c. Brand packages with corresponding identification marks.

2. Affidavit certifying experience of the installation company, as specified.

E. Project Closeout Submittals:

1. Maintenance materials, as specified.

F. Low Emitting Materials Compliance Submittals:

1. Provide documentation for each sealant to be used indicating that the sealants comply with low V.O.C. requirements as stated in Specification Section G01600.

2. Provide documentation of compliance with the testing and product requirements of CDPH-SPTVOE or applicable rules of SCAQMD as specified, and documentation as required for compliance with local regulations.

G. NOT USED:

1.05 QUALITY ASSURANCE

A. Manufacturer

1. Furnish tile of the same manufacturer and from the same origin for each tile type and color.

2. Furnish setting and grouting materials of the same manufacturer and from the same origin for each tile type and method of installation, unless otherwise specified.

B. Qualifications

Installer is to be a firm that has a minimum of three years experience with the installation of specified materials.

C. Pre-installation Conference

Prior to the start of the concrete and waterproofing construction schedule, the Contractor shall conduct a meeting to review the proposed waterproofing and tile design and to discuss the required methods and procedures to achieve the required quality and

waterproofing integrity. The meeting shall include, at a minimum, the Contractor, the waterproofing installer, waterproofing manufacturer, the Facility's Construction Manager and CID Inspector. The Contractor shall send a conference agenda to all attendees prior to the scheduled date of the conference.

D. Field Sample

Prior to proceeding with installation of tile, provide a field sample of each proposed tile installation. The field sample shall include both floor and wall applications of tile and, where applicable, shall also include a representative portion of any special color and joint pattern indicated.

The quantity and extent of such field sample(s) shall be coordinated with the Facility's Representative. With the approval of the Facility's Representative any acceptable field sample may be incorporated into the final Work.

E. Inspection of Liquid Applied Waterproof Membrane

Following installation of liquid applied waterproof membrane, and prior to proceeding with installation of thinset floor tile, obtain the Facility's Representative's written approval of the membrane.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage

1. Deliver all materials of this Section to the job site in their original unopened containers with grade seals unbroken and labels intact and legible.

2. Store all materials under cover in a manner to prevent damage and contamination by water, freezing, foreign matter or other causes. Store only the specified materials at the job site in location designated by the Facility's Representative.

B. Protection (General)

Use all means necessary to protect ceramic tile materials before, during, and after installation and to protect the installed Work and materials of all other trades.

C. Replacements

In the event of damage, immediately make all repairs and replacements necessary to the approval of the Project Architect and at no additional cost to the Authority.

1.07 MAINTENANCE MATERIALS (EXTRA STOCK)

A. General

Deliver extra stock of maintenance materials to Facility's Representative (to be transferred to the custodian). Furnish maintenance materials from same manufactured lot as materials installed and enclosed in protective packaging with appropriate identifying labels.

1. Tile: Furnish not less than one box for each 25 boxes or fraction thereof, for each type, color, pattern and size installed.

2. Wall Base: Furnish not less than 40 linear feet of each type, color, and size installed.

3. Sealer: Furnish one quart sealer in container with factory label with instructions for use.

PART 2 - PRODUCTS

2.01 MANUFACTURERS: provide products from manufacturers listed or approved equal.

A. General

1. Furnish tile by the same manufacturer and from the same origin for each tile type.

2. All tile indicated to be used on floor surfaces, as manufactured, shall bear a coefficient of friction not less than 0.60 when tested in accordance with ASTM C1028 under wet and dry conditions.

B. Glazed Ceramic Wall Tile

1. American-Olean Tile Co., Lansdale, PA. Type: "Bright".

2. Daltile Corporation, Dallas, TX. Type: "Semigloss".

3. U.S. Ceramic Tile Co., Doral, Florida. Type: "Color Collection – Bright".

C. Quarry Tile

1. American Olean Tile Co., Lansdale, PA.

2. Daltile Corporation, Dallas, TX.

3. Summitville Tiles, Inc., Summitville, Ohio.

4. Metropolitan Ceramics, Canton, Ohio

D. Unglazed Porcelain Pavers

1. American Olean

2. Daltile

3. Crossville Ceramics Co.

4. Casalgrande-Padana

5. Graniti Fiandre

6. StonePeak Ceramics Inc.

E. Unglazed Porcelain Mosaics

1. American Olean, Lansdale, PA

2. Daltile, Dallas, TX

3. Vitra Tiles, Pelham Manor, NY

F. Mortars and Grout

1. Laticrete International, Inc., Bethany, Connecticut 06524-3498.

2. Mapei, Deerfield Beach, FL

3. Pro Spec/Bonsal, Fairless Hills, PA

G. Cold Applied Liquid Waterproof Membrane

1. Laticrete International, Inc., Bethany, Connecticut 06524-3498.

2. Mapei, Deerfield Beach, FL.

3. Pro Spec/Bonsal, Fairless Hills, PA

H. Water-Soluble Grout Release

1. Aquamix

2. Miracle Sealants Co.

3. DuPont StoneTech Professional

I. Sealer

1. Miracle Sealants Co.

2. DuPont StoneTech Professional

2.02 MATERIALS

A. Tile Products

1. Unglazed Ceramic Mosaic Tile complying with Section 5.1 ANSI A137.1; Standard Grade.

a. Standard sizes: 1" x 1" x 1/4", 1" x 2" x 1/4", 2" x 2" x 1/4".

b. Colors: shall be selected by Project Architect from clear and/or textured porcelain tile. Floor and base tile of same colors.

c. Factory mounted.

d. Edges: Smooth, all purpose edge.

e. Average absorption: not to exceed 1/2 of 1%.

2. Unglazed Quarry Tile complying with Section 5.2 ANSI A137.1; Standard Grade.

a. Standard size: 6" x 6" x 1/2", flat tile.

b. Edges: Square edges, ground four-sided after firing.

c. Finish: non-slip, impregnated with abrasive aggregate.

d. Colors: shall be selected by Project Architect with floor and base tile of same colors.

e. If necessary to prevent soiling of exposed surfaces with setting and grouting materials, provide temporary wax coating or water soluble factory prepared grout release on exposed tile surfaces. Material shall be approved by manufacturer of tile and grout as being compatible with their materials and cleaning methods. Unexposed tile surfaces shall not be treated.

3. Glazed ceramic wall tile complying with Section 6.1 ANSI A137.1; Standard Grade.

   a. Standard sizes: 4¼" x 4¼" x 5/16", 6" x 6" x 5/16" - unless otherwise indicated.

   b. Colors: shall be selected by Project Architect.

   c. Edges: square, cushion edged.

4. Unglazed porcelain paver tiles complying with Section 5.3 ANSI A137.1; Standard Grade.

   a. Thickness: 5/16" min.

   b. Colors: shall be selected by Project Architect.

   c. To prevent soiling of exposed surfaces with setting and grouting materials, precoat with temporary protective coating of water soluble grout release on exposed tile surfaces. Material shall be approved by manufacturer of tile and grout as being compatible with their materials and cleaning methods. Unexposed tile surfaces shall not be treated.

5. Trim units including cap, bullnose, cove, external & internal corners to match characteristics of adjoining flat tile in size and color.

   a. Cove Base: 6" x 6 " with 3/4 inch to 1 inch maximum radius sanitary cove.

   b. Shapes: Provide manufacturers standard special shapes to suit installation. Provide bullnosed units at external corners and wainscot. Provide square corners at internal corners.

6. Inscriptions: There shall be one 4¼ by 8½ inch glazed wall tile in locations where indicated, bearing the inscription "Wash your hands before leaving this room" as shown on the Standard Details. The lettering of this inscription shall be beneath the final glazing of the tile. This applies to pupils' toilets only.

B. Marble Saddles

1. General: Provide marble which is uniform in color and finish, fabricated to sizes and profiles indicated or required to provide transition between tile surfaces and adjoining finished floor surfaces.

   Saddles shall be accessible for the disabled and conform to the requirements of the N.Y.C. Building Code and the Americans with Disabilities Act.

2. Marble:

   a. Provide marble complying with MIA Group "A" requirements for soundness.

   b. Minimum abrasion hardness (Ha) of 10.0 when tested in accordance with ASTM C241.

   c. Marble saddles shall be low absorption, Grade "A", full door jamb width by full width of opening, notched for door stops, corners rounded, edges beveled. Marble 3/4" thick, minimum. All exposed surfaces to have a honed finish.

C. Setting Materials

1. Portland Cement Mortar: Complying with ANSI A108.1

   a. Portland Cement - ASTM C150 Type 1

   b. Sand - ASTM C144

   c. Hydrated Lime - ASTM C206 or ASTM C207 Type S

   d. Water - Clean and potable.

   e. Follow recommendations outlined in TCA Handbook for Ceramic Tile Installation for mortar mix proportions.

2. Latex Portland Cement Mortar: Thin-setting bed - complying with ANSI A118.4.

   a. Prepackaged dry set mix mortar incorporating dry polymer additive in the form of a re-emulsifiable powder to which only water is added at job site,

or latex additive, serving as a replacement for part or all of gauging water, added at job site to dry mortar mix. Comply with mixing directions of latex additive manufacturer and mortar manufacturer. Comply with requirements of CDPH-SPTVOE, or SCAQMD rule #1168.

1) Mapei: Ultraflex 2 with Dust-Free Technology.

2) Laticrete: No. 253. For walls 255 MultiMax may be used.

3) Pro Spec: Permaflex 400.

b. Dryset mortar with latex additive serving as replacement for all of gauging water, added at jobsite to dryset mortar mix. Use with porcelain paver tile installations. Comply with requirements of CDPH-SPTVOE, or SCAQMD rule #1168.

1) Mapei Kerabond premium floor and wall thinset mortar with Mapei Keralastic super flexible additive.

2) Laticrete No. 272 premium floor and wall thinset mortar with Laticrete No. 333 super flexible additive.

3) Pro Spec Permalastic System – Two component, highly flexible mortar, with additive.

c. Follow recommendations outlined in TCA Handbook for Ceramic Tile Installation.

D. Grouting Materials

1. Polymer modified tile grout: a factory prepared compound of Portland cement, dry polymers and special additives complying with ANSI A 118.7. Comply with requirements of CDPH-SPTVOE, or SCAQMD rule #1168.

a. Laticrete 1500 Sanded, for joints 1/8" or greater.

b. Laticrete 1600 Unsanded, for joints less than 1/8".

c. Mapei Keracolor S (Ker 200), for joints 1/8" or greater.

d. Mapei Keracolor U (Ker 800), for joints less than 1/8" .

e. Pro Spec Sanded Grout 700, for joints 1/8" or greater.

f. Pro Spec Unsanded Grout 800, for joints less than 1/8".

2. Epoxy Grout: Solvent free, non-allergenic, two-component, 100% solids epoxy that is water cleanable, non-sagging, chemical and stain resistant, with long term color retention. Comply with ANSI 118.3. Comply with requirements of CDPH-SPTVOE, or SCAQMD rule #1168.

a. Laticrete SpectraLOCK 2000 IG.

b. Mapei Opticolor, factory blended.

c. Pro Spec B-7000 Epoxy Mortar and Grout

3. Colors: Unless otherwise indicated, wall type grout shall be white and floor type grout shall be grey.

4. All sealants shall comply with V.O.C. requirements specified in Section G01600.

E. Cold Applied Liquid Waterproof Membrane (for thinset floor applications):

Waterproof membrane shall be resistant to urine, dilute acids, alkalis, food wastes, and brine. Materials shall be non-hazardous and meet all volatile content (V.O.C) requirements. Comply with ANSI A118.10. Comply with requirements of CDPH-SPTVOE, or SCAQMD rule #1168.

1. Laticrete 9235; Waterproof Membrane, cold applied liquid rubber and reinforcing fabric.

2. Mapei Mapelastic AquaDefense cold-applied, roller applied synthetic liquid rubber and fiber reinforcing fabric.

3. Pro Spec B-6000; Latex polymer based waterproofing membrane and reinforcing mesh.

F. Miscellaneous Materials

1. Tile Cleaner: Product acceptable to tile and grout manufacturers and as recommended by Ceramic Tile Institute.

2. Sealer: Miracle Sealants Company "511 Porous Plus" or "511 H2O Plus", or DuPont StoneTech "Heavy Duty Sealer", subject to approval of quarry tile and grout manufacturers, and compliance with local regulations. Penetrating sealer, causing no

reduction of tile's slip resistance, and no change in tile appearance. Comply with requirements of CDPH-SPTVOE, or SCAQMD rule #1113.

3. Crack Isolation Membrane:

Comply with requirements of CDPH-SPTVOE, or SCAQMD rule #1168.

a. Laticrete "Hydro Ban"
b. Mapei "Mapelastic AquaDefense"
c. Pro Spec B-6000 Waterproofing/Crack Isolation Membrane with reinforcing mesh.

2.03 MIXES

A. Mix mortars, grouts and additives to comply with referenced standards and manufacturers recommendations. Accurately proportion materials for mixing to produce mortars and grouts of uniform quality with optimum performance characteristics.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Surfaces to receive tile shall be clean, firm and smooth.

B. Inspect all surfaces prepared by others before starting tile work and report all unsatisfactory conditions to the Authority. Verify that wall surfaces are level, plumb and square and that floor slopes to drains. Starting tile work shall be considered acceptance of Work of others and existing substrate.

C. Before proceeding with any tile work, verify:

1. Prior to application of thick set tile flooring systems, that sheet membrane waterproofing has been installed over prepared substrate and tested for leakage as part of Work of the specifications.

2. That plumbing contractor has installed all sleeves, drains, flashings and piping and that all piping systems have been run and tested for leakage.

D. No installation of ceramic tile shall proceed until the field samples have been approved by the Facility's Representative.

E. Following installation of liquid applied waterproof membrane, and prior to proceeding with installation of thinset floor tile, obtain the Facility's Representative's written approval of the membrane.

3.02 PROJECT CONDITIONS

A. Maintain environmental conditions and protect Work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent injury to persons or damage to tile work from carbon dioxide or carbon monoxide buildup.

C. Maintain temperatures at not less than 50°F (10°C) in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

3.03 PREPARATION

A. Prepare floors, walls and base substrates for tile installation in accordance with Tile Council of America's and product manufacturer's recommendations and requirements for wall and floor systems specified.

B. Prior to application of thin set floor tile, install cold applied liquid rubber waterproof membrane as per manufacturer's recommendations and specifications as part of Work of this Section.

C. Prior to application of thin set wall tile at locations having sheet membrane waterproofing turned up at wall base, such as in kitchen areas, provide materials to prepare the substrate for proper bonding as recommended by the thinset mortar manufacturer.

D. Allow waterproofing materials to cure in accordance with membrane manufacturer's recommendations.

E. Where porcelain paver tile is indicated to be installed on stair landings, first provide crack isolation membrane on properly cured and prepared concrete.

3.04 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard

Comply with applicable parts of ANSI 108 series of tile installation standards included under American National Standard Specifications for Installation of Ceramic Tile.

B. TCA Installation Guidelines

Comply with Tile Council of America installation methods specified.

C. All wall tile shall be laid up with vertical joints not over 1/16" thick, continuous and unbroken in perfect alignment. For tile mounted in sheets, make joints between tile sheets same width as joints within sheets so extent of each sheet is not apparent in finish Work.

D. Tile shall be set to the required levels and planes with true lines and angles. Layout tile work and center tile fields in both directions in each space and on each wall area unless otherwise indicated on Drawings. Adjust to minimize tile cutting.

E. Cut edges of tile shall be carefully ground and jointed. Do all cutting and drilling required for setting and as may be required by other contractors in a neat manner without marring the surface. Fit tile closely to electrical outlets, piping, fixtures and other penetrations so that plates, collars, or covers overlap tile.

F. The tile setter shall cut holes in the base tile of toilet rooms where bronze tubing extends through the partitions into the adjoining pipe spaces.

G. Set rings for floor type water closets, as specified in Division 15 of this Specification.

H. Provide tile base at convector enclosures where indicated on Drawings. Tile base and wainscot shall be terminated with bullnose units at top course unless otherwise shown.

I. Start all wainscots and facings above a ceramic glazed tile base 6 inch x 6 inch with 3/4 inch minimum or 1 inch maximum radius sanitary cove except where other flooring or base are indicated.

J. All trim including cap, bullnose, cove, external and internal corners to match field tile in size and color unless indicated otherwise.

K. Eliminate all voids behind tiles.

L. Provide expansion joints as indicated, where tilework abuts restraining surfaces, where expansion or control joints occur in the substrate, and where recommended in the TCA Handbook method EJ171. Spacing of expansion joints shall not exceed 30 feet in each direction, and shall not exceed 12 feet where tile will be exposed to direct sunlight or moisture.

3.05 FLOOR TILE INSTALLATION METHODS

A. Ceramic Mosaic Tile, Porcelain Paver Tile, and Quarry Tile.

Install tile to comply with requirements indicated below for setting methods, TCA installation methods related to types of subfloor construction, and grout types:

1. Thick set method, reinforced, on interior concrete subfloors, including Kitchen areas and other areas where indicated: mortar bed of uniform thickness of 1¼" to 2" thick depending on location, comply with TCA F121.

   a. Commercial Portland Cement Mortar Bed: ANSI A108.1

   b. Grout: Commercial Sanded Portland Cement type grout - acid resistant, ANSI A118.6. At Kitchen areas provide epoxy grout, ANSI A118.3.

   c. Waterproof membrane: Provided as part of Work of Section 07110 - SHEET MEMBRANE WATERPROOFING.

   d. Expansion joints mandatory. Provide in accordance with TCA Method EJ171.

   e. Reinforcing: 16 gage, 2"x2", galvanized welded wire mesh, centered within mortar bed.

   f. Mortar bed to be uniform depth within range specified above. Slope to be in fill installed as part of work of Section 03300 – CAST-IN-PLACE CONCRETE or Section 03733 – CONCRETE REPAIR WORK. Refer to Section 07110 for installation of sheet membrane waterproofing. Prior to starting work, confirm that all floor areas slope to drains, with no back pitch away from drains.

2. Thin set method, interior concrete subfloors, except lobbies, corridors and stair landings: mortar bed of 3/32" to 1/8", comply with TCA F122.

   a. Latex Portland Cement Mortar Bed: ANSI A118.4

   b. Grout: Polymer modified Portland cement tile grout, ANSI A118.7. At Science Laboratory areas provide epoxy grout, ANSI A118.3.

   c. Waterproof membrane: Cold applied liquid rubber provided as part of Work of this Section. Prepare slab and install membrane, including reinforcing fabric, as per membrane manufacturer's recommendations and

specifications. Pretreat cracks, joints, coves, and corners with reinforcing fabric and waterproofing material. Turn membrane up onto wall, extending 2 inches above finished floor. Waterproof penetrations and around drains.

d. Expansion joints: follow waterproof membrane manufacturer's directions and recommendations. Provide in accordance with TCA Method EJ171.

3. Thin set method, interior concrete subfloors, for lobbies, corridors, and stair landings: mortar bed of 3/32" to 1/8", comply with TCA F113.

a. Where porcelain paver tile is indicated to be installed on stair landings, first provide crack isolation membrane on properly cured and prepared concrete.

b. Latex Portland Cement Mortar Bed: ANSI A118.4

1) For installation of porcelain paver tiles provide latex additive serving as replacement for all of gauging water, added at jobsite to dryset mortar mix. Premium thinset mortar, and flexible additive.

c. Grout: Polymer modified Portland cement tile grout, ANSI A118.7.

d. Provide expansion joints in accordance with TCA Method EJ171. Above grade provide joints spaced 8' to 12' apart in each direction.

3.06 WALL TILE INSTALLATION METHODS

A. General

Install wall tile and base to comply with requirements indicated below for setting bed methods, TCA installation methods related to subsurface wall conditions and grout types.

1. Thick set method, on interior plaster, cement, and masonry: mortar bed of 3/4" to 1½" thick comply with TCA W221.

a. Commercial Portland Cement Mortar Bed: ANSI A108.1

b. Scratch Coat: Portland cement mortar proportioned as per TCA W221.

c. Bond Coat: Portland cement paste on workable mortar bed.

d. Grout: Commercial Portland Cement Grout. Compound of Portland cement and additives, factory blended to decrease shrinkage and increase moisture resistance, and complying with ANSI A118.6.

e. Metal Lath: Galvanized expanded metal.

f. 4 mil polyethylene membrane.

g. Expansion joints mandatory. Provide in accordance with TCA Method EJ171.

2. Thick set method, on interior plaster, cement, and masonry: mortar bed of 3/8" to 3/4" thick comply with TCA W222.

a. Commercial Portland Cement Mortar Bed: ANSI A108.1

b. Bond Coat: Portland cement paste on workable mortar bed.

c. Metal Lath: Galvanized expanded metal.

d. Grout: Commercial Portland Cement Grout. Compound of Portland cement and additives, factory blended to decrease shrinkage and increase moisture resistance, and complying with ANSI A118.6.

e. 4 mil polyethylene membrane.

f. Expansion joints mandatory. Provide in accordance with TCA Method EJ171.

3. Thin set method, gypsum board on metal studs: TCA W243.

a. Latex Portland Cement Mortar Bond Coat: ANSI A118.4.

b. Grout: Polymer modified Portland cement. ANSI A118.7.

c. Provide expansion joints in accordance with TCA Method EJ171.

4. Thin set method, tile backer board on metal studs: TCA W244.

a. Latex Portland Cement Mortar: ANSI A118.4.

b. Grout: Polymer modified Portland cement. ANSI A118.7.

c. 4 mil polyethylene membrane required.

d. Expansion joints mandatory. Provide in accordance with TCA Method EJ171.

3.07 GROUT APPLICATION

A. Where possible, tile should not be grouted sooner than 48 hours after setting.

B. Clean all joints of dust, dirt, and foreign materials.

C. When grouting wall tile thoroughly soak all joints with clean water. This is important as grout will not cure properly unless thoroughly soaked.

D. Mix grout with clean water to a consistency of thick cream. Completely fill all joints and allow to set for a few minutes. Remove the surplus grout and finish flush and true. As soon as the grout has reached its initial set, thoroughly wash with a sponge and clean water. Polish with clean, dry cloths.

3.08 REFRIGERATOR - FREEZER AREA

A. Continue tile facing in kitchen at exposed portion of the walk-in refrigerator extending from floor to ceiling.

B. After installation of the refrigerator-freezer in the kitchen, fill in solidly with concrete all spaces around the freezer and complete installation of floor tile and base around freezer. Tile base shall be secured to sides of freezer with waterproof mastic.

C. Apply sealer to floor as specified in Article titled "Sealer Application".

3.09 CLEANING

A. Upon completion of all ceramic tile installation and grouting, thoroughly clean the exposed surfaces so they are free of foreign matter and stains. Clean grout from exposed tile surfaces.

B. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but not sooner than 14 days after installation. Protect metal and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning. Remove all traces of acid solution upon completion of cleaning process.

3.10 WATER TEST – FOOD SERVICE AREAS

A. After completion of thick-set tile application, apply water to floor to demonstrate that all floor areas are sloped to drains and do not back pitch away from the drains. Advise the Facility's Representative 48 hours prior to the test.

3.11 SEALER APPLICATION

A. Apply sealer to quarry tile floors in kitchen, food preparation, and servery areas, in accordance with sealer manufacturer's printed instructions.

3.12 PROTECTION

A. As soon as the tile work in each space has been grouted and cleaned, it shall be covered with either reinforced kraft paper (sisal kraft) or other heavy covering. Floor covering shall be kept and maintained until completion of the Work of all trades or as otherwise directed by the Authority, when it shall be removed without damage to tile or adjoining Work.

END OF SECTION

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SECTION 09 5100
ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide acoustical ceiling Work as indicated on Drawings and as specified herein, including the following:

1. Acoustical Mineral Fiber Tile and Panel Ceilings.

a. Lay-in panel installation - exposed grid

b. Direct (adhesive) installation

c. Concealed spline installation

2. Acoustical Wood Fiber Panel Ceilings.

Lay-in panel installation - exposed grid

3. Metal Panel Ceilings, non-perforated.

Lay-in panel installation – exposed grid with flush tegular panels.

1.02 NOT USED

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

B. American Society for Testing and Materials (ASTM), latest edition.

C423 Test Method for Sound Absorption and Sound Absorption Coefficient by the Reverberation Room Method.

C635 Metal Suspension System for Acoustical Tile and Lay-In Panel Ceilings.

C636	Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
D1779	Specification for Adhesion for Acoustical Materials
E84	Surface Burning Characteristics of Building Materials.
E90	Standard Test Method for Laboratory Sound Transmission Class
E119	Method for Fire Tests of Building Construction and Materials.
E413	Determination of Sound Transmission Class
E1264	Standard Classification for Acoustical Ceiling Products.
E1414	Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a common Ceiling Plenum (CAC)
E1477	Standard Test Method for Luminance Reflectance Factor (LR) LR1 >75%

C. AMA -1-II Ceiling Sound Transmission Test By Two-Room Method

D. Underwriters Laboratories Inc. (UL)

Fire Resistance Directory

E. Acoustical and Insulation Materials Association, "Job Conditions".

F. New York City Building Code.

G. New York City Board of Standards and Appeals (BSA) approvals; New York City Materials Equipment Acceptance (MEA).

1.04 DEFINITIONS

A. Direct Suspension System

Directly fastened to floor or roof construction above

B. Indirect Suspension System

Installed as part of the Work of this Section, as furnished by ceiling system manufacturer to be attached to direct suspension system.

1.05 SUBMITTALS

A. Product Data

Submit manufacturer's product specifications and installation instructions for ceiling materials, indicating compliance with applicable requirements. Include information pertaining to fire performance, flame spread, and smoke development.

B. Shop Drawings

Submit shop drawing details indicating the relationship to mechanical and electrical Work and other items penetrating or connected to the ceiling. Indicate framing and support details for the ceiling Work.

1. Metal panel ceilings

a. Submit large scale details indicating how ceiling mounted items such as lighting fixtures and HVAC diffusers are installed.

b. Submit ceiling plans for coordination with mechanical trades. Indicate which panels are to be installed without retainer clips, to enable service and maintenance access.

C. Samples

1. Submit samples of the following materials, prior to installation;

a. Acoustical panels: 6"x6" samples of each type, pattern and color.

b. Lay-in mineral fiber acoustical panel with field cut tegular edge on one edge, painted to match factory tegular edges. The other three edges shall have manufactured tegular profile: 12" x 24" sample.

c. Metal Panel Ceiling units: Full size sample of each type and finish.

d. Exposed runners and moldings: 8" long samples of each color and system type required.

e. Concealed suspension members: 1 set of each assembly specified.

2. Forward each approved sample type to Mechanical Installer for purpose of matching diffusers.

D. Quality Assurance Submittals

1. Affidavit certifying experience of installation company.

2. Certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies regulated by the NYC Building Code are acceptable for the intended use. When test methods are stipulated in the NYC Building Code, the tests utilized shall be stated in the Certification. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

E. Project Closeout Submittals

1. Guarantee

2. Extra Materials (Attic Stock)

F. Low Emitting Materials Compliance Submittals:

1. Provide documentation for each sealant and adhesive to be used indicating that the sealants and adhesives comply with V.O.C. requirements as stated in the Specifications.

1.06 QUALITY ASSURANCE

A. Qualifications

Installer is to be a firm with not less than 3 years of successful experience in the installation of specified materials.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the N.Y.C. Building Code and all applicable regulations of other governmental authorities.

2. Certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

C. Fire Performance Characteristics

Provide ceiling components that are identical to those tested for the following fire performance characteristics, according to ASTM test method, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction. Identify ceiling components with appropriate marking of applicable testing and inspecting agency.

1. Surface Burning Characteristics: Tested per ASTM E84. Tested surfaces shall be the surfaces facing the occupied space.

   a. Flame Spread: 25 or less.

   b. Smoke Developed: 25 or less.

2. All materials exposed to the airflow in ceiling cavity plenums used for supply, return, or exhaust air shall be non-combustible or have a maximum smoke developed index/rating of 50, as defined by and in accordance with NYC Construction Code Sections BC 719 and MC 602. Flame spread index shall not exceed 25. Tested surfaces shall be the surfaces facing the plenum.

D. Fire Resistance Ratings

When the drawings indicate that the acoustical ceiling construction is part of a fire-rated floor/ceiling or roof/ceiling assembly, provide certification by an Approved Agency, in accordance with NYC Dept. of Buildings rules, indicating approval of the ceiling for use in the assembly described.

E. Coordination of Work

Coordinate layout and installation of ceiling units and suspension system components with other work above, supported by, or penetrating through ceilings, including light fixtures,

HVAC equipment, fire-suppression systems and partitions. Resolve all discrepancies and conflicts prior to start of Work.

F. Pre-installation Meeting

Prior to start of Work, installer of ceiling system and representatives of trades involved are to have a conference at the job site, in the presence of the Authority representative, to discuss coordination of ceiling system installation and resolve all discrepancies.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery

Deliver all acoustical units in manufacturer's original, unopened packages fully identified with type, finish, performance data and compliance labeling.

B. Storage

1. Store materials where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.

2. Store tile containers in space where they will be installed for at least 24 hours prior to installation to stabilize moisture content and temperature.

C. Handling

Handle ceiling units carefully to avoid chipping edges or damaging units in any way.

1.08 PROJECT CONDITIONS

A. Space Enclosure

Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet work in space is completed and dry, work above ceilings is completed, and until air temperature and humidity are maintained at values of final occupancy.

1. Pressurized plenums: Operate HVAC system for not less than 48 hours before beginning acoustical panel installation.

1.09 GUARANTEE

A. Work showing defects in workmanship or materials within the one year guarantee period specified in the Contract shall be corrected as directed by the Authority. Defects include but are not limited to:

1. Tiles or suspension system loose or improperly secured.

2. Tiles or suspension members showing discoloration or cracking.

3. Tiles or suspension members warping, sagging, or deforming.

1.10 EXTRA MATERIALS

A. Deliver extra materials to the Authority's Representative (to be transferred to the custodian). Furnish extra materials, described below, matching products installed, packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Ceiling Units: Furnish 12 square feet of full size units.

PART 2 - PRODUCTS

2.01 MANUFACTURERS, MODELS: provide products from listed manufacturers or approved equal

A. Acoustical Panels

1. Mineral Composition Panels (24" x 48" x 3/4")

a. USG Interiors Inc.

Product name: "Mars"

Product number: 88785

Environmental
performance type: "ClimaPlus"

b. Armstrong World Industries

Product name: "Ultima"

Product number: 1914

Environmental
performance type: "HumiGuard Plus"

c. CertainTeed Corporation

Product name: "Symphony-m"

Product number: 1220BB-IOF-1

Environmental
performance type: "104/90"

B. Indirect Metal Suspension Systems

1. Chicago Metallic Corporation

2. Donn Corporation / USG Interiors, Inc.

3. Armstrong World Industries, Inc.

4. Suspension members for metal panel ceilings shall be by the manufacturer of the ceiling panels or by a company recommended by the panel manufacturer.

2.02 MATERIALS - ACOUSTICAL TILES AND PANELS

A. Mineral Fiber Tile and Panels

1. Provide units per ASTM E1264; of designation, style, finish, color, acoustical range, edge detail and size as indicated below:

Suspended (Exposed grid, lay-in) Installation

Style:	Fine Texture
Size:	24" x 48" x 3/4", or as indicated.
Edge Profile:	Reveal beveled tegular, or as indicated.

Weight:	0.95-1.05 lbs./sq.ft.
NRC:	Min. .70
CAC:	Min. 35
Light Reflectance	Min. .85 Average
Color:	White
Finish:	Factory finish

2. Mineral products shall be manufactured with a minimum of 60% of post and pre-consumer content materials.

B. Provide fire-rated ceiling systems when indicated on the Drawings as part of a fire-rated assembly, with ratings as stipulated.

2.03 MATERIALS - METAL SUSPENSION SYSTEMS - INDIRECT HUNG

A. Exposed Grid Suspension System

Manufacturer's standard system, with design and finish as selected by the Project Architect.

1. Structural Classification: Heavy-duty system in accordance with ASTM C 635.

2. Face width: 15/16".

3. Main runners: Connect to direct suspension system (refer to Specification Section 05170). Conform to ASTM C 635 for heavy-duty classification.

4. Provide runners suitable for attachment of hold-down clips and impact clips as applicable.

5. Hold-Down Clips for Non-Fire-Rated Ceilings: For ceilings composed of lay-in panels, provide hold-down clips spaced 2'-0" o.c. on all cross tees.

6. For metal panel ceilings the exposed grid shall be furnished by the panel manufacturer, or by a company recommended by the panel manufacturer, and finish shall match panels. Main runners and cross runners shall be G60 hot-dipped galvanized steel in accordance with ASTM A653, with aluminum capping.

7. Impact Clips: Provide in high impact areas, including corridors, lobbies, and gymnasiums, and at other locations indicated. Provide manufacturer's impact clip

("keep clip") system designed to absorb impact forces against lay-in panels. Provide number of clips recommended by manufacturer; not less than 4 clips per panel. System shall meet requirements of Article titled "Impaction Ceiling System Installation".

For metal panel ceilings provide Armstrong #414 "butterfly" style removable retention clips, or equal, to retain panels in place except at specific locations where maintenance access is required. Clips shall be easily removable by twisting the "wings" of the clip.

2.04 MISCELLANEOUS MATERIALS

A. Tile Adhesive

1. Comply with ASTM D1779 or FS-MMM-A-00150, factory made product recommended by manufacturer, bearing UL label for Class 0-25 flame spread.

2. All adhesives used on site shall comply with V.O.C. requirements specified in Section G01600.

B. Primer

In accordance with manufacturer of acoustical tile adhesive, substrate shall be primed with one of the following products prior to application of adhesive to remove any residual which would prevent proper attachment of tile:

1. Chemical Wash

2. Sizing

3. Adhesive base or primer

4. All adhesive base and primers used on site shall comply with V.O.C. requirements specified in Section G01600.

C. Edge Moldings and Trim Pieces

Provide manufacturer's standard molding for edges and penetrations of ceiling units which fit with type of edge detail and suspension system indicated.

D. Tile Fasteners

Cadmium plated, type recommended by tile manufacturer, but for not less than 1/2" penetration of substrate.

E. Drop Clips

18 gage galvanized steel with key hole slot, or other configuration approved by New York City Dept. of Buildings for connection of ceiling suspension members to carrying channels.

Drop clips shall be of length required for indicated ceiling height, and to provide clearances for lighting fixtures, mechanical equipment, and other items above the ceiling. Where necessary because of limited clearance, provide clips that connect runners tight to the bottom of carrying channels.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the building before beginning Work to determine that it is properly enclosed and the structure is in proper condition to receive acoustical materials and suspension system. Area shall be broom cleaned and uninterrupted for free movement of rolling scaffold. Do not proceed until satisfactory conditions prevail.

B. Verify that direct suspension system has been installed properly, that main runners are spaced evenly and have been leveled to a tolerance of 1/8" in 12' measured both lengthwise on each runner and transversely between parallel runners so that indirect suspension system installation may proceed accurately.

C. Start of Work constitutes acceptance of existing conditions, therefore, contractor is advised to bring any discrepancies to the attention of the Authority prior to start of Work.

3.02 PREPARATION

A. Coordination

Provide and coordinate the locations of inserts, clips, or other supports for support of acoustical ceilings.

Determine the length of drop clips required to maintain indicated ceiling height and to provide necessary clearance for electrical, mechanical and other equipment. Where necessary for clearance, clips that connect runners tight to the bottom of carrying channels shall be used.

B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders and comply with reflected ceiling plans.

C. Adhesive Tile Installations

1. Before installing adhesively-applied tile on wet-placed substrate such as cast in place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.

2. Surface Preparation: Remove dirt, dust, oil, grease, and other foreign matter that may impair proper bonding of the tile adhesive. Clean and prepare substrate in accordance with the adhesive manufacturer's instructions and as specified.

a. Existing Painted Surfaces: Remove loose, peeling, and blistered coatings. Sand glossy surfaces to a dull finish.

b. Concrete Surfaces: Remove laitance, fins, and other defects that may impair bonding of the tile adhesive or may prevent alignment of tiles in a uniform plane.

3.03 INSTALLATION - GENERAL

A. Install materials in accordance with manufacturer's printed instructions and in compliance with ASTM C636, governing regulations, fire resistance rating requirements, as indicated.

1. Coordinate requirements for Work of other trades to be built into ceiling system. Provide supplementary framing as required.

B. Arrange directionally-patterned units (if any) in manner shown by reflected ceiling plans, or as approved by the Project Architect. Install in patterns indicated, (balanced borders all

sided) symmetrical or centered about center line of corridors, panels, fixtures, beam haunches, rooms, spaces.

C. Cut as required for installation of electric fixtures, air diffusers, grilles, sprinkler heads, security devices, access doors, etc., provided under other contracts. Verify sizes and locations with other trades.

D. On completion, the ceilings shall present a uniform horizontal plane surface, unless otherwise indicated, free from blemishes and imperfections. Exposed grid cross runners shall fit tightly against adjacent main runners, with no visible gaps.

E. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.

1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.

2. Screw-attach moldings to substrate at intervals not over 16" o.c. and not more than 3" from ends, leveling with ceiling suspension system to tolerance of 1/8" in 12'-0". Miter corners accurately and connect securely.

F. Install panels in coordination with suspension system with suspension members concealed by support of tile units.

G. Neatly scribe and cut panels to fit accurately at borders, interruptions, and penetrations. The cut edges of reveal tegular lay-in mineral fiber panels shall be field cut to match profile of factory edges, in accordance with manufacturer's printed instructions. Paint the cut edges to match factory finish where exposed to view, using paint supplied by panel manufacturer.

3.08 ADJUSTING AND CLEANING

A. Clean exposed surfaces of ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage.

B. Remove and replace Work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

C. Remove and replace Work that is damaged or soiled by other trades as directed by Authority's Representative.

END OF SECTION

SECTION 09 65 00

RESILIENT FLOORING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all resilient tile (vinyl composition or vinyl), solid vinyl sheet flooring, reducer strips, transition strips, resilient base (at resilient flooring and at carpet), interior detectable warning surfaces and other accessories noted herein.

1.02 NOT USED

1.03 NOT USED

1.04 REFERENCES

A. American Society for Testing and Materials (ASTM), latest editions.

D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine

E84 Test Method for Surface Burning Characteristics of Building Materials.

E648 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

E662 Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

F1066 Standard specification for Vinyl Composition Floor Tile

F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

F1861 Standard Specification for Resilient Wall Base

F1913 Standard Specification for Vinyl Sheet Floor Covering Without Backing

B. Federal Specifications (FS)

P-F-430C

C. National Fire Protection Association (NFPA)

Standard 253 Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

D. Where the language in any of the documents referred to herein is in the form of a recommendation or suggestion, such recommendations or suggestions shall be deemed mandatory under this contract.

1.05 SUBMITTALS

A. Product Data

Manufacturers' specifications, installation instructions, surface preparation requirements and maintenance manuals for each material specified.

B. Samples

1. For Initial Selection: Submit actual sections of resilient flooring materials, showing full range of colors and patterns available, for each type of resilient flooring required

2. For Verification, prior to installation, submit the following:

a. Resilient tile: Full size, each type, size and color specified:

1) Light Reflectivity (L.R.): Sample tiles submitted must have light reflective values of each tile noted either by Light Reflectivity (L.R.) Sample tiles submitted must have light reflective values of each tile noted either by Stamping L.R. value on back or Stamping L.R. value on back or Printed schedule form (submit in triplicate).

b. Vinyl Sheet: 12 inch square section.

c. Resilient Base: 12 inch long sections, each type and color specified.

d. Feature Strip: 12 inch long section, each color selected

e. Detectable Warning Surfaces: one tile or 12" x 12" piece.

C. Quality Assurance

1. Furnish Installer's certification that it is a firm with not less than 3 years of successful experience in the installation of specified materials.

2. Manufacturer's certification from an independent testing laboratory that resilient flooring complies with the fire test performance requirements

3. Certification from flooring installer that the substrate surfaces have been examined and are acceptable

D. Extra Materials

E. FloorScore Certification

1. Provide documentation that each product is FloorScore certified.

F. Low Emitting Materials Compliance Submittals:

1. Provide documentation for each adhesive to be used indicating that the adhesives comply with V.O.C. requirements as stated in Specification

1.06 QUALITY ASSURANCE

A. Qualifications

1. Furnish Installer's certification that it is a firm with not less than 3 years of successful experience in the installation of specified materials.

B. Certifications

1. Furnish manufacturer's certification from an independent testing laboratory acceptable to authorities having jurisdiction that resilient flooring complies with the fire test performance requirements specified herein.

2. Furnish certification from flooring installer that the substrate surfaces have been examined and are acceptable for installation of the Work of this Section.

C. Fire Test Performance

Provide resilient flooring and wall base material that comply with the following performance criteria as determined by an independent testing laboratory acceptable to authorities having jurisdiction.

1. Resilient flooring – Shall conform to Class 1:

a. Critical Radiant Flux (CRF): Not less than 0.45 watts per sq. cm. as per ASTM E648 or NFPA 253

b. Specific Optical Density Rating: Less than 450 as per ASTM E662.

2. Resilient base – Shall conform to either Class B per ASTM E84 or Class 1 per ASTM E648 or NFPA 253:

a. Class B per ASTM E84

1) Flame Spread Index: Not more than 75 as per ASTM E84.

2) Smoke Density Index: Not more than 450 as per ASTM E84. Compliance with BC 803.1.1 of NYC Building code is also required.

b. Class 1 per ASTM E648 or NFPA 253: Critical Radiant Flux (CRF) of not less than 0.45 watts per sq. cm.

D. Slip Resistance

All flooring materials with coatings shall have a slip resistance of at least 0.60 when tested in accordance with ASTM D2047.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery

Deliver material in good condition to the site in manufacturer's original unopened containers with label information clearly marked thereon.

B. Storage

Store materials (resilient flooring, base and adhesives) in location protected from the weather and having a minimum temperature of 68°F for at least 24 hours prior to start of laying of flooring.

1.08 PROJECT CONDITIONS

A. Environmental Requirements

Continuously heat spaces to receive flooring to a temperature of 68°F for at least 48 hours prior to flooring installation, and for 48 hours after installation. Maintain a minimum temperature of 55°F. thereafter. Do not install products until they are at the same temperature as the spaces in which they are installed.

B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter has been cured

and is sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test. The Contractor shall allow sufficient time for the slab to dry out before installation of resilient flooring is started.

1.09 MAINTENANCE

A. Extra Materials

1. Furnish additional floor covering materials for replacement and maintenance to the Facility's Representative (to be transferred to the janitor), including manufacturer maintenance information.

2. Furnish materials of each size, color pattern, and type of material included in the Work. All materials must be new, clean, undamaged and in original containers.

3. Furnish materials at the rate of one (1) carton for each 1000-1500 sq. ft of material installed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS [or approved equal]

A. Vinyl Composition Tile

1. Armstrong World Industries, Inc. Lancaster, PA:

"Standard Excelon Imperial Texture".

2. Tarkett Inc. Houston Texas: Azrock® by Tarkett- Standard VCT and

Expressions™ by Tarkett

3. Mannington Mills, Inc.: "Essentials" and "Designer Essentials"

B. Solid Vinyl Sheet Flooring

1. Armstrong World Industries, Inc.: "Medintech".

2. Mannington Mill: "Homogeneous Sheet Flooring"

3. Johnsonite® a Tarkett Company: "Optima iQ Homogeneous Sheet"

C. Slip Retardant Vinyl Sheet Flooring

1. Armstrong World Industries, Inc: "Safeguard" ("Safeguard Spa" is not acceptable)
2. Altro Floors: "Impressionist II"
3. Mannington Mill: "Assurance II"
4. Johnsonite® a Tarkett Company : "Granit Safe-T"

D. Slip Retardant Vinyl and Vinyl Composition Tile

1. Armstrong: "Safety Zone"
2. Azrock/tarkett: "Cortina Grande SR" or "Color Essence SR"

E. Resilient Wall Base and Accessories (Vinyl or Rubber base)

1. Johnsonite/Tarkett
2. Armstrong World Industries, Inc
3. Stoler Industries/Allstate Rubber Corp., Dalton GA
4. Roppe Corporation,2 Fostoria, OH
5. Burke Flooring, San Jose CA

F. Vinyl Composition Feature Strips

1. Armstrong World Industries, Inc.
2. Azrock/Tarkett

G. Detectable Warning Surfaces

1. Detectable Warning Systems Inc., Jacksonville, FL: AlertTile
2. Access Products Inc., Buffallo , NY:

   Access Tile®-Surface Applied

H. Moisture Test Kits:

1. WagnerMeters Rouge River, OR
2. Floor Seal Technology, Inc. Milpitas, CA 95112

2.02 MATERIALS

A. Vinyl Composition Tile (VCT)

Provide VCT product, in compliance with ASTM F1066, Class 2 through pattern, asbestos free, complying with the following requirements:

1. Size: 12" x 12" x 1/8" gage

2. Color: As indicated on the drawings

3. Light Reflectivity: Maximum range as per Manufacturers Light Reflectivity Tables

   a. Corridors..... 35%

4. Vinyl composition tile shall be manufactured with a minimum of 1% of post consumer content materials.

5. Tile shall be FloorScore™ certified.

B. Solid Vinyl Sheet Flooring.

Provide non-layered, non backed solid vinyl sheet flooring in compliance with ASTM F1913.

1. Sheet Width: 6'-0" wide rolls

2. Thickness: 0.080 inch gage, minimum

3. Color: as selected by Architect

4. Welding rod: PVC welding rod, as produced by manufacturer of flooring and as intended for heat sealing of joints. Color as selected by Architect.

5. Sheet vinyl shall be manufactured with a minimum of 1% of post consumer content materials.

6. Flooring shall be FloorScore™ certified.

C. Slip Retardant Vinyl Sheet Flooring.

Provide slip retardant sheet flooring, for installation in common areas / ramps and other locations as indicated on Drawings in compliance with the following requirements:

1. Thickness: 0.080 inch gage, minimum

2. Color: as selected by Architect

3. Slip Resistance Tests: Static coefficient in accordance with the James Machine Test D 2047 (modified) in excess of 0.60 to meet Department of Commerce Safety Standards and ADA requirements.

4. Slip resistant sheet vinyl shall be manufactured with a minimum of 1% of post consumer content materials.

5. Flooring shall be FloorScore™ certified.

D. Slip Retardant Vinyl Tile and VCT

Provide slip retardant vinyl or vinyl composition tile, for installation in locations as indicated on Drawings in compliance with ASTM F1066, Class 2 through pattern, asbestos free, complying with the following requirements:

1. Size: 1/8" gage, 12" x 12" or 16" x 16"

2. Color: As indicated on the drawings

3. Light Reflectivity: Maximum 35% as per Manufacturers Light Reflectivity Tables

4. Slip Resistance Tests: Static coefficient in accordance with the James Machine Test D2047 (modified) in excess of 0.60 to meet Department of Commerce Safety Standards and ADA requirements.

5. Slip resistant vinyl tile shall be manufactured with a minimum of 1% of post consumer content materials.

6. Tile shall be FloorScore™ certified.

E. Detectable Warning Surfaces (Interior locations)

1. Detectable Warning Surfaces shall be in compliance with the requirements of ANSI A117.1-2003.

2. Material: Composite

3. Thickness: 1/8" to 1/4"

4. Size: Manufacturer's standard sizes.

5. Manufacturer's standard colors as selected by Project Architect.

2.03 ACCESSORIES

A. Resilient Base

1. Resilient base shall be in compliance with ASTM F1861. Standard solid colors as selected:

2. 4" high, 1/8" thick (tolerance + .005"), compression type.

3. Top corner rounded, bottom coved, arranged for above floor application. Provide straight base for carpeting.

4. Provide job formed inside and outside corners.

5. Colors as selected by Architect/Matte finish.

5. Base shall be FloorScore™ certified.

B. Resilient Edge Strips, Transition Strips, Reducer Strips, etc.

1/8" thick, homogeneous vinyl or rubber, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard colors available; not less than 1" wide. Material shall be FloorScore™ certified.

C. Resilient Feature Strips

1/8" thick, vinyl composition or rubber, 1" x 24" standard colors. Material shall be FloorScore™ certified.

D. Adhesives

1. Type as recommended by manufacturer for particular resilient flooring and base.

2. Adhesive suitable for adhesion to plaster, concrete, masonry, metal or wood, waterproof after drying to resist action of water.

3. All adhesives used shall comply with V.O.C. requirements as stated in Specification Section G01600.

E. Edging Strip

1. Brass or White alloy metal.

2. Under flange type, with anchors suitable for type of subfloor indicated.

F. Vinyl Saddles

1. Flush or tapered as indicated.

2. Thickness to suit abutting floor covering material.

3. Colors as selected by Project Architect.

G. Concrete Slab Primer

Resilient flooring adhesive manufacturer's recommended primer for preparation of porous or dusty concrete, non-staining type.

H. Self-Leveling Compound

As specified in specifications- Cement based self leveling underlayment, hydraulic-cement-based, polymer-modified, self-leveling product that can be applied in minimum uniform thicknesses of 1/8 inch (3 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Leveling compounds containing gypsum are not permitted.

I. Flash Patching Compound

As specified in the specifications - Cement based self leveling underlayment, Hydraulic-cement-based, polymer-modified product that can be trowel-applied from 1/4" to a feather-edge to match adjacent floor elevations.

1. Gypsum-based compounds are not permitted

J. Floor Polish

Fed. Spec. P-F-430C, heavy traffic water emulsion floor wax, as recommended by flooring manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. General

1. Installer shall inspect subfloor surfaces to determine that they are satisfactory. A satisfactory subfloor surface is one that is clean, dry, flat, smooth, level and free from cracks, holes, ridges, or coatings preventing adhesion, and other defects impairing performance or appearance. Notify the Authority of conditions, which will adversely affect flooring installation. Do not proceed with installation until conditions have been corrected.

2. Installation of the resilient flooring (or any component thereof) shall indicate the Contractor's acceptance of the subfloor as a satisfactory substrate to its work.

3. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

B. Concrete Subfloor

1. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain presence of curing, sealing, hardening or any other compounds.

a. Bond Tests shall be in accordance with resilient flooring Manufacturer's Installation Manual.

b. Moisture vapor transmission shall not exceed 5 pounds per 1,000 square feet in 24 hours. Tests shall be in accordance with ASTM F1869.

c. Installer shall provide certification that the concrete substrate surfaces have been examined and are acceptable in accordance with this Article.

C. Wood Subfloor

1. Verify that wood subflooring complies with the requirements specified in Section 06100 - Rough Carpentry.

2. Verify that underlayment surface is free of irregularities and substances that may interfere with adhesive bond, show through surface or stain flooring. Also verify that end joints and joints between panels are staggered in relation to each other and that fasteners are flush with the surface of the subfloor.

   a. Installer shall provide certification that the wood substrate surfaces have been examined and are acceptable in accordance with the specifications.

3.02 SURFACE PREPARATION

A. Unless otherwise specified, follow the materials manufacturers' written instructions.

B. Remove dirt, grease, oil, paint, varnish, wax, sealers, curing or hardening compounds and contaminants which may impair the full bonding of the materials to the substrate. Avoid organic solvents. Remove residual adhesives as recommended by the flooring manufacturer.

C. Concrete Subfloor

Prepare concrete slabs in accordance with ASTM F710.

1. Remove trowel marks or other projections by grinding or sanding.

2. Level uneven surfaces with smooth troweling of mstic underlayment. Follow underlayment manufacturer's application and curing instructions.

3. Provide a substrate surface with not more than 1/8 inch in 10'-0" variation from level or plane of required slope.

4. Treat porous and dusty concrete with primer after vacuum cleaning the surface. Apply primer at the rate recommended by the primer manufacturer.

5. Broom or vacuum clean subfloor prior to installation of flooring.

3.03 INSTALLATION - GENERAL

A. Install resilient flooring materials in compliance with manufacturer's latest printed instructions.

B. Scribe cut and fit resilient flooring to permanent fixtures, pipe trench covers, built-in cabinets, pipes, outlets columns, walls and partitions.

C. Tightly cement resilient flooring to sub base without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks or other surface imperfections.

D. Hand roll flooring at perimeter of each covered area to assure adhesion.

E. Spaces and areas where flooring is being installed shall be closed to traffic and other trades until flooring has set.

F. Protect finished installation at all times. Contractor will be held responsible for all damage to flooring until Final Acceptance.

3.04 INSTALLATION OF TILE FLOORS

A. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room area are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis.

B. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.

1. Lay tile in patterns indicated and as directed by the Project Architect.

2. Lay adjacent tile with direction of texture opposite adjoining tiles.

C. Adhere tile flooring to substrates using full spread of adhesive to edge of covered area, applied as directed by tile manufacturer.

D. Cut tiles using equipment and methods recommended by respective tile manufacturer. Provide smooth cut edges tightly fit to adjacent work.

3.05 INSTALLATION OF SOLID VINYL SHEET FLOORING

A. Lay sheet flooring to provide as few seams as possible with economical use of materials. Match edges for color shading and pattern at seams.

B. Adhere sheet flooring to substrates using method approved by flooring manufacturer for applicable type of sheet flooring and substrate.

C. Prepare seams in vinyl sheet flooring with manufacturer's special routing tool and heat weld with vinyl thread or matching PVC rods.

D. Provide integral flash cove base where shown on Drawings, including cove support strip and metal top edge strip.

3.06 INSTALLATION OF SLIP RETARDANT VINYL SHEET FLOORING

A. General

Installation same as Article 3.05 for Solid Vinyl Sheet Flooring in addition to the following:

1. Caulk around penetrations with manufacturer's mastic. Mastic color shall match vinyl flooring.

2. Do not apply sealer or wax on flooring. Machine scrub, using nylon or hard bristle brushes and floor cleaner recommended by the manufacturer.

3.07 INSTALLATION OF ACCESSORIES

A. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with inside and outside corners job formed from base materials. Corner returns shall be not less than 6 inches in length and corners shall be formed without producing discoloration at bends. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces. Do not stretch base during installation.

1. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material. Color to match base material.

B. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed. Locate strips under doors.

C. Where color of flooring changes between spaces, install feature strip between the two colors. Feature strip shall be centered under the door when it is in a closed position.

D. Apply resilient accessories to areas as indicated and in strict accordance with manufacturer's installation instructions

3.08 DETECTABLE WARNING SURFACES

A. Install surface units in accordance with Manufacturer's recommendations, as indicated on Drawings and in compliance with ANSI/ICC A117.1 2003 Section 705 requirements.

3.09 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing resilient product installation:

1. Remove adhesive and other blemishes from exposed surfaces.

2. Sweep and vacuum surfaces thoroughly.

3. Damp-mop surfaces to remove marks and soil.

a. Do not wash surfaces until after time period recommended by manufacturer.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

1. Apply protective floor polish to horizontal surfaces of vinyl composition tile that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.

a. Use commercially available polish acceptable to manufacturer for vinyl composition tile.

2. Floor polish is not required for Slip-retardant Vinyl Tile. Apply protective floor polish to horizontal surfaces of Slip-retardant vinyl tile only if recommended in writing by tile manufacturer.

END OF SECTION

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SECTION 09 9000
PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. This Section includes surface preparation and field painting of the following:

1. Exposed exterior items and surfaces.

2. Exposed interior items and surfaces.

3. Surface preparation, priming and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

4. Photoluminescent exit path marking.

B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface as directed by the Architect. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels as described in Article 2.05A.

D. When removing or disturbing existing paint on surfaces that have not been tested by the Facility for lead content, assume that the existing paint contains lead. Take necessary precautions to protect workers. Provide measures to separate paint removal work areas from occupied areas, and clean-up and disposal as specified in the Specifications.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and

requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Federal Specifications (FS)

2. American Society of Testing and Materials (ASTM)

3. N.Y.S. Department of Environmental Conservation

4. U.S. Department of Labor

5. Occupational Safety and Health Administration (OSHA)

6. Steel Structures Painting Council (SSPC)

7. Department of Defense (DOD)

1.03 DEFINITIONS

A. The term "Painting" as used in this Section, means the application of all coatings such as paint, primer, enamel, varnish, shellac, oil, etc. as listed in the Painting Schedules.

B. The term "Painting" also includes preparation of surfaces for such applications, and the clean-up as hereinafter specified.

C. The term "Walls" means all surfaces from floor, or top of base, or top of wainscot, to ceiling or hung ceiling.

1. Include pilasters, breaks, jambs, reveals, returns, arches.

2. Include hardboards, pegboards.

3. Include free standing columns, low partitions.

4. Include masonry, plaster or gypsum board interiors of wardrobes or closets, cupboards and other enclosed spaces.

D. The term "Ceilings" means the general overhead horizontal surfaces.

1. Include cornices, arches, soffits, stair soffits.

2. Include beam and girder haunches.

3. Include primed metal cover and border strips.

4. Include metal frame of ceiling lights and ceiling equipment.

5. Include side faces of hung or furred ceiling.

E. Touching-up bare spots specified for previously primed or painted surfaces is in addition to the coats specified for the paint system.

F. Finishes:

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.

2. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.

3. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.

4. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

G. Concealed: The term "concealed" refers to surfaces, piping, ducts or conduit which cannot be accessed without moving a building element such as within a chase, wall or ceiling.

1. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:

a. Furred areas.

b. Ceiling plenums.

c. Duct shafts.

d. Elevator shafts.

H. The term "exposed" refers to any item which is not concealed.

1. The term "exposed to public view" means situated so that it can be seen from eye level from a public location. A public location is that which is accessible to persons not responsible for operation or maintenance of the building.

1.04 SUBMITTALS

A. Product Data

Provide manufacturers' product literature for all materials specified and material manufacturer's printed directions and recommendations for environmental conditions, surface preparation, priming, mixing, reduction, spreading rate, application, storage and VOC content, as applicable for each of the materials specified.

B. Samples

1. Initial Selection

Submit manufacturer's color charts for each type of finish for approval by the Project Architect. Verify colors specified with manufacturers' color charts for availability and notify the Project Architect if any discrepancies should occur.

2. Verification prior to installation

a. Contractor shall furnish color chips for surfaces to be painted.

b. Submit two samples of each color and finish selected on 12" x 12" hardboard.

c. Two samples of finish on concrete masonry and metal surfaces.

3. Submit samples of stained and varnished wood in triplicate for approval. Samples shall be 4" x 8" samples of the species of wood specified, stained and varnished as required and clearly labeled with type of coating, number of coats applied, etc.

4. All samples shall be labeled; and include the following information:

a. Manufacturer's name

b. Type of paint/stain/hardener

c. Manufacturer's stock number

d. Color: name and number

e. Federal Specification number, as specified

f. Federal regulations for amount of lead in paint.

g. VOC content

C. Quality Assurance

1. Certification that materials for each system are obtained from a single manufacturer.

2. Certification that Work shall be performed by personnel with a minimum of three years experience who meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).

3. Certification that material meets or exceeds the performance requirements of Federal Specifications.

4. Certification that materials comply with N.Y.C. and N.Y.S. regulations for Volatile Organic Compounds.

5. For photoluminescent paint system, submit NYC MEA Acceptance Reports or certification of required test results by an Approved Agency.

D. Testing

Toxicity Characteristic Leaching Procedure (TCLP) testing per Article in Part 3 titled "Disposal of Painted Waste and Debris from Existing Buildings".

E. Guarantee

Provide Guarantee per Article 1.08.

F. Low Emitting Materials Compliance Submittals:

1. Provide documentation for each coating to be used on the building interior indicating that the coatings comply with low V.O.C. requirements as stated in the specifications.

1.05 QUALITY ASSURANCE

A. General

1. All painting materials shall arrive at the job ready-mixed.

2. Varnish containers shall not exceed 5 gallon capacity.

3. Remove all rejected materials from the premises immediately.

4. All thinning and tinting materials shall be as recommended by the manufacturer. Generally, all paints shall not require additional thinning.

5. Verify that the specified shop prime paint for each applicable item in this Project is compatible with the total coating system, prior to application.

6. Materials selected for each system type shall be products of a single manufacturer.

B. Qualifications

1. Work of this Section shall be performed by personnel with 3 years experience in performing this type of Work.

2. The Contractor shall ensure that all employees meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).

C. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

D. Regulatory Requirements

1. N.Y.C. Building Code, latest edition

2. N.Y.S. Department of Environmental Conservation -Part 205 on "Architectural Surface Coatings" - for (VOC) Volatile Organic Compounds.

3. Steel Structures Painting Council (SSPC).

4. U.S. Department of Labor, Occupational Safety and Health Administration, Construction Industry Standards (29 CFR 1926/1910) Revised 10/1/79, Washington, D.C.

5. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62 (Lead In Construction Standard).

6. New York State Department of Environmental Conservation regulations, 6 NYCRR part 364.

7. New York City Department of Environmental Protection Waste water disposal permitting requirements.

E. Certifications

Federal Specifications: When materials are specified to comply with Federal Specifications, products will be accepted which meet or exceed the performance requirements of such Federal Specifications and comply with all regulations currently in effect.

1. Indicate that material complies with Federal Specifications by including the Federal Specifications number on the container label or on the product literature, or submit a statement with the Product Data stating that material meets or exceeds the performance requirements of the Federal Specifications.

2. Photoluminescent paint is required to listed by MEA, OTCR, or have certification of required test results by an Approved Agency.

F. Field Samples

1. Provide samples of each color and finish, under natural lighting conditions, in a location where each finish is to be applied.

2. Facility will request review of first completed room, space or item of each color scheme required by the Project Architect for color, texture and workmanship.

3. First acceptable room, space or item will be used as project standard for each color scheme, or finish.

4. Primer coat is to be inspected and approved in all locations before any subsequent finish coats are applied.

5. Provide complete paint system on wall sample specified in the specifications – Gypsum Board Assemblies. Wall field sample shall be a corridor wall at least 30 feet long or a location of equal or greater size as selected by the Facility's representative. Provide lighting at the time of inspection, equivalent to the lighting to be in place upon project completion. The sample will be inspected by the Architect for proper finish. Inspections will occur before and after painting the sample, with the final evaluation occurring after painting.

6. In existing building locations; repair of existing base surface is to be approved prior to commencement of painting.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery

Deliver materials to the site in original, unopened containers bearing manufacturers name and label containing the following information:

1. Product name or title of material

2. Manufacturer's stock number, batch number, VOC content in grams per liter and date of manufacture.

3. Manufacturer's name

4. Federal Specification number, if applicable.

5. Federal regulations for amount of lead in paint (less the 0.06% lead in non-volatile ingredients)

6. Contents by volume for major pigment and vehicle constitutions

7. Thinning instructions

8. Application instructions

9. Color name and number

B. Storage

1. Facility's Representative will designate space on premises for storage of materials. Contractor shall restrict storage in this area to paint materials and related equipment, and provide the following:

   a. Provide one (1) approved chemical dry fire extinguisher equal to 20 lb. CO_2 rating in all assigned rooms or locations where painting materials are stored. Fire extinguisher shall bear the label of the National Board of Fire Underwriters and tag of most recent inspection.

   b. Provide three (3) standard size red fire pails with clean sand in above locations. At the completion of project, fire extinguishers and pails shall become property of Contractor.

2. Maintain storage area in clean condition, store materials not in use in tightly covered containers. Remove oily rags, waste and empty containers from site each night.

3. Provide Facility's Representative with one key for each space if spaces are to be kept locked when not in use.

4. Protect all materials from freezing.

1.07 PROJECT CONDITIONS

A. Environmental Requirements

1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.

2. Do not apply finish in areas where dust is being generated or will be generated while the material is drying.

3. Provide paint and coating products to comply with applicable environmental regulations, VOC requirements and local authorities.

4. In all areas, spaces and rooms being painted, the Contractor shall ensure that there is adequate ventilation to ensure proper paint drying, along with minimizing paint odors. See specifications for requirements regarding fumes, ventilation and Material Safety Data Sheets.

5. The Contractor shall ensure that all requirements of OSHA 29 CFR 1926.62 (Lead in Construction Standard) are adhered to during the project. In addition, the

Contractor shall ensure that proper work area protection and clean-up procedures (as described in this Section) are strictly adhered to during all phases on the project.

1.08 GUARANTEES

A. Adherence of workmanship and materials to Specifications requirements shall be maintained for the one year Contract guarantee period. These requirements shall include the following:

1. There shall be no evidence of blistering, peeling, crazing, alligatoring, streaking, staining, or chalking.

2. Dirt shall be removed without blemishing the finish by washing with mild soap and water.

3. Colors of surfaces shall remain free from serious fading; the variation, if any, shall be uniform.

B. Correct all defects, appearing within the guarantee period, by removal of the defective work and replacement as directed.

C. All corrective measures shall be the Contractor's responsibility, and shall be made at no extra cost to the Facility. The requirements set forth in Part 3 of these Specifications shall be strictly adhered to.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with specified requirements, provide "First Line" or "Top Quality" products of one of the following manufacturers or approved equal:

1. Benjamin Moore and Co.

2. Devoe and Reynolds Co.

3. Glidden Coatings and Resins.

4. PPG Industries, Pittsburgh Paints Inc.

5. Pratt and Lambert

6. The Sherwin-Williams Co.

7. Tnemec Company, Inc.

8. MAB Paints

9. Carboline

10. Mercury Paint Corp.

B. Photoluminescent Paint Systems

1. Defense Holdings Inc., Manassas Park, VA. AfterGlo Photoluminescent Paint, and White Base Coat Paint. NYC-MEA

2. Co-leash Co.Inc., Tampa, FL. Kryptaglow MEA Group System: MEA Latex Glow Paint #1300A, and MEA White Base Coat #1171, and MEA Clear Top Coat #1102.

2.02 MATERIALS

A. Provide products which meet all N.Y.S. Part 205-VOC requirements for applications outlined herein and comply with low V.O.C. requirements as stated in specifications.

B. Provide products which meet all Federal regulations for amount of lead in paint (less than 0.06% lead in non-volatile ingredients).

C. Provide best quality grade of various types of coatings as regularly manufactured by the paint materials manufacturers. Materials not displaying manufacturers' identification as a standard, best-grade product will not be acceptable.

D. Use only thinners approved by paint manufacturers for applications intended and use only within recommended limits.

2.03 REFERENCE STANDARDS

A. Paint materials shall meet or exceed the requirements of the following standards:

Federal Specifications

1. Primers, Sealers, Undercoats

a. Metal Primer for Galvanized surfaces:
FS TT-P-001984
FS TT-P-650-C

b. Metal Primer Aluminum or Steel surfaces:
FS TT-P-57B

c. Primer Sealer, Latex Base: FS TT-P-650C

d. Alkyd Primer (Corrosion Inhibiting)
Lead and Chromate Free,
VOC Complying
FS TT-P664C

e. Acrylic Primer TT-P-650-C

f. Wood Primer, Exterior: FS TT-P-25

2. Finish Paints

a. Exterior Alkyd Modified Paint; Gloss:
FS TT-P-102E,
Type II and
Type III

b. Ext. Acrylic Latex Paint; Flat: FS TT-P-19

c. Gloss Acrylic Latex Enamel: FS TT-P-1511-B

d. Flat Vinyl Acrylic Latex
Interior: TT-P-29J

e. Semi-Gloss Vinyl Acrylic
Latex Enamel, Interior: TT-P-1511-B

f. Alkyd Odorless Semi-Gloss
Enamel: FS TT-E-509C for white
and tints; Class A for deep colors.
FS TT-E-529

g. Aluminum Paint (Ready Mixed): FS TT-P-38D.

	h.	Heat Resistant Semi-Gloss Enamel (400°F max. surface temperature):	FS TT-E-496
	i.	Asphalt Varnish:	FS TT-V-51
	j.	Smokestack Black Paint:	FS TT-E-496

3. Transparent and Semi Transparent Finishing Systems

	a.	Spar Varnish: FS TT-V-121, Water Resisting	
	b.	Spar Varnish: FS TT-V-119, Phenolic Resin	
	c.	Stain; Interior Oil Type:	FS TT-S-711
	d.	Polyurethane Coating (Satin Finish)	FS TT-C-001951
	e.	Gloss Varnish	

4. Floor Finishing Systems

	a.	Rubber Base Paint: For use over concrete and masonry	FS TT-P-91
	b.	Cement Floor Hardener - Magnesium Zinc and Fluosilicate type as specified in Section 03300 of this Specification.	
	c.	Urethane Floor Paint:	FS TT-C-542, Type II
	d.	Polyamide Epoxy Paint	FS TT-C535B Type II

5. Lettering Enamel: Interior/Exterior full gloss enamel: FS TT-E-489

6. Fire Retardant Paint: Latex Fire Retardant Paint: FS TT-P-26P Rated Class A by Underwriters Laboratories.

7. Miscellaneous Materials:

a. Mineral Spirits (Petroleum Paint Thinner): FS TT-T-291

b. Color Pigments: Pure, non-fading, finely ground pigments, at least 99 percent passing a 325 mesh sieve. Color pigments that are to be used on masonry, concrete and plaster shall be lime proof - FS-TT-P-381.

c. Putty: Linseed-Oil type for Wood Sash Glazing -FS-TT-P-791B.

d. Shellac: Two pound cut shellac, FS TT-S-300

e. Paste Wood Filler: FS TT-F-336

f. Plastic Wood Filler: FS TT-F-340C.

g. Surface Sealer: Pigmented Oil for Plaster & Wallboard - FS-TT-S-179.

h. Linseed Oil: (Boiled) FS A-A-371A

i. Linseed Oil: aw) FS A-A-379A

j. Lacquer (Brushing) Clear and Pigmented: FS-TT-L-26C.

k. Lacquer, Rubbing, Clear: FS-TT-L-57C

l. Lacquer, Spraying Clear and Pigmented for Interior and Exterior Use: FS-TT-L-58E.

B. Miscellaneous Standards and Requirements

1. Turpentine: ASTM D13.

2. Cold Galvanizing Compound: Single component material conforming to ASTM A780 giving 96% pure zinc in the dried film.

3. Cleaning Solvents: Low toxicity; flash point in excess of 100°F.

4. Spackling Compound: ASTM C475.

5. Polyester Filler: Polyester resin base autobody filler standard weight or finishing grade required by conditions; Marson's "White Lightning" and "Topcoat."

6. Photoluminescent Paint: Comply with requirements of the NYC Building Code for exit path markings, including but not limited to testing for brightness, washability, toxicity, radioactivity, and flame spread.

   Paint system shall be certified and listed by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials as regulated by the NYC Building Code are acceptable for the intended use. Test methods shall be stated in the certification. Prior NYC MEA (Materials Equipment Acceptance) approvals are acceptable for materials conforming to current Building Code requirements.

2.04 COLORS

A. Selection

1. Paint colors, surface treatments and finishes will be selected by the Project Architect.

2. Color Schedule will be issued to the Contractor after award of the Contract.

   a. Final acceptance of colors will be from actual job applications.

B. Maximum Number of Colors and Tints

1. Number of colors selected by the Project Architect will not exceed those listed in Schedule below.

2. Tint each undercoat a slightly different shade than the succeeding coat to permit easy identification of the separate coats.

3. In general, Project Architect will vary the color scheme in various classrooms, and all other locations so that numerous color schemes will be used throughout the building.

4. The number of paint color and tints which will be used in a school project is given in the schedule below. All colors are to be "custom".

	Max. No. of Colors (Deep Tones)	Max. No. of Tints (Pastel or Mid Shades)
Wall and Ceiling Colors	10	20
Corridors and Toilets	0	10
Trim Colors (doors, etc.)	10	10
Exterior	5	-

Colors & Tints per Room:

2.05 PAINTING SCHEDULE

A. Surfaces not to be painted, unless specifically indicated otherwise:

1. Polished or bright metals: Aluminum, bronze, brass, chrome, nickel, stainless steel, copper.
2. Exterior: Brick, Stone, Masonry, Concrete
3. Glass
4. New galvanized Chain Link Fence Work
5. Galvanized members not exposed to public view
6. Ceramic Materials
7. Factory Pre-Finished Masonry Block.
8. Resilient Flooring Materials; Wood Floors.
9. Terrazzo; Marble; Bluestone
10. Acoustical Tile

11. Chalk Boards; Cork Boards; Bulletin Boards; Plastic Laminate

12. Mechanical Equipment, Steel Shelving, and Cabinets, which are factory finished.

13. General Construction Items with factory applied final finish.

14. Factory finished Wood Doors.

15. Acoustic Tile & Metal Pan Ceiling

16. Pipe and duct Spaces and utility tunnels, including items within the space such as pipes, ducts and conduits.

17. Oil Tank Enclosure including items within the space such as pipes, ducts and conduits.

18. Meter Room including items within the space such as pipes, ducts and conduits.

19. Concealed Ducts, Pipes, and Conduit.

20. Metal Lockers

21. Toilet Compartments

22. Light Fixtures

23. Electrical Distribution Cabinets

24. Foundation Spaces

25. Furred Areas

26. Ceiling Plenums

27. Valve and Damper Operators

28. Mechanical Linkages

29. Sensing Devices

30. Motor and Fan Shafts

31. Light Switch and Electrical Outlet Covers

32. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

B. Interior Finish Schedule - Standard

1. All new and previously unpainted, surfaces shall receive one (1) prime coat and two (2) finish coats unless otherwise specified.

2. All previously painted surfaces shall be spot primed as needed and receive (2) finish coats unless otherwise specified.

3. First or Prime coats shall vary with substrates and are outlined in Article 2.07 - Interior Paint Systems.

Finish coats in areas indicated shall have the sheen and gloss levels specified below

	Location	Type
a.	Stair Enclosures, Vestibules, Offices and Office Closets, Staff Lounges	(Semi Gloss)
b.	Entrance Hall/Lobby, Corridors, Store Rooms, Shops, Toilets, Telephone Closet, Locker Rooms,	(Semi Gloss)
c.	Janitor's Sink Closets, Sink Closets	(Gloss)
d.	All plaster and gypsum board ceilings shall be off white	(Flat)
e.	All interior plaster, gypsum board, concrete, brick or block surfaces of walls throughout the building not otherwise specified	(Semi Gloss)

2.06 INTERIOR PAINT SYSTEMS

A. Concrete

1. Semi-Gloss Finish:

1st Coat - Vinyl Acrylic Latex Primer
- Sealer (Flat) -- 1.0 Mils DFT

2nd & 3rd Coats-
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT each coat

B. Interior Concrete Flooring

1. Semi-gloss Finish:

1st Coat – Waterborne Epoxy-Amine -- 3.0 to 4.0 Mils DFT

2nd Coat - Waterborne Epoxy-Amine -- 3.0 to 4.0 Mils DFT
Equal to Tnemec Series-287 "Enviro-Pox".

C. Concrete Masonry Units

1. Semi-Gloss Finish:

*1st Coat - Vinyl Acrylic Latex Block Filler, or 100% acrylic resin block filler/surfacer as recommended by manufacturer of succeeding coats.

**1st Coat - Vinyl Acrylic Latex Primer-Sealer (Flat) -- 1.0 Mils DFT

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex Enamel-- 1.3 Mils DFT each coat

2. Gloss Finish:

*1st Coat - Vinyl Acrylic Latex Block Filler, or 100% acrylic resin block filler/surfacer as recommended by manufacturer of succeeding coats.

**1st Coat - Vinyl Acrylic Latex
Primer-Sealer (Flat) -- 1.0 Mils DFT

2nd & 3rd Coats -
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT
each coat

*Apply filler coat on new and previously unpainted concrete masonry units at a rate to ensure complete coverage with all pores filled. If required, provide in two (2) or more coats.

** Spot prime previously painted concrete masonry unit surfaces as needed.

D. Gypsum Drywall and Plaster:

1. Flat Finish (ceilings only):

1st Coat - Vinyl Acrylic Latex
Primer Sealer (Flat)-- 1.0 Mils DFT

2nd & 3rd Coats -
Flat Vinyl Acrylic Latex -- 1.3 Mils DFT
each coat

2. Semi-Gloss Finish:

1st Coat - Vinyl Acrylic Latex
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

3. Gloss Finish:

1st Coat - Vinyl Acrylic Latex
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats -
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT
each coat

4. For use over existing oil based paints

100% Acrylic Primer -- 1.0 mils DFT

Tinted as required to approximate Finish color

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex Enamel -- 1.3 Mils DFT each coat

OR

2nd & 3rd Coats -
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT each coat

F. Ferrous Metal:

1. Flat Finish: Metal ceilings, jamb and head sections, coat and hat rack, metal shelves.

*1st Coat - Alkyd Modified Acrylic Rust Preventive Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats
Flat Vinyl Acrylic Latex -- 1.3 Mils DFT each coat

2. Semi-Gloss Finish: Convector enclosures, grilles, access doors, frames, Steel Doors and Frames, Trim, Partitions, Screens, Demountable Office Partitions, Office Railings, Wire mesh work.

*1st Coat - Alkyd Modified Acrylic Rust Preventive Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex Enamel -- 1.3 Mils DFT each coat

3. Gloss Finish:

*1st Coat - Alkyd Modified Acrylic Rust Preventive Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats -
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT
each coat

* Provide full prime coat on new and previously unpainted surfaces. Spot prime previously painted surfaces, including shop-primed items, as needed. Items shop primed with modified alkyd equal to Tnemec 10-99 primer shall be touched up with same primer. See related specification sections.

G. Zinc-Coated Metal

1. Flat Finish:

1st Coat (New) - Alkyd Modified Vinyl Acrylic
Latex Primer -- 1.2 Mils DFT

*1st Coat (Repaint) - Alkyd Modified Acrylic Rust
Preventive Latex Primer
-- 1.6 Mils DFT

2nd & 3rd Coats
Flat Vinyl Acrylic Latex -- 1.3 Mils DFT
each coat

2. Semi-Gloss Finish: Railings, wire-mesh work.

1st Coat (New) - Alkyd Modified Vinyl Acrylic
Latex Primer -- 1.2 Mils DFT

*1st Coat (Repaint) - Alkyd Modified Acrylic Rust
Preventive Latex Primer
-- 1.6 Mils DFT

2nd & 3rd Coats
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

3. Gloss Finish:

1st Coat (New) - Alkyd Modified Vinyl Acrylic

Latex Primer -- 1.2 Mils DFT

*1st Coat (Repaint) - Alkyd Modified Acrylic Rust Preventive Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats - Gloss Acrylic Latex Enamel -- 1.2 Mils DFT/each coat

* Spot prime as needed.

H. Painted Woodwork and Hardboard

Wood window trim, chair rails, wood door frames and trim, unless otherwise specified to be stained.

1. Semi-Gloss Enamel Finish:

1st Coat - Vinyl Acrylic Latex Enamel Underbody -- 1.1 Mils DFT

2nd & 3rd Coats - Semi-Gloss Vinyl Acrylic Latex Enamel -- 1.3 Mils DFT/each coat

I. Stained Woodwork (Transparent or semi-transparent finish to match Project Architect's sample).

1. Stained-Varnish Rubbed Finish:

Stain Coat - Oil Type -- 0.9 Mils DFT

1st Coat - Cut Shellac

Filler Coat -Paste wood filler (for open grain wood)

2nd & 3rd Coats - Oil Rubbing Varnish -- 1.0 Mil DFT/each coat

J. Interior Woodwork

Pegboard, display units, clothing lockers.

1. Flat Finish:

1st Coat - Vinyl Acrylic Latex
Enamel Underbody -- 1.1 Mils DFT

2nd & 3rd Coats -
Flat Vinyl Acrylic Latex -- 1.3 Mils DFT/each coat

K. Interior Woodwork

Oak woodwork (except wood flooring and doors)

1. 1 Coat Spar Varnish over specified prime coats; 1.1 Mils DFT.

L. Interior Woodwork

White birch.

1. 1 Coat Polyurethane clear coating (Satin Finish)

M. Interior Woodwork

Red or White birch throughout.

1. Semi Gloss Finish:

1st Coat - Vinyl Acrylic Latex
Enamel Underbody -- 1.1 Mils DFT

2nd & 3rd Coats -
Vinyl Acrylic Latex Enamel -- 1.3 Mils DFT each coat

N. Interior Woodwork

Wood stairs for (treads, risers, and trim-moldings)

1. 2 Coats interior gloss varnish. -- 1.0 Mil DFT/each coat

O. Interior Woodwork

1 Coat interior gloss varnish -- 1.0 Mil DFT
1 Coat cabinet rubbing varnish, rub to dull finish with fine pumice and oil. -- 1.0 Mil DFT

P. MEP Equipment and Piping

See Sections 15501, 15502, 15431 and 16010 for MEP Equipment and Piping painting requirements.

Q. Photoluminescent Paint

1. Epoxy system – "AfterGlo NYC-MEA System"

2 Coats White Base Coat Paint -- 2.0 Mil DFT each coat

2 Coats Photoluminescent Paint — 3.0 Mil DFT each coat

2. Latex system – "Kryptaglow MEA System"

2 Coats White Base Coat -- 1.5 to 2.0 Mil DFT each coat

3 Coats Glow Paint -- 3.4 Mil DFT each coat

1 Coat Clear Top Coat -- 1.5 Mil DFT

3. If necessary, apply photoluminescent paint in greater thicknesses than indicated above to achieve required brightness in accordance with NYC Building Department requirements.

2.07 EXTERIOR PAINT SYSTEMS

A. New Ferrous Metal

Structural steel, all ferrous metals, and steel window trim.

1st Coat – Touch up with epoxy Polyamide Paint
2nd Coat - Polyamide Epoxy Paint
applied at the rate of -- 4.0 to 6.0 Mils DFT. SSPC-PS Guide 13.01

3rd Coat (Top Coat) - Acrylic Aliphatic Polyurethane applied at rate of -- 1.5 to 2.0 Mils DFT. SSPC-PS Guide 17.00 Type 5.

B. Zinc Coated Metal Exposed to Public View

Provide for all galvanized surfaces (Zinc metallizing) exposed to public view (not just on the exposed face), except chain link fences:

1st Coat - Epoxy polyamide -- 4.0 Mils DFT

2nd Coat - Exterior Aliphatic polyurethane semi-gloss enamel -- 4.0 Mils DFT

C. Zinc Coated Metal

Exterior basketball backstops, scoreboard mounting posts, bleachers.

1st Coat - Epoxy polyamide -- 4.0 Mils DFT

2nd Coat - Exterior Aliphatic polyurethane semi-gloss enamel -- 4.0 Mils DFT

D. Existing steel members embedded in masonry or concrete.

1st Coat - Epoxy polyamide equal to Tnemec Series 135 Chembuild (capable of painting on an SSPC-SP3 surface prep. -- 7 to 9 Mils DFT

E. Existing steel members exposed to view or the elements.

Provide the epoxy coat system, except the first coat shall be an Epoxy polyamide equal to Tnemec Series 135 Chembuild (capable of painting on an SSPC-SP3 surface prep.

F. Epoxy Coat System

1st Coat (Primer) - Epoxy organic zinc rich Primer with 85% zinc applied at rate of	--	2.0 to 4.0	Mils DFT. SSPC - PS Guide 12.00 (Organic Zinc Rich).
2nd Coat - Polyamide Epoxy Paint applied at the rate of	--	4.0 to 6.0	Mils DFT. SSPC-PS Guide 13.01
3rd Coat (Top Coat) - Acrylic Aliphatic Polyurethane applied at rate of	--	1.5 to 2.0	Mils DFT. SSPC-PS Guide 17.00 Type 5.

For factory painted items, Manufacturer/Fabricator shall provide touch-up paint in sufficient amount for Project. -- 5.0 Mils DFT

G. Aluminum – Mill Finished

1st Coat - Aluminum metal primer-- 3.0 Mils DFT

2nd and 3rd Coats - Enamel gloss paint	--	2.0 Mils	DFT/each Coat

H. Copper, Exposed

Except roof and flashing.

1st Coat - 1 coat linseed oil rubbed dry.

I. Copper, exposed (where indicated to be painted)

1st Coat - Modified Alkyd Primer	--	2.0 Mils DFT
2nd and 3rd Coats - Exterior Alkyd Gloss Enamel	--	2.0 Mils DFT/each Coat

J. Cast Iron Chimney Cap

1st and 2nd Coats - Smokestack black paint--	3.0 Mils	DFT/each Coat

2.08 LETTERING (Inscriptions)

A. Use "Normal Block" letters on all inscriptions.

B. Inscriptions shall have letter heights as indicated below.

1. Gas Valve: On doors to gas control valve enclosures. (2"high)

2. On all doors to pupils' stair enclosures, doors across corridors and doors between stairs and passages, there shall be painted on the lock stile on the side opposite the pull (both sides of double acting doors), and at the same height as the pull, a black panel full width of stile and 18" high on paneled doors and 5" wide on flush doors. The painting at top and bottom edge of plate shall be extended as is necessary in order to surround the hardware which otherwise will be partly in and partly out of painted area. These painted push plates shall terminate in straight edges.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions

I. The application of painter's finish to any surface shall be taken to indicate that the Contractor considers such surfaces suitable for a first-class finish.

2. Do not apply painter's finish in any locations until the Work of other Contractors that might damage the new finish is completed.

3. Notify the Facility in writing regarding Work by others that does not provide a suitable surface for the new finish.

4. In case of dispute regarding the suitability of any surface, the Facility's decision shall be final and conclusive upon all concerned.

5. Contractor shall check the compatibility of previously painted surface with the new coating by applying a test panel 4 foot wide x wall height. Allow test panel to dry thoroughly; verify proper adhesion before proceeding with painting Work.

3.02 PREPARATION AND APPLICATION - EXISTING BUILDING

A. Protection

1. In cases where the painting of surfaces involves removal or disturbance of existing paint and the paint is known or assumed to be lead-based paint, the following protection requirements shall apply:

a. All objects near or adjacent to the surface(s) to be painted shall be moved a minimum of three feet away from that surface(s). Any immovable object, and the floor, within the three foot "work area" shall be covered with one layer of 6-mil polyethylene, sealed on all edges to prevent the penetration of dust and debris. If the ceiling is to be painted, all objects in the room and the floor of the room shall be covered in this manner.

b. All objects bordering the three-foot work area shall be completely covered with clean cloths, heavy building paper or clean plastic covering.

c. If, during the removal of existing paint, the Contractor notices paint chips or other debris related to the ongoing work on objects beyond the border of the three foot work area, these objects shall be cleaned by HEPA vacuuming and wet-wiping and then covered as described in (b) above.

d. For exterior metal surfaces on the building or site the ground beneath the work area shall be surrounded on all sides by a washable construction tarp or 10-mil polyethylene. The covering need not be airtight; however, it must be of adequate size and durability to completely enclose the work area and

prevent the dispersal of any paint chips or dust during paint removal activities. Any dust and debris shall be contained in the work area and shall be removed immediately upon generation. Protect from damage landscaping, paving, and other improvements near the building. Protect and seal all windows and openings within the work area with a minimum of 1 layer of 6-mil polyethylene sheeting.

e. The protection shall remain in place during all paint removal activities.

f. All protection is to be carefully removed, cleaned or discarded after painting is complete.

2. In cases where the painting of surfaces does not involve the removal or disturbance of existing paint or the paint is not lead-based as determined by testing by the Facility, the following protection requirements shall apply:

a. In each area to be painted, cover and protect furniture, equipment and floors from damage with clean cloths, heavy building paper or clean plastic covering secured in place. All protection is to be carefully removed, cleaned or discarded after painting is complete.

B. Removal of Existing Work

1. Remove wire guards, screens, grilles and similar items as necessary to paint properly all surfaces, windows and doors, behind these items.

a. These items shall be HEPA vacuumed and wet-cleaned once removed. Once cleaned, the items shall be placed on 6-mil polyethylene sheeting (or equivalent) and covered with a second layer of 6-mil polyethylene sheeting.

b. If paint is to be removed from these items, the contractor shall ensure that the items are taken to a separate, non-occupied space prior to scraping and repainting.

2. Remove and paint behind pictures, signs, shades, drapes, furniture, cabinets, lockers and similar items that are not secured to walls.

3. Unless otherwise specified, radiators, convectors, univents need not be removed providing all visible surfaces of these items and visible surfaces behind them are properly painted.

4. Carefully mark removed work for identification and replace in the original location unless otherwise directed.

C. Surface Preparation

1. Gently wet mist the surface to be scraped with water, then remove all loose paint with scraper and putty knife.

2. Sand existing surfaces to dull sheen and gloss. Before sanding, wet mist the area to be sanded. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).

3. Remove dust by washing with water, using damp sponge or cloth.

4. After washing, spot prime grease and water stains; magic markers marks, crayon marks, lipstick marks, etc; with a quick-drying alcohol base primer sealer to prevent bleeding.

5. Fill all cracks and holes with appropriate filler material, wet mist and sand flush with adjacent surfaces and spot prime. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).

6. Existing paint that was not removed with scraper and which appears to be sound shall receive spackling compound around perimeter high spots and feathered out so that surface is smooth. Repair gouges created by the scraping process and other imperfections in the existing surface with spackling compound to provide a smooth, even finished surface.

7. Apply number of finish coats specified herein or as many as may be necessary to obtain the proper finish and completely cover the substrate.

8. Cement Plaster: Coat surfaces to be patched with an approved bonding agent. Patch with an approved mortar patching mix and finish to match texture of adjacent surfaces.

9. Existing Woodwork:

   a. Prepare surfaces as indicated in Art. 3.02, C., Subparagraphs 1., 2., 3., 4., above.

b. Puttying: Fill cracks, open joints, nail holes and similar defects in existing woodwork specified to be painted or varnished with putty or plastic filler. Putty stop nail holes in all new woodwork specified to be painted or stained and varnished. Prime or seal all surfaces in contact with new putty. Color interior putty to match the finish.

c. Touch-Up

1. Spot prime defects in existing Work and Work primed under other Paragraphs of Work as necessary to produce an even plane in the new finish.

2. All worn, scaled, blistered, crackled and discolored places in the existing stained and varnished work specified to be revarnished shall be wet-misted prior to being scraped or sanded, then filled and touched up with stain as required to equalize the color. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).

3. Touch-up and equalize the color of new woodwork specified to be stained and varnished where damaged, due to job fitting and trimming.

4. Touch-up all pitch streaks and knots in woodwork with shellac.

10. Existing Metal:

a. Prepare surfaces as indicated in Art. 3.02,C., Subparagraphs 1., 2., 3., 4., above.

b. Machine tool clean exposed steel to an SSPC-SP3 surface preparation.

b. For steel surfaces exposed to view, repair defects in surfaces to provide for an even plane in the new finish. Use auto-body filler to even out surface and sand smooth.

11. Wood Sash: Clean and oil pulley stiles of wood sash with one coat of stained, boiled linseed oil at completion of painting of sash.

12. Glazing Repairs

a. Cut out loose and cracked putty on doors and windows. Replace cut out and missing putty with elastic glazing compound. If the putty contains asbestos, the Contractor shall abate the putty in accordance with the procedures specified in the specifications.

b. Prime Surfaces before applying glazing compound.

3.03 NOT USED

3.04 APPLICATION

A. General

1. No Work shall be performed where cement or plaster is being applied or is in the process of drying.

2. No Work shall be performed in spaces that are not broom clean and free of dust and waste.

3. Apply paint materials to produce smooth finished surfaces, free of brush or roller marks, drops, runs, or sags.

4. Paint materials shall be kept at a proper and uniform consistency.

5. Thin only when necessary to achieve best results.

6. Thinners shall be material recommended by manufacturer of paint, and in quantity as recommended.

7. Excessive use of thinner as indicated by variation in absorption, lack of "hide", thickness of dry film, mottled or streaky coat, shall be cause for rejection. Correct as directed.

8. Thinning of varnish or aluminum paint prohibited.

9. Apply all coats with brush or roller, varying slightly the color of succeeding coats. Spraying will not be permitted.

a. If recommended by manufacturer, 100% acrylic resin concrete block filler may be spray applied and shall be backrolled as necessary to work material into substrate surface.

10. Brush out or roll on first or prime coat; work well into surface.

11. Each coat shall be inspected, approved and dry before proceeding with additional coats.

12. Allow at least 48 hrs for enamels and exterior oil paint to dry.

13. The surfaces of interior woods and metals shall be sanded or rubbed between coats to assure smooth finish and proper adhesion of subsequent coats.

14. Avoid lapping of paint on glass, hardware, or other adjoining surfaces.

15. Apply no paint to operating units where sliding contact of metals is necessary for proper functioning of unit.

16. Painting is not required on walls or ceilings in concealed and inaccessible areas.

17. Moving parts of operating units will not require finish painting unless otherwise required.

18. Do not paint over any code-required labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plate.

19. Finish doors on tops, bottoms and side edges same as exterior faces.

3.05 PREPARATION AND APPLICATION – PHOTOLUMINESCENT PAINT

A. Preparation and application shall conform to methods used to obtain approval for MEA or Approved Agency listing in accordance with the NYC Building Code.

B. Prepare all surfaces in accordance with the manufacturers written recommendations. All surfaces shall be cured, clean, dry, and free of all loose and foreign materials. Prime surfaces as recommended by manufacturer. Etch or sand metal and other surfaces as recommended. Test previously painted surfaces and other surfaces for compatibility and adhesion prior to application.

C. Apply photoluminescent paint as indicated herein and on the Drawings. Apply evenly by brush or roller, and in accordance with the manufacturer's instructions. Stir and mix thoroughly. Do not thin. Allow paint to dry between coats as recommended.

D. Maintain manufacturer's recommended conditions for temperature, humidity, and air movement until paint is dry and cured.

E. Handrail marking: Paint exit markings on all exit stair handrails in accordance with the NYC Building Code, including but not limited to sections BC 403.16, BC 1026.11, and amendments, and by NYC Local Law 26 of 2004, including Reference Standards RS6, RS6-1 and RS6-1A. Paint in a 1" wide strip, taping the sides to provide a uniform finished appearance

3.06 FIELD QUALITY CONTROL

A. The Facility reserves the right to require the following material testing procedures at any time, and any number of times during period of field painting:

1. Measurement of dry film thickness (DFT) by use of a dry film thickness gauge in accordance with use and calibration requirements of Structural Steel Painting Council [SSPC], "Method of Measurement of Dry Paint Thickness with Magnetic Gauges".

2. Engage services of an independent testing laboratory, recommended by the Facility, to sample paint being used. Samples of materials delivered to construction site will be taken, identified and sealed, and certified in presence of Contractor

3. Testing laboratory will perform appropriate tests for any or all of the following characteristics: Abrasion resistance, apparent reflectivity, flexibility, washability, absorption, accelerated weathering, dry opacity, accelerated yellowness, recoating, skinning, color retention, alkali resistance and quantitative materials analysis.

4. If test results show that material being used does not comply with specified requirements, Contractor shall be directed to stop painting Work, and remove non-complying paint; repaint surfaces coated with rejected paint; remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are non-compatible.

a. If the samples do not comply with requirements of the Specifications, costs of testing and remediation of rejected work shall be borne by Contractor.

b. If the tests find that the samples do comply with the requirements of the Specifications, the cost of the testing will be borne by the Facility.

B. The Facility will engage the services of a Special Inspection agency to inspect the installation of the photoluminescent stair markings.

3.07 CLEANING

A. General

Contractor shall clean-up behind each paint crew such that painting and clean-up will be a continuous uninterrupted operation. The practice of one general clean-up after completion of all painting will be strictly prohibited. This clean-up will include, but not be limited to the following:

1. Remove spots or defacement resulting from Work of this Section.

2. Retouch all damaged surfaces to leave Work in perfect finished condition.

3. If spots or defacement cannot be satisfactorily removed and retouched, re-finish the surfaces as directed.

4. Within the three foot work area created for removal and painting where existing paint is known or assumed to be lead-based all objects and surfaces shall be thoroughly HEPA vacuumed, wet-cleaned and HEPA vacuumed again. In rooms where the ceiling has been painted all surfaces and objects in the room shall be cleaned in this manner.

5. The contractor shall ensure that the objects and surfaces under protective covering are free of any dust or debris created during painting activities. If necessary, these objects and surfaces shall be wet cleaned and HEPA vacuumed.

6. The contractor shall conduct any cleaning deemed necessary by the independent environmental consultant.

7. Free all operating units of painted materials and leave them clean and in proper working order.

8. Remove from premises all surplus paint materials, debris and any other rubbish resulting from the Work.

9. Leave storage space clean and in condition required for equivalent spaces in project.

3.08 PROTECTION

A. Provide caution tape and/or locked entryways during paint removal activities in existing buildings to prevent access to the work area from unauthorized personnel.

B. Provide "Wet Paint" signs to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their Work after completion of painting operations.

C. At the completion of Work of other trades, touch-up and restore all damaged or defaced painted surfaces as directed by the Facility.

3.09 DISPOSAL OF PAINTED WASTE AND DEBRIS FROM EXISTING BUILDINGS

A. Testing

Perform Toxicity Characteristic Leaching Procedure (TCLP) testing of all painted waste and debris generated from existing painted objects and surfaces.

END OF SECTION

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SECTION 10 8100
TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide toilet and bath accessories as indicated on Drawings and as specified herein.

1. Grab bars are provided under separate section.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

B. Federal Specifications (FS)

1.03 SUBMITTALS

A. Product Data

Manufacturer's specifications and catalog sheets indicating compliance with specified requirements. Installation instructions, maintenance instructions.

B. Shop Drawings

Submit Shop Drawings for each item specified herein, indicating locations of all items, and installation details.

Submit mounting templates for coordination with other trades.

Prior to installation of adjacent drywall work submit elevations, details, and templates for locations of steel grounds to be furnished and installed in drywall partitions under Section 09260-Gypsum Board Assemblies. Grounds and/or steel studs shall receive fasteners at all locations where the work of this Section is attached to drywall construction.

C. Affidavits certifying compliance with Quality Assurance requirements.

1. Manufacturer's qualifications.

2. Installer's qualifications.

D. Warranties

1.04 QUALITY ASSURANCE

A. Manufacturer

Three (3) years experience, minimum, in successful manufacture of product of type and quality specified.

B. Installer

Three (3) years experience, minimum, in installation of product of type specified.

C. Comply with ANSI; Accessibility Design Guidelines for Public Facilities Serving Children.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products as recommended by respective manufacturer to protect from damage.

1.06 WARRANTY

A. Manufacturer's Warranty

Standard, written, for each item.

PART 2 - PRODUCTS

2.01 MANUFACTURERS: provide products from manufacturers listed or approved equal

A. Manufacturers:

A & J Washroom Accessories, Inc	New Windsor, NY 12553
American Specialties,Inc.	Yonkers, NY 10701
Bradley Corp.	Menomonee Falls, WI

Bobrick Washroom Equipment, Inc. Clifton Park, NY 12065

2.02 TOILET PAPER HOLDERS

A. Provide one dual paper holder at side of each water closet; attach to toilet partitions where toilet partitions occur, and attach to walls elsewhere.

B. Toilet Room

Bradley 5241, Bobrick B-274, American Specialties Inc. 0264-12 or A&J #U806. Provide concealed locking device for spindle.

1. At single-occupancy toilet rooms, and at Disabled Accessible stalls, provide similar model with non-controlled delivery: Bradley 5241-50, Bobrick B-2740, ASI 0264-1A2, A&J U806-NC.

D. Install paper holders at locations and at heights as indicated on the Drawings.

E. Secure to partitions and/or walls as detailed on the Drawings or as specified.

Do not use plastic or lead expansion shields.

2.03 LIQUID SOAP DISPENSERS - COUNTERTOP MOUNTED

A. Manufacturers/Models

Bobrick B-822; Bradley 6324-68.

B. Construction

Pump type valve, stainless steel piston and spout, 4" spout, 32 oz. plastic soap container. Able to be filled from top using special tool (supply Custodian with one tool for each room having dispenser).

C. Provide one dispenser for each counter-mounted lavatory unless indicated otherwise, installed so end of spout extends over inner edge of bowl.

2.04 LIQUID SOAP DISPENSERS - WALL MOUNTED, SURFACE

A. Manufacturers/Models

1. Vertical Type: Bobrick B-2111; Bradley 6562; American Specialties Inc. 0343 or A&J #U126.

2. Horizontal Type: Bobrick B-2112; Bradley 6542; American Specialties Inc. 0342 or A&J #U124.

B. Construction

Corrosion resistant 20 gage, minimum, Type 304 (18-8) stainless steel, with unbreakable window or vandal-proof level indicating device. Provide stainless steel liquid/lotion soap valve with internal check. Conform to requirements of Fed. Specs P-S-624H.

C. Capacity

40 oz. minimum.

2.05 LIQUID SOAP DISPENSERS - WALL MOUNTED, RECESSED

A. Manufacturers/Models

Horizontal Type: Bobrick B-306; Bradley 643; American Specialties Inc 0326.

B. Construction

Corrosion resistant, 22 gage minimum, Type 304 (18-8) stainless steel, with unbreakable window or vandal-proof level indicating device. Provide stainless steel or chrome-plated brass liquid/lotion soap valve with internal check. Tumbler lock.

C. Capacity

32 oz. minimum.

2.06 POWDERED SOAP DISPENSER

A. Surface mounted, 32 fluid oz capacity, locked top: Bobrick B132, Bradley 6583, American Specialties 0337A
A&J #U112.

2.07 WALL MIRRORS

A. Manufacturers/ Models

1. Mirror Only

   Bobrick B-290, or Bradley 780, or American Specialties Inc. 0600, or A&J U700.

2. Mirror with Shelf

   American Specialties Inc. 0605, or Bobrick B-292, or Bradley 7805, or A&J U705.

B. Construction

1. Polished Plate/float glass, 1/4" thick, electro-copper plated and waterproofed with metal backing.

2. Type 304 satin finish 18 gage stainless steel frames 3/4" x 3/4" with heliarc-welded ground smooth corners and frames beveled. Provide angle stiffeners, 20 gage, welded to frame.

3. Mirror Back: Protected by full size shock absorbing non-abrasive polyethylene padding, 1/8" thick.

4. Back of Unit: 20 gage galvanized steel, with integral horizontal hanging brackets, secured to frame with concealed screws.

5. For mirror with shelf: Provide 18" wide x 5" deep integral stainless steel shelf, 18 gage, secured to mirror frame with Type 304, 16 gage stainless steel concealed brackets.

6. Provide concealed hangers with theft-proof locking device for securing mirror to wall.

C. Size: 18" wide x 36" high, unless indicated otherwise.

D. Provide wall mirrors at locations indicated on the Drawings

2.08 COAT HOOK

A. For each Toilet Room without toilet compartments, provide one chrome-plated brass or solid aluminum casting, surface mounted coat hook, with rubber bumper.

American Specialties Inc. 0714, Bobrick B212, A&J Washroom Accessories UB 14, or Bradley 914.

B. Mount on door at 5'-6" height above floor.

2.09 PAPER TOWEL DISPENSER:

A. Manufacturers / Models

1. Surface-mounted: Bobrick B-262; Bradley 250-15

   Towel Capacity: 400 C-fold paper towels (minimum).

2. Surface-mounted: Bobrick B26212; Bradley 252

   Towel capacity: 200 C-fold

3. Recessed: Bobrick B-4362; Bradley 247

   Towel Capacity: 500 C-fold (min.).

B. Construction: Type 304 stainless steel, 22 gage (min.). Tumbler lock. Design of unit shall permit servicing from front, when unit is mounted beneath a wall cabinet.

2.10 PAPER TOWEL DISPENSER AND WASTE RECEPTACLE, RECESSED:

A. Manufacturers / Models

Bobrick B-369; Bradley 2291; A&J U626. Towel capacity 350 C-fold minimum.

B. Construction: Type 304 stainless steel, 22 gage front (minimum thickness). Provide tumbler lock at towel compartment.

2.11 SANITARY NAPKIN/TAMPON VENDOR:

A. Provide one sanitary napkin/tampon vendor at each women's and girls' toilet and locker rooms having more than one water closet.

B. Manufacturer: Bobrick No. B-3500X2.

C. Construction: Recessed mounted, 18 gage, type 304 satin finish stainless steel, welded construction, tumbler locks.

2.12 SANITARY NAPKIN DISPOSAL:

A. Manufacturers / Models

1. Toilet partition mounted, serving two toilet compartments: Bobrick B-354; Bradley 4721-15; A&J U580.

2. Wall mounted, recessed: Bobrick B-353; Bradley 4731-15; A&J U581.

B. Construction: Type 304 stainless steel, 22 gage front (minimum thickness). Self-closing hinged disposal panel. Tumbler lock on door.

PART 3 - EXECUTION

3.01 PREPARATION

A. Coordinate with drywall, framing, and ceiling trades for locations of concealed metal grounds to receive mounting hardware. Submit templates of fastener locations.

3.02 INSTALLATION

A. Install accessory items as detailed on Drawings and recommended by respective manufacturer.

B. Provide stainless steel expansion shields and bolts, and stainless steel toggle bolts at cavities. Do not use plastic or lead anchors.

C. Install units plumb, level and anchor securely.

3.03 CLEANING

A. Clean and polish exposed surfaces of accessory items.

B. Remove temporary labels, markings and protective coatings.

END OF SECTION

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SECTION 10 8400
GRAB BARS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide grab bars as shown on Drawings and as specified herein.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

B. American Society for Testing and Materials (ASTM).

C. American National Standards Institute (ANSI).

1.03 SUBMITTALS

A. Product Data: Manufacturer's specifications and catalog sheets indicating compliance with specified requirements.

B. Submit Shop Drawings showing installation details and locations.

C. Prior to installation of adjacent drywall work, submit elevations, details, and templates for locations of concealed anchor plates. Furnish anchor plates for installation on metal studs prior to application of wall board.

D. Submit samples of grab bar, flange and anchoring devices.

1.04 QUALITY ASSURANCE

A. Comply with ANSI-A117.1 requirements for size, spacing and structural strength for grab bars.

1.05 DELIVERY, STORAGE AND HANDLING

A. Protect grab bars during delivery, storage, handling, and installation, until Work of Contract is completed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS provide products from manufacturers listed or approved equal:

A. American Specialties Inc., Yonkers, NY: Series 3400.

B. Bradley Corp., Menomonee Falls, WI: Series 837.

C. AJ Washroom Accessories, New Windsor, NY: Series UG 120.

D. Bobrick Washroom Accessories, Clifton Park, NY: Series B490.

2.02 MATERIALS

A. Grab Bars

1. Materials: Type 304 stainless steel, 18 gage, 1-1/4" O.D., Satin finish, exposed mounting.

2. Sizes and Configurations: As shown on Drawings and in accordance with ANSI requirements.

   Provide 1-1/2" clearance between grab bar and wall surface.

3. Flanges: Type 304 stainless steel, 11 gage, minimum diameter 3", continuous welded to grab bar.

4. Exposed Anchorage Components: Type 304 stainless steel.

B. Plates and Anchoring Devices: See Part 3. Provide mounting templates, plates, and fasteners as required for indicated installations.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Grab Bar Anchorage

1. Grab bars, fasteners, and anchors shall be capable of sustaining a force of at least 250 lbs. at any point and from any direction.

2. Meet requirements of ANSI, latest edition, for "Structural Strength" for grab bars.

3. For New Masonry Structural Walls and Existing Masonry Structural Walls (unless indicated otherwise on the Drawings):

   a. Where face of wall opposite grab bar side is concealed (e.g., chase):

      1) Provide hot-dip galvanized steel fish plate (minimum size: 6"x 6"x 1/8" thick).

      2) At grab bar side: Provide stainless steel through-bolts (1/4" diameter minimum) through flange of grab bar and extending through fish plates. Provide washers and nuts. Bolts shall be as recommended by grab bar manufacturer.

      3) At grab bar side (Option): Provide 1/4" thick stainless steel (18-8, Type 304) base plate, with exposed surface edges rounded, either 6" diameter or 6" square with 1" radius corners. Provide 1/4" diameter threaded studs welded to base plate for attachment of grab bar flange. Secure base plate to fish plate with two 3/8" diameter stainless steel through-bolts (with nuts and washers), aligned vertically, spaced at 4 1/2" on centers. Provide tamper-proof stainless steel cap nuts. Secure grab bar flange to base plate threaded studs with tamper-proof stainless steel cap nuts.

   b. For Hollow Concrete block walls, where not possible to use fish plates (unless indicated otherwise on the Drawings):

      1) Anchorage of Grab Bar Flange at Block Core: Provide two (2) 1/4" diameter stainless steel toggle bolts (threaded stud) through flange of grab bar, with tamper-proof stainless steel cap nuts.

      2) Anchorage of Grab Bar Flange at Block Web: Provide two (2) Hilti Standard Hit Anchors, adhesive type with screen tube 5/16" diameter zinc-plated carbon steel studs. Use tamper-proof stainless steel cap nuts.

      3) Option: At grab bar side, provide a 1/4" thick stainless steel (18-8, Type 304) base plate, with exposed surface edges rounded,

either 6" diameter or 6" square with 1" radius corners. Provide 1/4" diameter threaded studs welded to base plate for attachment of grab bar flange.

Anchor base plate to wall:

a) At Block Core: Two (2) 3/8" diameter stainless steel toggle bolts (threaded studs), with tamper-proof stainless steel cap nuts.

b) At Block Web: Two (2) Hilti Standard Hit Anchors, adhesive type with screen tube, 3/8" diameter zinc-plated carbon steel stud. Use tamper-proof stainless steel cap nuts.

Align toggle bolts (or anchor studs) vertically, at 4-1/2" on centers.

Attach grab bar flange to base plate; secure with tamper-proof stainless steel cap nuts.

c. For solid masonry, where not possible to use fish plate: provide as in 3b(2) or in 3b(3) (b), above.

d. For clay tile walls: Where not possible to use fish plate, attachment to be as detailed on Drawings.

4. For Existing or New Drywall/Metal Stud Walls: Attachment shall be as detailed on the Drawings and in compliance with 1. and 2., above.

For new metal stud walls provide concealed hot-dip galvanized steel anchor plates (minimum size 4" x 1/8" thick). Secure anchor plate to studs on both sides of grab bar attachment points before wallboard is applied (2 fasteners per stud, minimum). Recess plate as required for flush wallboard application. Drill pilot holes through wallboard and finish material. Secure grab bar to anchor plate with tamper-proof stainless steel fasteners.

5. For Existing Toilet Compartment Panel: Attachment shall be as detailed, and in compliance with 1. and 2., above.

6. For New Toilet Compartment and Shower Compartment Panel: Reinforce panels as required to sustain the design forces specified in 1. and 2. above.

7. No plastic or lead expansion shields shall be used for attachment of grab bars.

B. Install grab bars at heights above floor, and in locations related to plumbing fixtures as shown on Drawings and in accordance with ANSI requirements. Install true and plumb.

C. Clean grab bars and exposed anchorage components thoroughly.

END OF SECTION

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SECTION 12 5000
WINDOW SHADES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all window shade Work for every window indicated on the Drawings and as specified herein to provide a complete installation.

B. Where indicated, remove existing shades completely, including all accessory items.

C. Provide double shades if window height exceeds 90".

D. Provide double shades for all windows with fixed sash above double hung sash.

1.02 SUBMITTALS

A. Samples:

1. Five pieces of shade cloth, 12" x 12" minimum

2. Two rollers

3. Two slat pulleys

4. Two check pulleys

5. Two brackets of each type.

6. Two 12" lengths of shade cord.

7. Two 12" lengths of slats.

8. One 12" long assembled sample of slat, cloth & slat pulley.

B. Product Data:

1. Certification of wood slat species and kiln drying.

2. Shade Cloth Data:

Submit data for shade cloth proposed, detailing characteristics and requirements as indicated in Art. 2.02, Paragraphs B. and C., herein.

C. Shop Drawings:

Schedule in accordance with Article 1.05 and installation details.

D. Guarantees per Article 1.06.

1. Contractor's one year guarantee on the total Work of this section.

2. Contractor's 2-year guarantee on the shade cloth. Contractor's one year guarantee on the total Work of this section.

E. Shade Survey (Submit at the completion of the Work):

The Contractor shall provide, for reference by the user, a chart summarizing the "Schedule of Shade Equipment" (see Art. 1.06). The information shall be school specific and shall include: Room Number, Window Number, actual shade size installed and type of shade installed at each window location.

Abbreviation descriptions and the window numbering methodology shall be indicated on the chart and shall be in accordance with Art. 1.06.

Three copies of the summary chart shall be typewritten on 8½" by 11" sheets, bound and sheathed in a plastic binder or folder for submission.

1.03 QUALITY ASSURANCE:

A. Manufacturer:

Minimum of three years successful experience in the manufacture of products of type specified.

B. Installer:

Minimum of three years successful experience in the removal, repair, and installation of products of type specified.

C. Quality Control System:

To ensure uniformity of finish and quality, the manufacturer must test each roll of shade cloth produced and keep these reports on file for at least one (1) year, showing lot number, and findings. All reports shall be available and open to the Authority for inspection.

D. Washability:

The shade cloth shall be able to withstand a test of ten washings on each side, first being soiled with dirt and then scrubbed by brush with hot water and soap.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle the products of this Section as recommended by the Manufacturers, to protect products.

1.05 SCHEDULE OF SHADE EQUIPMENT

A. The "Schedule of Shade Equipment" shall indicate the rooms, window numbers, quantity of shades, types of equipment at each location.

1. Abbreviations:

U -Upper		T -Transom
L -Lower		NR -New Roller
S -Single	*	NSC -New Shade Cloth
PS -Partition Sash		NLS -New Light Strip
NC -New Cord		NSS -New Shade Slat
NSP -New Slat Pulleys		NCP -New Check Pulley

Contract includes complete new shade equipments.

* Shall be furnished with NSS, NC, NCP and NSP.

2. Measurements: The sizes stated in the "Schedule of Windows" represents the approximate sizes only to be installed. The Contractor shall take accurate measurements at the locations, promptly after the Award of Contract, and will be held strictly responsible for providing shades of the correct sizes.

3. Numbering of Windows: Window numbers as stated in the "Schedule of Shade Equipment" shall begin with the window to the left of the room entrance when entering the room, and continue in a clockwise direction.

B. Remove:

At all locations where new window shades are required to be installed, unless otherwise specified, the existing removed window shade equipment shall be tied up in bundles, and placed where directed by the Authority's Representative. A signed receipt for the removed shades shall be obtained and attached to the invoice for payment.

1.06 GUARANTEE

A. In addition to the Contractor's one-year guarantee on the total Work of this Section, the Contractor shall further provide a two-year guarantee that the shade cloth will continue to test approximately to the same structural and physical requirements as herein specified; if, during this two-year period, the shade cloth shows any appreciable deterioration, the Contractor shall replace the shade cloth at no expense to the City of New York.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Shades:

1. The C-Mor Company, Garfield, N.J.

2. American Window Fashions, Brooklyn, N.Y.

3. Sol-R-Veil Division, Kenney Drapery Associates, Inc., Bronx, N.Y.

B. Rollers:

1. Draper Husky

2. Brenerman

3. Hartshone

4. Joanna Western

2.02 MATERIALS

A. General Requirements

1. The shade cloth shall be a close woven fiberglass fabric, double coated vinyl plastic and shall have a high degree of opacity for the effective control of light. The shade

cloth shall be pliable and properly treated to resist pinholing, cracking and breaking when rolled or folded, and in use.

2. The shade cloth shall be flame-resistant, waterproof, washable and color-fast to water and sunlight; with sufficient rigidity to ensure straight hanging without curling, twisting or being distorted. Shade cloth shall be commercially known as FIRST ONLY; no seconds of any nature shall be used or will be acceptable.

B. Detailed Requirements:

CHARACTERISTIC	REQUIREMENT
Finished Weight: (minimum ounces/sq.yd.)...	12.0
Thread Count: (base cloth, minimum/sq.in.)..	60 Total
Breaking Strength: (minimum/pounds)	
Warp	180
Filling.....	150
Tearing Strength: (minimum/grams)	
Warp	1300
Filling.....	900
Thickness: (minimum/inches).....	.010" to .013"
Flame Resistance: (maximum after flame-seconds)	
Warp	2.0
Filling.....	2.0
Char Length: (maximum/inches)	
Warp	4.0
Filling.....	4.0
Stiffness: (minimum/centimeters)	
Warp only.....	8
Resistance to Cracking: ...	No evidence of holes, breaking or cracking.
Width:	As scheduled or as required.

Color: As selected by the Project Architect - In partial installations and/or repair or replacement work in any individual room, the color must be of an identical color.

Opacity: The shade cloth specified shall not transmit light. The test for light transmission shall be as follows: Hold a single thickness of shade cloth against a 4" aperture of a light box, containing a 1000 watt bulb at a distance of 6" from the surface of the shade cloth, in a fully darkened room. If light is transmitted, the shade cloth is not acceptable.

C. Window shade shall meet following Federal Test and Specification CCC - C 521

CHARACTERISTIC	METHOD NO.
Weight:	5041
Breaking Strength:	5102
Flame Resistance: After flame	5903
Char Length	5903
Tearing Strength:	5132
Stiffness:	5204
Thickness:	5030

D. Rollers:

1. Extension plug lengths: 12" for 1¼" rollers and 18" for larger size rollers. The length of exposed wood of the extension plug for the completed shades shall not exceed 3" for 1¼" rollers and 6" for all larger size rollers.

2. Loose sleeves on extension plugs will not be accepted. The rollers shall be new and shall not have been previously used. Roller ferrules and ends: Standard stamped steel. Springs for the roller: Adjustable for the tension required; catch readily at every turn of the roller, and release rapidly when properly handled, and shall have a single notch for windows, door panels, transoms and partition sash shades, and a double notch for auditorium doors.

3. The rollers for shades under 2 feet in width shall be 1¼" in diameter. The rollers for shades more than 2 feet and less than 6 feet in width, shall be 1½" in diameter. The

rollers for shades over 6 feet but less than 9 feet in width, shall be 1¾" in diameter. Fasten the shade cloth to the roller by means of one piece wire in a pear shaped groove. Then secure the shade cloth to the roller by means of one piece of adhesive tape at each end of the shade cloth to prevent it from shifting on the roller.

4. Spring Length shall conform to the following sizes:

5. Metal, of an approved type, such as Draper Husky, Brenerman, Hartshorn, or Joanna Western, equipped with extension plugs.

Diameter of Roller	Shade Width	Minimum Length of Spring
1 1/4"	Up to 24"	10 3/8"
1 1/2"	25" to 72"	17 3/4"
1 3/4"	73" to 96"	22 1/2"
1 3/4"	97" and up	24 1/2"

(BRACKETS SHALL CONFORM TO THE ROLLER SIZE)

E. Slats:

1. Kiln dried, one piece, clear, straight grained white pine; wedge shaped and with all horizontal edges rounded and with all sides finished.

   No joints or splicing will be permitted in the shade slat.

2. Finished minimum sizes of the shade slats shall be as follows:

   a. For windows up to 63" wide ..... Slat size 3/8" x 1 5/8"

   b. For windows 64" to 80" wide..... Slat size 1/2" x 1 3/4"

   c. For windows 81" wide and over..... Slat size 9/16" x 2"

F. Pulleys:

1. Metal slat pulleys and check pulleys: type approved by the Authority.

2. Slat pulleys: Pulley assemblies shall have at least 2 prongs on each side, and a pulley to accept the cord. Pre-drill pilot hole through slat to receive machine screw with lock nut to tighten and secure each pulley to the shade slat.

3. Check pulleys: Secure to wood trim with 1" x #8 screws; secure to aluminum or bronze trim with Parker type steel screws; secure to steel trim with cadmium plated self-tapping screws.

G. Brackets:

1. Brackets for rollers: cast iron or stamped steel, of type approved by the Authority.

   a. Secure brackets to wood trim with 1" x #8 screws; secure to aluminum or bronze trim with Parker type steel screws; secure to steel trim with cadmium plated self-tapping screws.

   b. Secure rollers in brackets with cotter pins.

   c. Brackets shall be of sufficient depth to permit the lower half of a double-hung window sash to be fully opened.

   d. Hang shades for Auditorium doors on 1/4" brackets.

2. Brackets for the installation of side overlapping shades: mill finish aluminum or galvanized steel "Z" type plate, and of sufficient offset to permit a 3" minimum side overlap of the adjacent shades. Where horizontal light strips are installed, or already exist along the tops of windows, the side overlap of the shades may be obtained by attaching regular outside brackets at staggered heights along the horizontal light strip.

3. Bracket Types:

   a. Bracket Type A1 through A8
   -Outside brackets -"L" Shaped

   Use to extend the window shade, various distances from the window frames, depending on job conditions.

   b. Bracket Type A9
   - Clip Angle Plate - Metal Plate

Use as a fastening device for a check pulley, shade bracket or a horizontal light strip. Shapes and sizes dependent upon job conditions and installation problems.

c. Bracket Type A10
- "Z" Type Plate

Bracket formed in shape of a "Z", use for double shade attachment to overlap shades on multiple windows.

4. Not more than 50% of the windows in any one room shall have shades trimmed from a larger width shade cloth. Wherever shades overlap each other, two depths of brackets shall be used, of a sufficient difference in depth to prevent the shades from rubbing or interfering with each other.

H. Light Strip(s) - Horizontal:

Provide a horizontal light strip in all rooms of instruction and the Library, when the window head is of an insufficient depth to baffle "direct" light from entering the room, above the overlapping shades.

1. Where the overall height of the window requires a separate shade on each window sash, install the shades (one up and one down) so that the shade cloth runs flat against the window frame. Install a horizontal light strip to cover the space behind and between the two rollers. The shades and brackets shall be secured to the horizontal light strip.

2. The horizontal light strip(s) shall be a minimum of 3/4" x 3 1/2" x the required length, made of straight grained white wood, and painted with two coats of paint to match the color of the window shade.

I. Light Strip(s) - Vertical (For Room Darkening)

Provide vertical light strips in all rooms of instruction and the Library when a particular installation results in an appreciable amount of "direct" light entering a room on the jamb side of a window. The vertical light strips shall be made of 22 gage, 4" wide galvanized metal strip, with rolled edges, properly secured to the window frame. Angle strips 1/2" x 3" x 20 ga. galvanized metal shall be installed on the surface of the window stops, where flat strips installed on the trim is impractical. The new vertical light strips shall be given one coat each of an approved flat metal prime paint and gloss enamel paint; sandpapered between coats to produce a smooth enamel finish. The color of the vertical light strips shall match the color of the trim. Construct angle strips for aluminum and bronze windows of 1/2" x 3" angles x 14

gage aluminum or bronze, extending from the sill to the top of the window trim, with a 4" cut-out at the top where necessary for the shade roller installation. Properly secure the angle strips to the window trim or the wall.

J. Shade Cord:

The shade cord shall be a minimum of a #4 1/2 pliable, solid uniformly braided cotton cord with a polyester center core.

1. Color: Match color of shade material.

2. Diameter: 9/64" with a tolerance of .007"

3. Strength: The tensile strength of the finished cord shall be a minimum of 120 lbs.

4. Finish: Natural unglazed finish.

5. Cord Test: Table I, Federal Specifications T-C-571F.

6. Diameter Test: Federal Test 191 Method 6002

2.03 FABRICATION

A. Cut the shade cloth in a sufficient length to allow the shade cloth to wrap twice around the roller, provide for a shade slat pocket, and of a sufficient length to pull down to the sill of the window. Form the slat pockets by folding the cloth so that the fold is on the room side of the shades, thereby providing a smooth surface on the window side. Stitching: straight stitch, with no less than 8 to 10 stitches to the inch, by means of a #33 (Dia.-.008) clear nylon monofilament or stranded thread. Reinforce the beginning and end of each stitch a minimum of two times.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Full Height Windows Without Fixed Sash Above

Equip all windows, if height does not exceed 90", or unless otherwise specified, with single shades. For windows exceeding 90" in height, provide double shades. (Where necessary, for double hung windows, the shade which is to cover the lower sash, shall be hung 6" above the meeting rail. The shade which is to cover the upper sash, shall be hung closely below,

leaving, however, sufficient clearance for the shades to be fully rolled. The shade on the upper roller shall leave the roller on the window side and pull downward. The shade on the lower roller shall leave the roller on the room side and pull upward). Fit the shades so that rooms will be practically dark when the shades are drawn to cover all of the window openings. (See Art. 2.02, Para. H- Light Strip(s) - horizontal).

B. Double Hung Windows With Fixed Sash Above

Provide double shades. The upper and lower shades shall be hung above the horizontal stack mullion and closely together leaving sufficient clearance for the shades to be fully rolled and allow for operation of the pole operated spring latch at the top of the upper sash. The shade on the upper roller shall leave the roller on the window side and pull downward. The shade on the lower roller shall leave the roller on the room side and pull upward. Fit the shades so that rooms will be practically dark when the shades are drawn to cover all of the window openings. See Art. 2.02, par. H - Light Strip(s) - horizontal.

C. Shades shall be of the side over-lapping type where possible, to ensure proper room darkening. Alternate shades shall be of a sufficient width to permit a 3" minimum overlap of the adjacent shades, and shall be secured to the special brackets specified in Art. 2.02, par. G. Pivoted window sash shall have single shades installed on the bottom rails of each window sash. Shades for door panels, transoms and partition sash shall be center-corded and shall be 1/2" wider than the glass, where possible, and shall have brackets secured to the rail, either top or bottom, as directed. The slats shall have eyelet and brass plated washers on each side of the slat for pulls, except where slat pulleys are to be used. The cord shall pass through the eyelet and be tied at the bottom of the shade slat. The cord shall be:

1. Tied to brass screw-eye,

2. Secured to aprons at free ends or

3. Continuous. All door shades shall have center cords operated by center check-pulley or Ring Pull.

D. All hardware shall be securely fastened to the existing construction. The number and type of fasteners shall be as required to prevent hardware from loosening, pulling out or becoming disengaged.

3.02 OPERATION

A. Window shades, either single or double, shall be operated with side cords, secured at one end with a hardened sheet metal screw eye on aluminum trim or a brass screw eye on wood trim, and running through two (2) approved slat pulleys that are clamped through the fabric

and the shade slat, no more than 1" from each end; the free end of the cord shall run through and be secured by an approved check pulley that is screwed fast to the window heads and/or sills. In the center of each shade slat over 54" long, there shall be inserted a small screw eye, through which the cord shall pass, between the two (2) slat pulleys.

3.03 REPLACEMENT OF EXISTING WINDOW SHADES

A. Complete removal and replacement:

1. Remove the old shades completely, including the cloth, roller, cord, slat-pulleys and check-pulley. Remove horizontal light strip, if required.

2. Provide new window shade, complete with new cloth, roller, shade slat, cord, two (2) slat-pulleys and check-pulleys. Existing brackets may be used; however, existing brackets where defective or missing shall be replaced.

B. Window shade repair using existing roller:

1. Remove the old shade completely, including the cloth, roller, cord, slat pulleys and check pulley. When the existing roller is reusable, the replacement shade shall be fabricated using this roller. In such instances, a credit shall be issued to the Authority.

2. Provide new shade cloth on existing window shade roller, complete with new shade slat, two (2) slat-pulleys, check-pulleys and cord. Existing brackets may be used; however, existing brackets where defective or missing shall be replaced.

3.04 DAMAGE

A. If damage to adjacent areas occurs due to the Work of this Section, such damage shall be corrected by the Contractor at no cost to the Authority.

3.05 CLEANING

A. Clean all components of the window shade Work upon completion; remove all debris from the premises.

END OF SECTION

SECTION 22 05 00

COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and valve markers for plumbing systems.
2. Nameplates for plumbing equipment.
3. Sleeves for interior floor and wall pipe penetrations.

1.2 SUBMITTALS

A. Product Data: Required.

B. Project Record Documents: Required.

PART 2 - PRODUCTS

2.1 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

A. Plastic Nameplates: Laminated plastic with engraved letters.

B. Plastic Tags: Laminated plastic with engraved letters, minimum 1-1/2 inches diameter.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

2.2 SLEEVES

A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.

B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or Schedule 40 galvanized steel.

PART 3 - EXECUTION

3.1 INSTALLATION - PIPING AND EQUIPMENT IDENTIFICATION

A. Install plastic nameplates with adhesive.

B. Install plastic tags with corrosion resistant metal chain.

3.2 INSTALLATION - SLEEVES

A. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

B. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

C. Where piping penetrates floor, ceiling or wall, close off space between pipe and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

D. Install chrome plated steel escutcheons at finished surfaces.

END OF SECTION

SECTION 22 05 03

PIPES AND TUBES FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Pipe and pipe fittings for the following systems:

1. Domestic water piping, within 5 feet of building.
2. Sanitary sewer piping, within 5 feet of building.
3. Unions and flanges.

B. Related Sections:

1. Section 09 90 00 - Painting and Coating: Product and execution requirements for painting specified by this section.
2. Section 22 05 23 - General-Duty Valves for Plumbing Piping: Product requirements for valves for placement by this section.
3. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment: Product requirements for pipe hangers and supports for placement by this section.
4. Section 22 07 00 - Plumbing Insulation: Product requirements for piping insulation for placement by this section.

1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
2. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

B. ASTM International:

1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

2. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.

3. ASTM B32 - Standard Specification for Solder Metal.

4. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes.

5. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

6. ASTM B251 - Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube.

C. Cast Iron Soil Pipe Institute:

1. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

2. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on pipe materials and fittings. Submit manufacturers catalog information.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with NYCBC.

B. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Furnish temporary end caps and closures on piping and fittings. Maintain in place until installation.

C. Protect piping from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements: Environmental conditions affecting products on site.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 - PRODUCTS

2.1 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Tubing: ASTM B88, Type L drawn.

1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.

2. Joints: ASTM B32, Alloy Grade Sb5 tin-antimony, or Alloy Grade Sn95 tin-silver, lead free solder.

B. Copper Tubing: ASTM B88, Type L, drawn, rolled grooved ends.

1. Fittings: ASME B16.18 cast copper alloy, ASME B16.22 wrought copper and bronze grooved ends.

2. Joints: Grooved mechanical couplings meeting ASTM F1476.

a. Housing Clamps: ASTM A395/A395M and ASTM A536 ductile iron, enamel coated, compatible with copper tubing sizes, to engage and lock designed to permit some angular deflection, contraction, and expansion.

b. Gasket: Elastomer composition for operating temperature range from 40 degrees F to 180 degrees F.

c. Accessories: Steel bolts, nuts and washers.

2.2 SANITARY SEWER PIPING, ABOVE GRADE

A. Cast Iron Pipe: ASTM A74, service weight.

1. Fittings: Cast iron, ASTM A74.

2. Joints: ASTM C564, rubber gasket joint devices or lead and oakum.

B. Cast Iron Pipe: CISPI 301, hub-less, service weight.

1. Fittings: Cast iron, CISPI 301.

2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

2.3 UNIONS AND FLANGES

A. Unions for Pipe 2 inches and Smaller:

1. Ferrous Piping: Class 250, malleable iron, threaded.

2. Copper Piping: Class 150, bronze unions with soldered joints.

3. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.4 PIPE FITTINGS

A. Each pipe fitting shall have cast, stamped, or indelibly marked on it the marker's name or mark, weight, and quality of the product when such marking is required by the approved standard.

B. Nipples shall be extra heavy shoulder type of same material as pipe, close nipples are not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Verification of existing conditions before starting work.

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges or unions.

D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.3 INSTALLATION - ABOVE GROUND PIPING

A. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

B. Install piping to maintain headroom without interfering with use of space or taking more space than necessary.

C. Group piping whenever practical at common elevations.

D. Sleeve pipe passing through partitions, walls and floors. Refer to Section 22 05 29.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 22 07 00.

G. Install non-conducting dielectric connections wherever jointing dissimilar metals.

H. Establish invert elevations, slopes for drainage to NYCBC. Maintain gradients.

I. Slope piping and arrange systems to drain at low points.

J. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

K. Install valves in accordance with Section 22 05 23.

L. Install piping specialties in accordance with Section 23 21 16.

M. Insulate piping. Refer to Section 22 07 00.

N. Install pipe identification in accordance with Section 22 05 53.

3.4 INSTALLATION - DOMESTIC WATER PIPING SYSTEMS

A. Install domestic water piping system in accordance with Section 22 11 00.

B. Install Work in accordance with the City of New York standards.

3.5 INSTALLATION - SANITARY WASTE AND VENT PIPING SYSTEMS

A. Install sanitary waste and vent piping systems in accordance with Section 22 13 00.

B. Install bell and spigot pipe with bell end upstream.

C. Support cast iron drainage piping at every joint.

D. Install Work in accordance with the City of New York standards.

3.6 FIELD QUALITY CONTROL

A. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Test domestic water piping system in accordance with applicable NYCBC.

3.7 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean and disinfect domestic water distribution system in accordance with NYCBC.

END OF SECTION

SECTION 22 05 23

GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gate valves.
2. Ball valves.

B. Related Sections:

1. Section 22 05 03 - Pipes and Tubes for Plumbing Piping and Equipment: Product and installation requirements for piping materials applying to various system types.
2. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment: Product and installation requirements for pipe hangers and supports.
3. Section 22 07 00 - Plumbing Insulation: Product and installation requirements for insulation for valves.
4. Section 22 11 00 - Facility Water Distribution: Product and installation requirements for piping and equipment used in domestic water systems.
5. Section 22 13 00 - Facility Sanitary Sewerage: Product and installation requirements for piping and equipment used in sanitary waste and vent systems.

1.2 REFERENCES

A. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP 70 - Cast Iron Gate Valves, Flanged and Threaded Ends.
2. MSS SP 71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.
3. MSS SP 80 - Bronze Gate and Check Valves.

4. MSS SP 110 - Ball Valves Threaded, Solder Joint.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturers catalog information with valve data and ratings for each service.

C. Manufacturer's Installation Instructions: Submit hanging and support methods, joining procedures.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Requirements for submittals.

B. Operation and Maintenance Data: Submit installation instructions, spare parts lists, exploded assembly views.

1.5 QUALITY ASSURANCE

A. For drinking water service, provide valves complying with NSF 61.

B. Perform Work in accordance with the City of New York standards.

C. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum three years' experience.

1.7 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

C. Provide temporary protective coating on cast iron and steel valves.

PART 2 - PRODUCTS

2.1 GATE VALVES

A. Manufacturers: Subject to requirements of the specification, provide the following manufacturer's products by one of the following or approved equal:

1. Crane Valve
2. Hammond Valve
3. Milwaukee Valve Company
4. NIBCO, Inc.
5. Stockham Valves & Fittings

B. 2 inches and Smaller: MSS SP 80, Class 125 bronze body, bronze trim, threaded, union bonnet, non-rising stem, hand-wheel, inside screw, solid split wedge disc, alloy seat rings, solder or threaded ends.

C. 2-1/2 inches and Larger: MSS SP 70, Class 125, cast iron body, bronze trim, bolted bonnet, non-rising stem, hand-wheel, solid wedge disc with bronze seat rings, flanged ends.

2.2 BALL VALVES

A. Manufacturers: Subject to requirements of the specification, provide the following manufacturer's products by one of the following or approved equal:

1. Crane Valve, North America
2. Hammond Valve
3. Milwaukee Valve Company
4. NIBCO, Inc.

5. Stockham Valves & Fittings

6. Substitutions: Section General Conditions - Product Requirements.

B. 2 inches and Smaller: MSS SP 110, Class 150, bronze, two piece body, chrome plated bronze type 316 stainless steel ball, full port, teflon seats, blow-out proof stem, solder or threaded ends with union and lever handle.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify piping system is ready for valve installation.

3.2 INSTALLATION

A. Install valves with stems upright or horizontal, not inverted.

B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

C. Install 3/4 inch ball valves with cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.

D. Install valves with clearance for installation of insulation and allowing access.

E. Provide access where valves and fittings are not accessible. Coordinate size and location of access doors with Section 08 31 13.

F. Refer to Section 22 05 29 for pipe hangers.

G. Refer to Section 22 07 00 for insulation requirements for valves.

H. Refer to Section 22 05 03 for piping materials applying to various system types.

I. For installation of valves in domestic water systems refer to Section 22 11 00.

3.3 VALVE APPLICATIONS

A. Install shutoff and drain valves at locations indicated on Drawings in accordance with this Section.

B. Install ball or gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.

C. Install ball valves for throttling, bypass, or manual flow control services.

D. Install ball or gate valves in domestic water systems for shut-off service.

E. Install ball valves in domestic water systems for throttling service.

END OF SECTION

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SECTION 22 05 29

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe hangers and supports.
2. Hanger rods.
3. Inserts.
4. Flashing.
5. Sleeves.
6. Formed steel channel.
7. Firestopping relating to plumbing work.
8. Firestopping accessories.

1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B31.9 - Building Services Piping.

B. ASTM International:

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
3. ASTM E814 - Standard Test Method for Fire Tests of Through Penetration Fire Stops.
4. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.

C. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.

2. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.

3. MSS SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

D. Underwriters Laboratories Inc.:

1. UL 263 - Fire Tests of Building Construction and Materials.

2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

3. UL 1479 - Fire Tests of Through-Penetration Firestops.

4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.

5. UL - Fire Resistance Directory.

1.3 SYSTEM DESCRIPTION

A. Firestopping Materials: Comply with product requirements.

1.4 PERFORMANCE REQUIREMENTS

A. Firestopping: Conform to applicable code, FM, UL for fire resistance ratings and surface burning characteristics.

B. Firestopping: Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.5 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data:

1. Hangers and Supports: Submit manufacturers catalog data including load capacity.

2. Firestopping: Submit data on product characteristics, performance and limitation criteria.

C. Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.

D. Design Data: Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers. Indicate calculations used to determine load carrying capacity of trapeze, multiple pipe, and riser support hangers.

E. Manufacturer's Installation Instructions:

1. Hangers and Supports: Submit special procedures and assembly of components.

2. Firestopping: Submit preparation and installation instructions.

F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

G. Engineering Judgments: For conditions not covered by UL, submit judgments by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

1.6 QUALITY ASSURANCE

A. Through Penetration Firestopping of Fire Rated Assemblies: UL 1479 or ASTM E814 with 0.10 inch water gage minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.

1. Wall Penetrations: Fire F-Ratings as indicated on Drawings, but not less than 1-hour.

2. Floor [and Roof] Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.

a. Floor Penetrations Within Wall Cavities: T-Rating is not required.

B. Through Penetration Firestopping of Non-Fire Rated Floor [and Roof] Assemblies: Materials to resist free passage of flame and products of combustion.

1. Noncombustible Penetrating Items: Noncombustible materials for penetrating items connecting maximum of three stories.

2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.

C. Fire Resistant Joints in Fire Rated Floor, Roof, and Wall Assemblies: [ASTM E1966 or] UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.

D. Fire Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10 inch water gage minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.

E. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

F. Perform Work in accordance with the City of New York standard.

G. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

B. Installer: Company specializing in performing Work of this section with minimum three year experience.

1.8 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

C. Protect from weather and construction traffic, dirt, water, chemical, and damage, by storing in original packaging.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements: Environmental conditions affecting products on site.

B. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F.

C. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.

D. Provide ventilation in areas to receive solvent cured materials.

1.10 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.10 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five-year manufacturer warranty for pipe hangers and supports.

PART 2 - PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

A. Manufacturers: Subject to requirements of the specification, provide the following manufacturer's products by one of the following or approved equal:

1. Carpenter & Paterson Inc.

2. Michigan Hanger Co.

3. Superior Valve Co.

4. Cooper B-Line

5. Substitutions: Section 01 60 00 - Product Requirements.

B. Plumbing Piping - DWV:

1. Conform to ASME B31.9, ASTM F708, MSS SP58, MSS SP69, MSS SP89.
2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or Carbon steel, adjustable swivel, split ring.
3. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
5. Wall Support: Welded steel bracket and wrought steel clamp.
6. Vertical Support: Steel riser clamp.
7. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
8. Copper Pipe Support: Copper-plated, carbon-steel adjustable, ring.

C. Plumbing Piping - Water:

1. Conform to ASME B31.9, ASTM F708, MSS SP58, MSS SP69, MSS SP89.
2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or Carbon steel, adjustable swivel, split ring.
3. Hangers for Cold Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
4. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
5. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
6. Wall Support: Welded steel bracket and wrought steel clamp.
7. Vertical Support: Steel riser clamp.
8. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

9. Floor Support for Hot Pipe Sizes 4 inches and Smaller: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

10. Copper Pipe Support: Copper-plated, Carbon-steel ring.

2.2 ACCESSORIES

A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.

2.3 INSERTS

A. Manufacturers: Subject to requirements of the specification, provide the following manufacturer's products by one of the following or approved equal:

1. ITW Romset/Redhead, Trubolt

2. Hilti, Kwik Bolt

3. Powers Fastener, Power Stud

4. Substitutions: Section 01 60 00 - Product Requirements.

B. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.4 FLASHING

A. Metal Flashing: 26 gage thick galvanized steel.

B. Metal Counterflashing: 22 gage thick galvanized steel.

C. Lead Flashing:

1. Waterproofing: 5 lb./sq. ft sheet lead.

2. Soundproofing: 1 lb./sq. ft sheet lead.

D. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.5 SLEEVES

A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.

B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or galvanized steel pipe.

C. Sealant: Acrylic; refer to Section 07 90 00.

2.6 FORMED STEEL CHANNEL

A. Manufacturers: Subject to requirements of the specification, provide the following manufacturer's products by one of the following or approved equal:

1. Allied Tube & Conduit Corp.

2. B-Line Systems

3. Unistrut Corp.

4. Substitutions: Section 01 60 00 - Product Requirements.

B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

2.7 FIRESTOPPING

A. Firestopping Materials: Comply with requirements of Section 07 84 00.

2.8 FIRESTOPPING ACCESSORIES

A. Installation Accessories: Comply with requirements of Section 07 84 00.

B. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

C. Dam Material: Permanent:

1. Mineral fiberboard.

2. Mineral fiber matting.

3. Sheet metal.

4. Plywood or particle board.

5. Alumina silicate fire board.

D. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

E. General:

1. Furnish UL listed products or products tested by independent testing laboratory.

2. Select products with rating not less than rating of wall or floor being penetrated.

F. Non-Rated Surfaces:

1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where piping is exposed.

2. For exterior wall openings below grade, furnish mechanical sealing device to continuously fill annular space between piping and cored opening or water-stop type wall sleeve.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify openings are ready to receive sleeves.

C. Verify openings are ready to receive firestopping.

3.2 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.

B. Remove incompatible materials affecting bond.

C. Install backing and damming materials to arrest liquid material leakage.

D. Obtain permission from Architect/Engineer before using powder-actuated anchors.

E. Do not drill or cut structural members.

3.3 INSTALLATION - INSERTS

A. Install inserts for placement in concrete forms.

B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

D. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.4 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Install in accordance with ASME B31.1, ASME B31.5, ASME 31.9, ASTM F708, MSS SP 58, MSS SP 69, MSS SP 89.

B. Support horizontal piping as scheduled.

C. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.

D. Place hangers within 12 inches of each horizontal elbow.

E. Use hangers with 1-1/2 inch minimum vertical adjustment.

F. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.

G. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.

H. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.

I. Support riser piping independently of connected horizontal piping.

J. Provide copper plated hangers and supports for copper piping.

K. Design hangers for pipe movement without disengagement of supported pipe.

L. Prime coat exposed steel hangers and supports. Refer to Section 09 90 00. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

M. Provide clearance in hangers and from structure and other equipment for installation of insulation. Refer to Section 22 07 00.

3.5 INSTALLATION - FLASHING

A. Provide flexible flashing and metal counterflashing where piping penetrates weather or waterproofed walls and floors.

B. Flash vent and soil pipes projecting 3 inches minimum above finished roof surface with lead worked 1 inch minimum into hub, 8 inches minimum clear on sides with 24 x 24 inches sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counter-flash, and seal.

C. Seal floor drains watertight to adjacent materials.

3.6 INSTALLATION - SLEEVES

A. Set sleeves in position in forms. Provide reinforcing around sleeves.

B. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

C. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

D. Where piping penetrates floor, ceiling, or wall, close off space between pipe and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

E. Install chrome plated steel or stainless steel escutcheons at finished surfaces.

3.7 INSTALLATION – FIRESTOPPING

A. Firestopping Materials: Comply with manufacturer's requirements.

3.8 FIELD QUALITY CONTROL

A. Section General Conditions - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect installed firestopping for compliance with specifications and submitted schedule.

3.9 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean adjacent surfaces of firestopping materials.

3.10 PROTECTION OF FINISHED WORK

A. Section General Conditions - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect adjacent surfaces from damage by material installation.

3.11 SCHEDULES

PIPE HANGER SPACING		
PIPE MATERIAL	MAXIMUM HANGER SPACING Feet	HANGER ROD DIAMETER Inches
Cast Iron (All Sizes)	5	5/8
Copper Tube, 1-1/4 inches and smaller	6	1/2
Copper Tube, 1-1/2 inches and larger	10	1/2

END OF SECTION

SECTION 22 05 53

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Nameplates.
2. Tags.
3. Stencils.
4. Pipe markers.
5. Labels.
6. Lockout devices.

B. Related Sections:

1. Section 09 90 00 - Painting and Coating: Execution requirements for painting specified by this section.

1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME A13.1 - Scheme for the Identification of Piping Systems.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit manufacturers catalog literature for each product required.

C. Shop Drawings: Submit list of wording, symbols, letter size, and color coding for mechanical identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

D. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.

1.5 QUALITY ASSURANCE

A. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.

B. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years' experience.

1.7 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.8 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish two containers of spray-on adhesive.

PART 2 PRODUCTS

2.1 NAMEPLATES

A. Manufacturers:

1. Craftmark Identification Systems

2. Safety Sign Co.

3. Seton Identification Products

4. Substitutions: Section 01 60 00 - Product Requirements.

B. Product Description: Laminated three-layer plastic with engraved or black letters on light contrasting background color.

2.2 TAGS

A. Plastic Tags:

1. Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inches diameter.

B. Metal Tags:

1. Manufacturers:

a. Brimar Industries

b. Marking Services, Inc.

c. Emed Co.

d. Or approved equal.

2. Brass, Aluminum, Stainless Steel with stamped letters; tag size minimum 1-1/2 inches diameter with finished edges.

2.3 PIPE MARKERS

A. Color and Lettering: Conform to ASME A13.1.

B. Plastic Pipe Markers:

1. Manufacturers:

a. Seton Nameplate Corp.

b. Brimar Industries, Inc.

c. EMED Co.

d. Or approved equal.

2. Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.

C. Plastic Tape Pipe Markers:

1. Manufacturers:

a. Seton Nameplate Corp.

b. Brimar Industries, Inc.

c. EMED Co.

d. Or approved equal.

2. Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

2.4 LABELS

A. Manufacturers:

1. Seton Nameplate Corp.

2. Brimar Industries, Inc.

3. EMED Co.

4. Or approved equal.

B. Description: Aluminum Laminated Mylar, size 1.9 x 0.75 inches, adhesive backed with printed identification.

PART 3 EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with Section 09 90 00 for stencil painting.

3.2 INSTALLATION

A. Apply stencil painting in accordance with Section 09 90 00.

B. Install identifying devices after completion of coverings and painting.

C. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.

D. Install labels with sufficient adhesive for permanent adhesion and seal with clear lacquer. For unfinished canvas covering, apply paint primer before applying labels.

E. Install tags using corrosion resistant chain. Number tags consecutively by location.

F. Identify water heaters with plastic nameplates or stencil painting.

G. Identify valves in main and branch piping with tags.

H. Identify piping, concealed or exposed, with plastic pipe markers or plastic tape pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION

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SECTION 22 07 00

PLUMBING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plumbing piping insulation, jackets and accessories.

B. Related Sections:

1. Section 09 90 00 - Painting and Coating: Execution requirements for painting insulation jackets and covering specified by this section.

1.2 REFERENCES

A. ASTM International:

1. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement.
2. ASTM C449/C449M - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement.
3. ASTM C450 - Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging.
4. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation.
5. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation.
6. ASTM C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
7. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
8. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

9. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.

C. Manufacturer's Installation Instructions: Submit manufacturers published literature indicating proper installation procedures.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84.

B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.

C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

D. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Applicator: Company specializing in performing Work of this section [with minimum three years' experience.

1.6 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

C. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements: Environmental conditions affecting products on site.

B. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

C. Maintain temperature before, during, and after installation for minimum period of 24 hours.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five-year manufacturer warranty for man-made fiber.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturers for Glass Fiber and Mineral Fiber Insulation Products:

1. CertainTeed.
2. Knauf.
3. Johns Manville.
4. Owens-Corning.
5. Or approved equal.

2.2 PIPE INSULATION

A. ASTM C547, molded glass fiber pipe insulation.

1. Thermal Conductivity: 0.23 at 75 degrees F.

2. Operating Temperature Range: 0 to 850 degrees F.

3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.

4. Jacket Temperature Limit: minus 20 to 150 degrees F.

B. TYPE P-11: ASTM C533; Type I, hydrous calcium silicate pipe insulation, rigid molded white; asbestos free.

1. Thermal Conductivity: 0.45 at 200 degrees F.

2. Operating Temperature Range: 140 to 1200 degrees F.

2.3 PIPE INSULATION JACKETS

A. Vapor Retarder Jacket:

1. ASTM C921, white Kraft paper with glass fiber yarn, bonded to aluminized film.

2. Water Vapor Permeance: ASTM E96/E96M; 0.02 perms.

B. PVC Plastic Pipe Jacket:

1. Product Description: ASTM D1785, One piece molded type fitting covers and sheet material, off-white color.

2. Thickness: 10 mil.

3. Connections: Brush on welding adhesive Pressure sensitive color matching vinyl tape.

C. Field Applied Glass Fiber Fabric Jacket System:

1. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.

2. Glass Fiber Fabric:

a. Cloth: Untreated; 9 oz/sq yd weight.

b. Blanket: 1.0 lb/cu ft density.

c. Weave: 5 x 5.

3. Indoor Vapor Retarder Finish:

a. Cloth: Untreated; 9 oz/sq yd weight.

b. Vinyl emulsion type acrylic, compatible with insulation, white color.

2.4 PIPE INSULATION ACCESSORIES

A. Vapor Retarder Lap Adhesive: Compatible with insulation.

B. Covering Adhesive Mastic: Compatible with insulation.

C. Piping 1-1/2 inches diameter and smaller: Galvanized steel insulation protection shield. MSS SP-69, Type 40. Length: Based on pipe size and insulation thickness.

D. Piping 2 inches diameter and larger: Steel insulation saddle, hard maple. Inserts length: not less than 6 inches long, matching thickness and contour of adjoining insulation.

E. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

F. Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement: ASTM C449/C449M.

G. Insulating Cement: ASTM C195; hydraulic setting on mineral wool.

H. Adhesives: Compatible with insulation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify piping has been tested before applying insulation materials.

C. Verify surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION - PIPING SYSTEMS

A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.

B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions. Refer to Section 07 84 00 for penetrations of assemblies with fire resistance rating greater than one hour.

C. Piping Systems Conveying Fluids Below Ambient Temperature:

1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections and expansion joints.

2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.

3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.

D. Hot Piping Systems less than 140 degrees F:

1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.

2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

3. Do not insulate unions and flanges at equipment, but bevel and seal ends of insulation at such locations.

E. Inserts and Shields:

1. Piping 1-1/2 inches Diameter and Smaller: Install galvanized steel shield between pipe hanger and insulation.

2. Piping 2 inches Diameter and Larger: Install insert between support shield and piping and under finish jacket.

a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.

b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.

3. Piping Supported by Roller Type Pipe Hangers: Install galvanized steel shield between roller and inserts.

F. Insulation Terminating Points:

1. Condensate Piping: Insulate entire piping system and components to prevent condensation.

G. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces: Finish with PVC jacket and fitting covers.

H. Prepare pipe insulation for finish painting. Refer to Section 09 90 00.

3.3 SCHEDULES

A. Water Supply Services Piping Insulation Schedule:

PIPING SYSTEM	INSULATION TYPE	PIPE SIZE	INSULATION THICKNESS inches
Domestic Hot Water Supply and Recirculation	P-1	1-1/4 inches and smaller 1-1/2 inches and larger	1.0 (25) 1.0 (25)
Domestic Cold Water	P-5	1-1/4 inches and smaller 1-1/2 inches and larger	1.0 (25) 1.0 (25)

END OF SECTION

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SECTION 22 11 00

FACILITY WATER DISTRIBUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Domestic water piping, above grade.
2. Unions and flanges.
3. Strainers.
4. Water hammer arrestors.

B. Related Sections:

1. Section 09 90 00 - Painting and Coating: Product and execution requirements for painting specified by this section.
2. Section 22 05 03 - Pipes and Tubes for Plumbing Piping and Equipment: Product and installation requirements for piping materials applying to various system types.
3. Section 22 05 23 - General-Duty Valves for Plumbing Piping: Product requirements for valves for placement by this section.
4. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment: Product requirements for pipe hangers and supports and firestopping for placement by this section.
5. Section 22 05 53 - Identification for Plumbing Piping and Equipment: Product requirements for pipe identification and valve tags for placement by this section.
6. Section 22 07 00 - Plumbing Insulation: Product and execution requirements for pipe insulation.

1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.

2. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

3. ASME B40.1 - Gauges - Pressure Indicating Dial Type - Elastic Element.

B. American Society of Sanitary Engineering:

1. ASSE 1010 - Performance Requirements for Water Hammer Arresters.

C. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.

2. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.

3. MSS SP 70 - Cast Iron Gate Valves, Flanged and Threaded Ends.

4. MSS SP 71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.

5. MSS SP 80 - Angle and Check Valves.

6. MSS SP 85 - Angle Valves, Flanged and Threaded.

7. MSS SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

8. MSS SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint and Grooved Ends.

D. National Electrical Manufacturers Association:

1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

E. Plumbing and Drainage Institute:

1. PDI WH201 - Water Hammer Arrester Standard.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data:

1. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturer's catalog information.

2. Valves: Submit manufacturers catalog information with valve data and ratings for each service.

3. Hangers and Supports: Submit manufacturers catalog information including load capacity.

4. Domestic Water Specialties: Submit manufacturers catalog information, component sizes, rough-in requirements, service sizes, and finishes.

C. Manufacturer's Installation Instructions: Submit installation instructions for pumps, valves and accessories.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of valves and equipment.

C. Operation and Maintenance Data: Submit spare parts list, exploded assembly views and recommended maintenance intervals.

1.5 QUALITY ASSURANCE

A. For drinking water service, provide valves complying with NSF 61.

B. Maintain one copy of each document on site.

1.6 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Accept valves and equipment on site in shipping containers with labeling in place. Inspect for damage.

C. Provide temporary protective coating on cast iron and steel valves.

D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

E. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five-year manufacturer warranty for domestic water piping.

1.10 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish two packing kits for each size valve.

PART 2 - PRODUCTS

2.1 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Tubing: ASTM B88, Type L drawn.

1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.

2. Joints: ASTM B32, Alloy Grade Sb5 tin-antimony, or Alloy Grade Sn95 tin-silver, lead free solder AWS A5.8 Classification BCuP-3 or BCuP-4 silver braze.

2.2 UNIONS AND FLANGES

A. Unions for Pipe 2 inches and Smaller:

1. Ferrous Piping: Class 150, malleable iron, threaded.

2. Copper Piping: Class 150, bronze unions with soldered joints.

3. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

B. Flanges for Pipe 2-1/2 inches and Larger:

1. Ferrous Piping: Class 150, forged steel, slip-on flanges.

2. Copper Piping: Class 150, slip-on bronze flanges.

3. Gaskets: 1/16 inch thick preformed neoprene gaskets.

2.3 STRAINERS

A. Manufacturers:

1. Sarco

2. Mueller Steam Specialty

3. Apollo Valves

4. Or approved equal.

B. 2 inch and Smaller: Threaded brass body for 175 psi CWP Class 150, threaded bronze body 300 psi CWP, Y pattern with 1/32 inch stainless steel perforated screen.

C. 1-1/2 inch to 4 inch: Class 125, flanged iron body, Y pattern with 1/16-inch stainless steel perforated screen.

2.4 WATER HAMMER ARRESTORS

A. Manufacturers:

1. J.R. Smith
2. Zurn
3. Josam
4. Or approved equal.

B. ASSE 1010; stainless steel or copper construction, piston type sized in accordance with PDI WH-201.

C. Pre-charged suitable for operation in temperature range 34 to 250 degrees F and maximum 150 psi working pressure.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

3.3 INSTALLATION - ABOVE GROUND PIPING

A. Install non-conducting dielectric connections wherever jointing dissimilar metals.

B. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

C. Install piping to maintain headroom without interfering with use of space or taking more space than necessary.

D. Group piping whenever practical at common elevations.

E. Slope piping and arrange systems to drain at low points.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 22 07 00.

H. Provide access where valves and fittings are not accessible. Coordinate size and location of access doors with drawings.

I. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

J. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting. Refer to Section 09 90 00.

K. Install domestic water piping in accordance with ASME B31.9.

L. Sleeve pipes passing through partitions, walls and floors. Refer to Section 22 05 29.

M. Install firestopping at fire rated construction perimeters and openings containing penetrating sleeves and piping. Refer to Section 07 84 00.

N. Install unions downstream of valves and at equipment or apparatus connections.

O. Install valves with stems upright or horizontal, not inverted.

P. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

Q. Install gate or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

R. Install ball valves for throttling, bypass, or manual flow control services.

S. Install potable water protection devices on plumbing lines where contamination of domestic water may occur; on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, interior and exterior hose bibs.

T. Pipe relief from valves, back-flow preventers and drains to nearest floor drain.

U. Test backflow preventers in accordance with ASSE 5013, 5015.

3.4 FIELD QUALITY CONTROL

A. Section General Conditions - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting and balancing.

B. Test domestic water piping system in accordance with applicable NYCBC.

3.5 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for cleaning.

B. Disinfect water distribution system in accordance with NYCPC requirements.

END OF SECTION

SECTION 22 13 00

FACILITY SANITARY SEWERAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sanitary sewer piping above grade.
2. Cleanouts.

B. Related Sections:

1. Section 09 90 00 - Painting and Coating: Product and execution requirements for painting specified by this section.
2. Section 22 05 03 - Pipes and Tubes for Plumbing Piping and Equipment: Product and installation requirements for piping materials applying to various system types.
3. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment: Product requirements for pipe hangers and supports and firestopping for placement by this section.
4. Section 22 05 53 - Identification for Plumbing Piping and Equipment: Product requirements for pipe identification for placement by this section.

1.2 REFERENCES

A. ASTM International:

1. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings.
2. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.

B. Cast Iron Soil Pipe Institute:

1. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

2. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate dimensions, weights, and placement of openings and holes for sewage-ejectors, and manholes.

C. Product Data:

1. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturers catalog information.

2. Sanitary Drainage Specialties: Submit manufacturers catalog information, component sizes, rough-in requirements, service sizes, and finishes.

D. Manufacturer's Installation Instructions: Submit installation instructions for material and equipment.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of equipment and clean-outs.

C. Operation and Maintenance Data: Submit frequency of treatment required for interceptors. Include, spare parts lists, exploded assembly views for pumps and equipment.

D. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years' experience.

1.6 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

PART 2 - PRODUCTS

2.1 SANITARY SEWER PIPING, ABOVE GRADE

A. Cast Iron Pipe: ASTM A74, service weight.

1. Fittings: Cast iron, ASTM A74.

2. Joints: ASTM C564, lead and oakum.

B. Cast Iron Pipe: CISPI 301, hub-less, service weight.

1. Fittings: Cast iron, CISPI 301.

2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

2.2 CLEANOUTS

A. Manufacturers:

1. J.R. Smith
2. Josam
3. Zurn
4. Or approved equal.

B. Interior Floor Areas: Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round scored cover with gasket.

C. Interior Finished Wall Areas: Line type with lacquered cast iron body and round epoxy coated cover with gasket, and round stainless steel access cover secured with machine screw.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.3 INSTALLATION - ABOVE GROUND PIPING

A. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Provide clearances at cleanout for snaking drainage system.

B. Install floor cleanouts at elevation to accommodate finished floor.

C. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

D. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

E. Install piping to maintain headroom. Do not spread piping, conserve space.

F. Group piping whenever practical at common elevations.

G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

H. Provide clearance in hangers and from structure and other equipment for installation of insulation. Refer to Section 22 07 00.

I. Provide access where valves and fittings are not accessible. Coordinate size and location of access doors with Section 08 31 13.

J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

K. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting. Refer to Section 09 90 00.

L. Install bell and spigot pipe with bell end upstream.

M. Sleeve pipes passing through partitions, walls and floors.

N. Install firestopping at fire rated construction perimeters and openings containing penetrating sleeves and piping. Refer to Section 07 84 00.

O. Support cast iron drainage piping at every joint.

3.4 FIELD QUALITY CONTROL

A. Section General Conditions - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Test sanitary waste and vent piping system in accordance with applicable NYCBC.

END OF SECTION

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SECTION 22 33 00

ELECTRIC DOMESTIC WATER HEATERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Commercial electric water heaters.

B. Related Sections:

1. Section: 22 11 00 - Facility Water Distribution: Supply connections to domestic water heaters.

2. Section 26 05 00 - Equipment Wiring Connections: Execution requirements for electric connections specified by this section.

1.2 REFERENCES

A. American Society of Heating, Refrigerating and Air-Conditioning Engineers:

1. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.

B. American Society of Mechanical Engineers:

1. ASME PTC 25 - Pressure Relief Devices.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate heat exchanger dimensions, size of taps, and performance data. Indicate dimensions, materials or construction, anchors, attachments, lifting points, taps and drains.

C. Product Data: Submit dimensioned drawings of water heaters indicating components and connections to other equipment and piping. Submit electrical characteristics and connection locations.

D. Manufacturer's Installation Instructions: Submit mounting and support requirements.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit replacement part numbers and availability.

1.5 QUALITY ASSURANCE

A. Water Heater Performance Requirements: Equipment efficiency not less than prescribed by ASHRAE 90.1.

B. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years' experience.

1.7 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Products storage and handling requirements.

B. Accept water heaters on site in original labeled cartons. Inspect for damage.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five-year manufacturer warranty for commercial water heaters.

PART 2 - PRODUCTS

2.1 COMMERCIAL ELECTRIC WATER HEATERS

A. Manufacturers:

1. Eemax
2. Bosch
3. Stiebel Eltron
4. Or approved equal.

B. Type: Factory-assembled and wired, electric, tankless water heaters.

C. Capacity:

1. Heating element size: 4.1 kW.
2. Number of heating elements: 1.
3. Minimum recovery rate: 0.5 gpm at 50 degrees F temperature rise.
4. Maximum working pressure: 150 psig.

D. Controls: Heating element automatically activates at 0.5 gpm flow through heater. High temperature limit switch protects element from burnout, with reset button.

E. Accessories: Integral 3/8" compression fittings, integral flow restrictor.

F. Heating Element: Nickel chrome element.

2.2 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics: In accordance with Section 26 05 03 and the following:

1. 208 volts, single phase, 60 Hz.
2. 19.7 amperes.

B. Disconnect Switch: Lockable breaker in supply panel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Maintain manufacturer's recommended clearances around and over water heaters.

B. Connect domestic cold water piping to supply water heater connections.

C. Install the following piping accessories. Refer to Section 22 11 00.

1. On C.W. supply:

a. Shutoff valve.

2. On H.W. return:

a. Shutoff valve.

D. Install water heater trim and accessories furnished loose for field mounting.

E. Install electrical devices furnished loose for field mounting.

END OF SECTION

SECTION 22 40 00

PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Water closets.
2. Lavatories.
3. Sinks.

B. Related Sections:

1. Section 07 90 00 - Joint Protection: Product requirements for calking between fixtures and building components for placement by this section.
2. Section 22 11 00 - Facility Water Distribution: Supply connections to plumbing fixtures.
3. Section 22 13 00 - Facility Sanitary Sewerage: Waste connections to plumbing fixtures.
4. Section 26 05 00 - Equipment Wiring Connections: Execution requirements for electric connections to sensor valves and faucets specified by this section.

1.2 REFERENCES

A. American National Standards Institute:

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.

B. American Society of Mechanical Engineers:

1. ASME A112.6.1 - Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use.
2. ASME A112.18.1 - Plumbing Fixture Fittings.
3. ASME A112.19.2M - Vitreous China Plumbing Fixtures.

4. ASME A112.19.3 - Stainless Steel Plumbing Fixtures.

5. ASME A112.19.5 - Trim for Water-Closet Bowls.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

C. Manufacturer's Installation Instructions: Submit installation methods and procedures.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit fixture, trim, exploded view and replacement parts lists.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with NYCBC.

B. Provide products requiring electrical connections listed and classified by Underwriters Laboratories Inc., as suitable for purpose specified and indicated.

C. Provide plumbing fixture fittings in accordance with ASME A112.18.1 that prevent backflow from fixture into water distribution system.

D. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years' experience.

1.7 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Accept fixtures on site in factory packaging. Inspect for damage.

C. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.8 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five-year manufacturer warranty for plumbing fixtures.

1.9 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish two sets of faucet washers and flush valve service kits.

PART 2 - PRODUCTS

2.1 FLUSH VALVE WATER CLOSETS (P-1)

A. Manufacturers:

1. American Standard Plumbing
2. Eljer Plumbingware
3. Kohler Co.
4. Or approved equal.

B. Furnish materials in accordance with NYCBC.

C. Bowl: ASME A112.19.2M; wall hung, siphon jet vitreous china closet bowl, with elongated rim, 1-1/2 inch top spud, 1.28 GPF.

D. Sensor Operated Flush Valve: Exposed chrome-plated diaphragm type with battery-operated solenoid operator, infrared sensor and over-ride button in chrome plated plate and vacuum breaker; maximum 1.28 gallon flush volume.

E. Seat: Solid white plastic, open front, brass bolts, without cover.

F. Wall Mounted Carrier: ASME A112.6.1; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.2 LAVATORIES (P-2)

A. Manufacturers:

1. American Standard Plumbing
2. Eljer Plumbingware
3. Kohler Co.
4. Or approved equal.

B. Vitreous China Wall Hung Basin: Vitreous china wall hung lavatory 20-1/2 x 18-1/4 inch minimum, with 4 inch high back, single hole, rectangular basin with splash lip and front overflow.

C. Sensor Operated: ASME A112.18.1; chrome plated sensor-operated faucet with battery-operated solenoid operator and infrared sensor, aerator spray and open grid strainer.

D. Waste Fittings: ASME A112.18.2 or ASTM F 409.

E. For public hand washing facilities, provide tempered water through regulating device conforming to ASSE 1070.

F. Accessories:

1. Chrome plated 17 gage brass P-trap with clean-out plug and arm with escutcheon.
2. Screwdriver stops.
3. Rigid supplies.
4. Trap and waste insulated and offset to meet ADA compliance.

G. Wall Mounted Carrier: ASME A112.6.1; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, concealed arm supports, bearing plate and studs.

2.3 SINKS (P-3)

A. Manufacturers:

1. Elkay
2. JUST
3. Or approved equal.

B. Single Compartment Bowl: 22 x 19-1/2 x 6 inch outside dimensions, 18 gage thick, Type 304 stainless steel. Self-rimming and undercoated, with 1-1/2 inch chromed brass drain, 3-1/2 inch drain and tailpiece, ledge back drilled for trim.

C. Trim: ASME A112.18.1; chrome plated brass supply with high rise swing spout, water economy aerator with maximum 2.2 gpm flow, single lever handle.

D. Accessories: Chrome plated 17 gage brass P-trap with clean-out plug and arm with escutcheon, wheel handle stop, rigid supplies.

2.4 LAVATORY INSULATION KIT

A. Manufacturers:

1. TRU BRO
2. Or approved equal

B. Product Description: Where Lavatories are noted to be insulated for ADA compliance, furnish the following: Safety Covers conforming to ANSI A177.1 and consisting of insulation kit of molded closed cell vinyl construction, 3/16 inch thick, white color, for insulating tailpiece, P-trap, valves, and supply piping. Furnish with weep hole and angle valve access covers.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify walls and floor finishes are prepared and ready for installation of fixtures.

C. Confirm millwork is constructed with adequate provision for installation of counter top sinks.

3.2 PREPARATION

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.3 INSTALLATION

A. Install Work in accordance with NYCBC.

B. Install each fixture with trap, easily removable for servicing and cleaning.

C. Install components level and plumb.

D. Install and secure fixtures in place with wall supports, wall carriers and bolts.

E. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 90 00, color to match fixture.

F. For ADA accessible water closets, install flush valve with handle to wide side of stall.

3.4 INTERFACE WITH OTHER PRODUCTS

A. Review millwork shop-drawings. Confirm location and size of fixtures and openings before rough in and installation.

3.5 ADJUSTING

A. Section General Conditions - Execution and Closeout Requirements: Testing, adjusting, and balancing.

B. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.6 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Final cleaning.

B. Clean plumbing fixtures and equipment.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Section General Conditions - Execution and Closeout Requirements: Protecting installed construction.

B. Do not permit use of fixtures before final acceptance.

END OF SECTION

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B. Furnish initial start-up and shutdown during first year of operation, including routine servicing and checkout.

3.4 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for cleaning.

B. After construction is completed, including painting, clean exposed surfaces of units.

C. Vacuum clean coils and inside of cabinets.

D. Touch up marred or scratched surfaces of factory finished cabinets, using finish materials furnished by manufacturer.

E. Install new throwaway filters in units after Substantial Completion.

3.5 DEMONSTRATION

A. Section General Conditions - Execution and Closeout Requirements: Requirements for demonstration and training.

B. Demonstrate unit operation and maintenance.

C. Furnish services of manufacturer's technical representative for one 8 hour day to instruct Owner's personnel in operation and maintenance of units. Schedule training with Owner, provide at least 7 days' notice to Architect/Engineer of training date.

3.6 PROTECTION OF FINISHED WORK

A. Section General Conditions - Execution and Closeout Requirements: Requirements for starting and adjusting.

B. Protect finished surfaces of cabinets with protective covers during remainder of construction.

C. If any warranty is voided due to transporting, rigging and installing process, it is the contractor's responsibility to restore the original warranty.

END OF SECTION

1. On inlet:
    a. Thermometer well for temperature limit controller.
    b. Thermometer well and thermometer.
    c. Strainer.
    d. Flow switch.
    e. Flexible pipe connection.
    f. Pressure gage.
    g. Shut-off valve.
2. On outlet:
    a. Thermometer well and thermometer.
    b. Flexible pipe connection.
    c. Pressure gage.
    d. Shut-off valve.
    e. Balancing Valve/Control Valve.

F. Water coils: Install air vents at high points complete with shutoff valve. Refer to Section 23 21 13.

G. Pipe condensate from drain pan to funnel drain and slop sink.

H. Install sensor tubing from unit mounted sensors to duct locations. Refer to Section 23 09 53.

I. Install accessories furnished loose for field mounting.

J. Install electrical devices furnished loose for field mounting.

K. Install control wiring between unit control panel and field mounted control devices.

3.3 MANUFACTURER'S FIELD SERVICES

A. Section General Conditions - Quality Requirements: Requirements for manufacturer's field services.

A. Section General Conditions - Quality Requirements: Testing, inspection and analysis requirements.

B. Perform factory test of [each] [representative] unit. Test includes:

1. Dynamic trim balance of completed fan assembly.

2. Complete run check of electrical components and safety controls, including proper control sequencing.

3. Pressure test, at rated pressure, of refrigerant coils and condenser coils prior to unit assembly.

4. Leak check of completed refrigerant circuits.

5. Leak check of completed water circuit.

6. Compressor run check.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify concrete housekeeping pad is sized and located correctly.

C. Verify piping rough-in is at correct location.

D. Verify electrical rough-in is at correct location.

3.2 INSTALLATION

A. Install unit on concrete housekeeping pad, minimum 3-1/2 inches high and 6 inches larger than unit on each side. Refer to Section 03 30 00.

B. Install indoor units on vibration isolators. Refer to Section 23 05 48.

C. Connect indoor units to supply and return ductwork with flexible connections. Refer to Section 23 33 00.

D. Arrange piping for easy dismantling to permit tube cleaning.

E. Install the following piping accessories on condenser water piping connections. Refer to Section 23 21 13.

2. Thermostat: Factory mounted, to cycle cooling within unit return air with factory mounted 'fan-off-cool' switch allowing continuous fan operation, or cycling fan on call for cooling.

O. Controls: Refer to Section 23 09 23. Refer to Section 23 09 93 for sequence of operation. Controls: Unit mounted DDC controller. Refer to approved Pre-purchasing submittal.

P. Discharge plenum: Factory field mounted constructed of galvanized steel and acoustically lined with glass fiber insulation. Entire interior lined with galvanized steel perforated liner. Furnish horizontal duct connections as indicated on Drawings.

Q. Vibration isolators: Rubber-in-shear type or Spring type. Refer to Section 23 05 48.

R. Corrosion resistant coating: Furnish manufacturer's standard coating on the following unit components:

1. Evaporator coil.
2. Interior and exterior of unit.
3. Condenser coil.
4. Discharge plenum.

2.2 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics: In accordance with Section 26 05 03 and the following:

1. Rated load amperes.
2. 208 volts, three phase, 60 Hz.
3. Maximum fuse size.
4. Minimum circuit ampacity.
5. 0.8 percent minimum power factor at rated load.

B. Disconnect switch: Factory mounted, non-fused type, visible, located at front of unit, and accessible without opening unit.

2.3 SOURCE QUALITY CONTROL

through unit at all times or isolates unit from condenser water loop cooling is not required.

b. Mechanical cooling is enabled during economizer operation, when economizer control valve opens 90 percent and cooling load is not satisfied. Compressors operate to maintain setpoint. To maximize energy savings, economizer control maintains full waterflow until differential between entering water temperature and entering air temperature falls below setpoint.

M. Airside economizer (ACU-9-1):

1. Mixing box: Constructed of galvanized steel with baked enamel finish. Contains filter section. Furnish factory installed parallel blade dampers constructed of galvanized steel with nylon bushings. Furnish factory installed damper operator, linkages, and adjustable set point enthalpy controller.

2. Operation: When outdoor conditions are not suitable, outside air damper is open to its minimum position. When outdoor conditions are suitable, damper position is modulated to maintain discharge air temperature set point for VAV units.

3. Outside Air Damper Leakage: Maximum 3.0 cfm per square foot at 1.0 inches wg pressure differential.

N. Controls:

1. Safety Controls: Factory wired including:

a. Water flow switch: Located in condenser water piping. Disables compressor operation and signals alarm when condenser water flow stops.

b. Freezestat: Manual reset type on entering face of economizer coil. Upon sensing freeze condition, unit supply fan shuts down, heating control valve drives to full open position. Provide alarm signal.

Phase failure and under voltage protection: On 3-phase motors.

2. Furnish each condenser on independent refrigerant circuit. Factory leak tested. Mechanically cleanable.

3. Factory pipe condensers including water side economizer for single water supply and return connection.

4. Furnish factory installed 3-way modulating head pressure control valve to maintain refrigerant head pressure through the unit's control system.

J. Integral Air Cooled Condenser:

1. Fan: Statically and dynamically balanced, with permanently lubricated bearings.

2. V-Belt Drive: Dynamically balanced, bored to fit shafts and keyed. Variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position as recommended by manufacturer or minimum 1.5 times nameplate rating of motor.

3. Motors: 2-7.5 hp with integral overload protection.

4. Furnish low ambient controls for operation to 0 degrees F.

5. Low pressure switch bypass timer to prevent compressor cutout during low ambient starts.

K. Filters: 2 inch thick pleated filters MERV-11 efficient based on ASHRAE 52.1.

L. Waterside economizer (ACU-9-2):

1. Coil and Piping Assembly: Factory installed in unit cabinet including coil constructed of copper tubes expanded on to aluminum fins, mechanically and chemically cleanable. Furnish control valves and factory installed piping. Coil and piping assembly factory leak tested.

2. Operation:

a. Economizer operation controlled to maximize free cooling. Economizer is enabled whenever entering water temperature is less than entering air temperature (adjustable). Economizer control valve modulates in response to cooling load. Control valve operation either maintains full flow

a. Drive Rating: Minimum 1.5 times nameplate rating of motor.

b. Fan Sheave: Adjustable.

c. Motor Sheave: Adjustable.

3. Fan motor: Three phase, NEMA MG1, Design B, continuously rated at 40 degrees C, high efficiency, open drip-proof NEMA T frame, with permanently lubricated bearings and integral overload protection.

a. 3 & 15 hp.

4. Fan Assembly Mounting:

a. Furnish spring-type vibration isolators.

b. Furnish flexible connection at fan discharge inside of cabinet.

F. Fan Modulation:

1. Variable frequency drive: Refer to Section 26 29 23.

2. Furnish field adjustable duct high limit safety control to protect duct work from excessive duct pressure.

G. Compressor:

1. Hermetically sealed, 3600 rpm maximum resiliently mounted with positive lubrication and internal motor overload protection.

a. Furnish internal vibration isolators.

b. Furnish short cycle protection.

c. Furnish each compressor with independent refrigeration circuit.

H. Evaporator Coil: Direct expansion type constructed of copper tubes expanded onto aluminum fins.

I. Water Cooled Condenser:

1. Co-Axial type with copper tube in copper tube with tubes in steel shell.

B. Furnish one (1) set of filters & fan belts for each unit.

PART 2 - PRODUCTS

2.1 SELF-CONTAINED AIR CONDITIONERS

A. The following HVAC equipment with performance characteristics described below will be purchased by the facility.

1. Self-contained air conditioner, water cooled.

2. Self-contained air conditioner with integral air cooled condenser.

B. Product Description: Packaged, self-contained, factory assembled, factory wired unit, consisting of cabinet, supply fan, variable frequency drive, compressor, evaporator coil, water cooled condenser, air cooled condenser, filters, water side economizer, air side economizer, and controls.

C. Assembly: Up flow air delivery, in draw-through configuration as indicated on Drawings.

D. Cabinet:

1. Frame and Panels: Galvanized steel with baked enamel finish, removable access doors or panels.

2. Insulation: Minimum 1/2 inch thick, 2.0 pound per cubic foot density acoustic duct liner for lining cabinet interior.

3. Drain Pan: Galvanized steel with corrosion-resistant coating & Insulated galvanized steel with drain piping connection.

E. Supply Fan:

1. Fan: Single width, forward curved centrifugal fan, statically and dynamically balanced, resiliently mounted.

2. Fan Drive: V-Belt type, Cast iron or steel sheaves, dynamically balanced, bored to fit shafts and keyed. Select Variable and adjustable pitch motor sheave to obtain required rpm with sheaves set at mid-position as recommended by manufacturer.

B. Installer: Company specializing in performing Work of this section with minimum three years' experience.

1.7 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.8 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Accept equipment on site in factory packaging. Inspect for damage.

C. Protect equipment from damage by providing temporary covers until construction is complete in adjacent space.

1.9 COORDINATION

A. Section General Conditions - Administrative Requirements: Requirements for coordination.

B. Coordinate wall openings, piping rough-in locations, concrete housekeeping pads, and electrical rough-in locations to accommodate work of this section.

1.10 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five-year manufacturer's warranty for compressors.

1.11 MAINTENANCE SERVICE

A. Section General Conditions - Execution and Closeout Requirements: Maintenance service.

1.12 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

6. Controls.

7. Accessories.

C. Test Reports: Submit results of factory test at time of unit shipment.

D. Manufacturer's Installation Instructions: Submit assembly, support details, connection requirements, and include start-up instructions.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

F. Manufacturer's Field Reports: Submit start-up report for each unit.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of controls separate from units.

C. Operation and Maintenance Data: Submit manufacturer's descriptive literature, operating instructions, installation instructions, and maintenance and repair data.

1.5 QUALITY ASSURANCE

A. Cooling capacity: Rate in accordance with ARI 210/240] [ARI 340/360.

B. Sound Rating: Measure in accordance with ARI 270.

C. Insulation and adhesives: Conform to requirements of NFPA 90A.

D. Performance Requirements: Conform to minimum EER prescribed by ASHRAE 90.1 when tested in accordance with ARI 210/240, ARI 340/360.

E. Outside Air Damper Leakage: Test in accordance with AMCA 500.

F. Perform Work in accordance with NYCBC.

G. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

2. ARI 270 - Sound Rating of Outdoor Unitary Equipment.

3. ARI 340/360 - Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment.

B. Air Movement and Control Association International, Inc.:

1. AMCA 500 - Test Methods for Louvers, Dampers, and Shutters.

C. American Society of Heating, Refrigerating and Air-Conditioning Engineers:

1. ASHRAE 52.1 - Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter.

2. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.

D. National Electrical Manufacturers Association:

1. NEMA MG 1 - Motors and Generators.

E. National Fire Protection Association:

1. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.

1.3 SUBMITTALS

A. Contractor shall obtain the approved submittal for pre-purchased equipment.

B. Product Data: Contractor shall verify the following when the equipment arrives for acceptance:

1. Cooling and heating capacities.

2. Dimensions.

3. Rough-in connections and connection requirements.

4. Duct connections.

5. Electrical requirements with electrical characteristics and connection requirements.

SECTION 23 81 19

SELF-CONTAINED AIR-CONDITIONERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Contractor is responsible for scheduling delivery, accepting, receiving, transporting, rigging, installing, maintaining and testing the following equipment to be pre-purchased:

1. Self-contained air conditioner, water cooled.

2. Self-contained air conditioner with integral air cooled condenser.

B. Related Sections:

1. Section 23 05 48 - Vibration and Seismic Controls for HVAC Piping and Equipment: Product requirements for vibration isolators for placement by this section.

2. Section 23 09 93 - Sequence of Operations for HVAC Controls: Requirements for sequences of operation applying to units specified in this section.

3. Section 23 21 16 - Hydronic Piping: Execution requirements for water and drain piping connections to units specified in this section.

4. Section 23 33 00 - Air Duct Accessories: Product requirements for flexible connections for placement by this section.

5. Section 26 05 03 - Equipment Wiring Connections: Execution requirements for electrical connection to units specified by this section.

6. Section 26 29 23 - Variable-Frequency Motor Controllers: Product requirements for variable frequency controllers for placement by this section.

1.2 REFERENCES

A. Air-Conditioning and Refrigeration Institute:

1. ARI 210/240 - Unitary Air-Conditioning and Air-Source Heat Pump Equipment.

3.3 INTERFACE WITH OTHER PRODUCTS

A. Check location of outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

END OF SECTION

E. Fabrication: 12 gage thick extruded aluminum, welded assembly, with factory baked enamel finish. Custom color selected by Architect.

F. Mounting: Furnish with interior angle flange for installation.

G. Bird Screen: Bird screen with 1/2 inch square mesh for exhaust and 3/4 inch for intake.

H. Insect Screen: Aluminum mesh, set in aluminum frame.

I. External louver must match architectural louvers and be approved by Architect.

Note: All louvers will be submitted by the G.C. and reviewed by the AOR/EOR and approved by the building engineer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify inlet and outlet locations.

C. Verify ceiling and wall systems are ready for installation.

3.2 INSTALLATION

A. Install diffusers to ductwork with airtight connection.

B. Install balancing dampers on duct take-off to diffusers, grilles, and registers, whether or not dampers are furnished as part of diffuser, grille, and register assembly. Refer to Section 23 33 00.

C. Paint visible portion of ductwork behind air outlets and inlets matte black. Refer to Section 09 90 00.

D. Provide mounting frame/border to match ceiling construction for each type of outlet.

E. Install insulation blanket on diffusers and taped to duct collar insulation and edges of diffuser to make air tight.

F. Install or secure the retainer cable for diffusers having removable cores.

5. Or approved equal.

B. Type: Extruded aluminum, continuous linear slot with extruded aluminum pattern controller.

C. Frame: To match ceiling construction.

D. Fabrication: Aluminum extrusions .062 inch thick with end-caps, mitered corner and blank-offs for a continuous appearance.

E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.9 WALL EXHAUST AND RETURN REGISTERS/GRILLES

A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with spring or other device to set blades, [vertical] [horizontal] face.

B. Frame: 1-1/4 inch margin with concealed mounting.

C. Fabrication: Steel with 20 gage minimum frames and 22 gage minimum blades finish. Custom color selected by Architect.

D. Damper: Integral, gang-operated, opposed-blade type with removable key operator, operable from face.

2.10 LOUVERS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Greenheck Corp.

2. Industrial Louvers Inc.

3. Ruskin Manufacturing

4. Or approved equal.

B. Furnish materials in accordance with NYCBC.

C. Product Description: Stationary, Stormproof, drainable.

D. Type: 4 inch deep with blades on 45 degree slope with center baffle and return bend, heavy channel frame.

C. Frame: 1 inch margin. Provide end caps, mitered corners, and blank-offs for a continuous appearance made of heavy gauge extruded aluminum and mitered corners.

D. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.7 WALL SUPPLY REGISTERS/GRILLES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Anemostat Air Products
2. E. H Price Company
3. Nailor Industries, Inc.
4. Titus
5. Or approved equal.

B. Type: Streamlined and individually adjustable blades, 3/4 inch minimum depth, 3/4 inch maximum spacing with spring or other device to set blades, along long face, double deflection.

C. Frame: 1 inch margin with concealed mounting and gasket made of 20 gauge steel welded.

D. Damper: Integral, gang-operated opposed blade type with removable key operator, operable from face.

2.8 LINEAR MODULAR SLOT

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Anemostat Air Products
2. E. H Price Company
3. Nailor Industries, Inc.
4. Titus

1. Anemostat Air Products
2. E. H Price Company
3. Nailor Industries, Inc.
4. Titus
5. Or approved equal.

B. Furnish materials in accordance with NYCBC.

C. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with blades set at 45 degrees, along long face.

D. Frame: 1-1/4 inch margin with concealed mounting.

E. Fabrication: Steel with 20 gage minimum frames and 22 gage minimum blades, steel and aluminum with 20 gage minimum frame, or aluminum extrusions, with factory finish. Custom color selected by Architect.

F. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face where not individually connected to exhaust fans.

G. Gymnasiums: Furnish front pivoted or welded in place blades, securely fastened to be immobile.

2.6 FIXED LINEAR SUPPLY AND RETURN BAR GRILLES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Anemostat Air Products
2. E. H Price Company
3. Nailor Industries, Inc.
4. Titus
5. Or approved equal.

B. Type: Extruded aluminum with 1/8" or 1/4" bars on 1/4" or 1/2" centers with 0° or 15° deflection. Deflection bars shall be fixed and parallel to the long dimension.

C. Type: Continuous 1 inch wide slot wide, with adjustable vanes for left, right or vertical discharge.

D. Fabrication: 18 gauge steel with factory finish. Custom color selected by Architect.

E. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket mitered end border.

F. Plenum: Integral, 24 gauge galvanized steel, internally insulated with black coatings. Plenum mounted pattern controller can be field adjusted thru face of diffuser.

2.4 CEILING SUPPLY REGISTERS/GRILLES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Anemostat Air Products
2. E. H Price Company
3. Nailor Industries, Inc.
4. Titus
5. Or approved equal.

B. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille, two-way deflection.

C. Frame: 1-1/4 inch margin with countersunk screw concealed mounting and gasket made of 20 gauge steel welded.

D. Fabrication: Aluminum extrusions with factory finish. Custom color selected by Architect.

E. Damper: Integral, gang-operated, opposed-blade type with removable key operator, operable from face.

2.5 CEILING EXHAUST AND RETURN REGISTERS/GRILLES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

2.2 RECTANGULAR CEILING DIFFUSERS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Anemostat Air Products
2. E. H Price Company
3. Nailor Industries, Inc.
4. Titus
5. Or approved equal.

B. Type: Square stamped, multi-core or plaque panel construction diffuser to discharge air in required pattern with sector baffles where indicated.

C. Frame: To match ceiling construction.

D. Fabrication: 24 gauge steel with baked enamel. Custom color selected by Architect.

E. Accessories: Butterfly damper and multi-louvered equalizing grid with damper adjustable from diffuser face. Molded and foil-baked insulation blankets.

2.3 CEILING PLENUM SLOT DIFFUSERS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Anemostat Air Products
2. E. H Price Company
3. Nailor Industries, Inc.
4. Titus
5. Or approved equal.

B. Furnish materials in accordance with NYCBC.

E. Remove mock-up when directed by Architect.

1.8 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.9 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

PART 2 - PRODUCTS

2.1 ROUND CEILING DIFFUSERS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Anemostat Air Products
2. E. H Price Company
3. Nailor Industries, Inc.
4. Titus
5. Or approved equal.

B. Product Description: Type: Round, stamped or spun, multi-core diffuser made of 18 gauge steel, with sector baffles where indicated. Diffuser collar not more than 1 inch above ceiling. In plaster ceilings, furnish plaster ring and ceiling plaque.

C. Fabrication: Steel with baked enamel. Custom color selected by Architect.

D. Accessories: Butterfly damper and multi-louvered equalizing grid with damper adjustable from diffuser face. Provide retainer cable for diffuser with neck of 12" or larger.

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit sizes, finish, and type of mounting. Submit schedule of outlets and inlets showing type, size, location, application, throw, and noise level.

C. Samples: Submit one (1) of each required air outlet and inlet type.

D. Test Reports: Rating of air outlet and inlet performance.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of air outlets and inlets.

1.5 QUALITY ASSURANCE

A. Test and rate diffuser, register, and grille performance in accordance with ANSI/ ASHRAE 70.

B. Test and rate louver performance in accordance with AMCA 500.

C. Perform Work in accordance with NYCBC.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of Project.

1.7 MOCK-UP

A. Section General Conditions - Quality Requirements: Mock-up requirements.

B. Construct typical interior ceiling module with supply and return air outlets.

C. Locate where directed by Architect/Engineer.

D. Incorporate accepted mock-up as part of Work.

SECTION 23 37 00

AIR OUTLETS AND INLETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Diffusers.
2. Registers
3. Grilles.
4. Louvers.

B. Related Sections:

1. Section 09 90 00 - Painting and Coating: Execution and product requirements for Painting of ductwork visible behind outlets and inlets specified by this section.
2. Section 23 33 00 - Air Duct Accessories: Volume dampers for inlets and outlets.

1.2 REFERENCES

A. Air Movement and Control Association International, Inc.:

1. AMCA 500 - Test Methods for Louvers, Dampers, and Shutters.

B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:

1. ASHRAE 70 - Method of Testing for Rating the Performance of Air Outlets and Inlets.

C. Sheet Metal and Air Conditioning Contractors:

1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

1.3 SUBMITTALS

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2. DDC microprocessor.

3. Pressure transducers if it is not self-contained in the DDC microprocessor.

B. Contractor shall exchange information and coordinate the following set points with the ATC Contractor for each box.

1. Maximum primary air velocity or CFM set point.

2. Minimum primary air velocity or CFM set point.

3. Cooling set point.

4. Terminal unit discharge air volume (CFM).

C. All VAV boxes shall be identified on the bottom of the unit and on the shipping carton with the floor and box number that identifies it along with the CFM settings.

END OF SECTION

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify ductwork is ready for air terminal installation.

3.2 INSTALLATION

A. Connect to ductwork in accordance with Section 23 31 00.

B. Install ceiling access doors or locate units above easily removable ceiling components.

C. Support units individually from structure. Do not support from adjacent ductwork. All unit supports shall clear the access panels on the boxes.

D. Connect fan-powered air terminal units by flexible duct independently of ducts.

E. Install minimum 1" thick lined ductwork downstream of units. Refer to Section 23 05 48 - Noise and Vibration Controls for HVAC Piping and Equipment.

F. Install Work in accordance with NYCBC.

G. Install lined duct elbow on return air opening. Provide access for filter replacement.

3.3 ADJUSTING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for starting and adjusting.

B. Reset volume with damper operator attached to assembly allowing flow range modulation from 100 percent of design flow to 0 percent full flow.

3.4 INTERFACING WITH AUTOMATIC TEMPERATURE CONTROLS (ATC) VENDOR - DIVISION 23 09 93

A. The following equipment will be supplied by the ATC Contractor and installed by the terminal manufacturer:

1. Damper motor.

1. VAV boxes shall be complete with 24 volt electric motor drive and DDC modules furnished and installed at the factory by the VAV box manufacturer. They shall be mounted in an easily accessible enclosure, and completely wired requiring only power, signal and room temperature sensor connection. An automatic air measuring device shall indicate cfm of each box instantaneously on the portable field console. The VAV box manufacturer shall pipe the controller's transducers to the box flow sensor. The VAV box manufacturer will coordinate with the manufacturer of the DDC modules to insure that the actuators positively lock on the VAV box shaft/linkage. The VAV manufacturer must mount the DDC controllers to the VAV boxes. In addition, the VAV terminal box manufacturer shall coordinate with ATC Contractor for initial damper set-up and adjustments.

2. VAV boxes shall be pressure independent and shall reset primary air volume as determined by the space thermostat regardless of changes in system air pressure. The primary air shall be normally open on loss of power unless otherwise specified. VAV boxes shall have test ports for manual verification and calibration of the air flow measuring device. VAV box controllers shall include provision for automatic calibration of air flow measuring device.

3. Velocity Reset Controller and Sensor:

   a. Electric: 24 volt.

   b. Calibration pressure taps for pressure independent control to compensate for varying inlet static pressure.

   c. Minimum and maximum limits set at reset device.

   d. Maintain airflow to within 5 percent of set point with inlet static pressure variations up to 4 inches.

4. Sound Ratings: Not to exceed criteria listed in Specifications Section 23 05 48 - Noise and Vibration Controls for HVAC Piping and Equipment:

I. Temperature Sensor: Refer to Section 23 09 93.

J. Sequence of Operation: Refer to Section 23 09 93.

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Anemostat Air Products.
2. Nailor.
3. Titus
4. Or approved equal.

B. Product Description: Variable air volume terminal units for connection to central air systems, with electronic/DDC controls, and with or without heating coils.

C. Identification: Furnish each air terminal unit with identification label and airflow indicator. Include unit nominal airflow, maximum factory-set airflow and minimum factory-set airflow and coil type.

D. Basic Assembly:

1. Casings: Minimum 22 gage galvanized steel.
2. Lining: Minimum 1/2 inch thick fiber-free insulation, 1.5 lb./cu ft density, meeting NFPA 90A requirements and UL 181 erosion requirements. Minimize mold growth to meet ASTM G21/22.

E. Basic Unit:

1. Configuration: Air volume damper assembly inside unit casing. Locate control components inside protective metal shroud.
2. Volume Damper: Construct of galvanized steel with peripheral gasket and self-lubricating bearings; maximum damper leakage: 2 percent of design air flow at 3 inches rated inlet static pressure.
3. Mount damper operator to position damper normally open.

F. Attenuation Section: Line attenuation sections with 2 inch thick insulation where indicated on drawings.

G. Heating Coil: Not Used

H. Automatic Damper Operator:

B. Perform Work in accordance with NYCBC.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.7 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 COORDINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work with Section 23 09 00 - Instrumentation and Controls and 23 09 93 - Sequence of Operations.

1.10 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

1.11 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Requirements for extra materials.

B. Furnish two (2) additional electric motors of each size of fan powered terminal units.

PART 2 - PRODUCTS

2.1 SINGLE DUCT VARIABLE AIR VOLUME TERMINAL UNITS (VAV)

C. National Fire Protection Association:

1. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.

D. Underwriters Laboratories Inc.:

1. UL 181 - Factory-Made Air Ducts and Connectors.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings indicating airflow, static pressure, heating coil capacity and NC designation. Include electrical characteristics and connection requirements. Include schedules listing discharge and radiated sound power level for each of second through sixth octave bands at inlet static pressures of 1 inch to 4 inches wg.

C. Manufacturer's Installation Instructions: Submit support and hanging details, and service clearances required.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of units and controls components.

C. Operation and Maintenance Data: Submit manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists. Include directions for resetting constant volume regulators.

1.5 QUALITY ASSURANCE

A. Test and rate air terminal unit's performance for air pressure drop, flow performance, and acoustical performance in accordance with ARI 880 and ARI 885. Attach ARI seal to each terminal unit.

SECTION 23 36 00

AIR TERMINAL UNITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Constant volume terminal units.
2. Variable volume terminal units.

B. Related Sections:

1. Section 23 05 13 - Common Motor Requirements for HVAC Equipment: Product requirements for fan powered terminal units for placement by this section.
2. Section 23 09 00 - Instrumentation and Control for HVAC: Product requirements for control components to interface with air terminal units.
3. Section 23 09 93 - Sequence of Operations for HVAC Controls: Sequences of operation applying to units in this section.
4. Section 26 05 03 - Equipment Wiring Connections: Execution requirements for electrical connections to air terminal units specified by this section.

1.2 REFERENCES

A. American Refrigeration Institute:

1. ARI 880 - Air Terminals.
2. ARI 885 -Procedure for Estimating Occupied Space Sound Levels in the Application of Air Terminals and Air Outlets.

B. National Electrical Manufacturers Association:

1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

L. Exhaust fans exposed to outdoor weather shall have two coats of chlorinated rubber base paint applied in the factory.

M. Insulated fans: Cleanout doors shall be raised type to finish flush with outside of insulation covering.

3.4 MANUFACTURER'S FIELD SERVICES

A. Section General Conditions - Quality Requirements: Requirements for manufacturer's field services.

B. Before start-up, factory technician shall be on site to certify the alignment in a written report.

C. Furnish services of factory trained representative for minimum of one (1) day to start-up, calibrate controls, and instruct Owner on operation and maintenance.

3.5 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for cleaning.

B. Vacuum clean coils and inside of fan cabinet.

3.6 DEMONSTRATION

A. Section General Conditions: Requirements for demonstration and instruction.

B. Demonstrate fan operation and maintenance procedures.

3.7 PROTECTION OF FINISHED WORK

A. Section General Conditions - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Do not operate fans for until ductwork is clean, filters in place, bearings lubricated, and fan has been test run under observation.

END OF SECTION

B. Verify roof curbs are installed and dimensions are as shown on shop drawings.

3.2 PREPARATION

A. Install roof curbs.

3.3 INSTALLATION

A. Secure roof and wall fans with cadmium plated steel lag screws to structure.

B. Suspended Cabinet Fans: Install flexible connections specified in Section 23 33 00 between fan and ductwork. Ensure metal bands of connectors are parallel with minimum one inch flex between ductwork and fan while running.

C. Install motorized dampers on inlet to roof and wall exhaust fans.

D. Provide backdraft dampers on outlet from cabinet and ceiling fans and as indicated on Drawings.

E. Install safety screen where inlet or outlet is exposed.

F. Pipe scroll drains to nearest floor drain.

G. Provide adjustable sheaves required for final air balance. Replace adjustable sheave with fixed sheaves after balancing as required.

H. Each fan shall be factory painted inside and out with high grade machinery grey enamel paint.

I. Fans with wheel diameters up to 27 inches shall have overhung wheel and pulley, Arrangement 2. Fans with larger diameter wheels shall have overhung pulley, Arrangement 3. Fans with wheels 24 inches and larger shall have cleanout door in scroll, with wedge type latches.

J. Fans too large to pass through available doorways may be split in halves along center of shaft, with hubs, etc., arrange to bolt together when erected. Such bolts shall have double nuts and cotter pins to prevent same from loosening. Provide scroll drains in all fans.

K. Fan wheel diameters shown are minimum diameter. Fan BHP indicated for each duty shall not be exceeded over its entire operating range.

B. Product Description: V-belt drive with galvanized steel housing lined with 1 inch acoustic glass fiber insulation, integral inlet cone, removable access doors on 3 sides, inlet and outlet duct collar, gravity backdraft damper in discharge, horizontal hanging brackets.

C. Fan Wheel: Backward inclined centrifugal type, aluminum construction.

D. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

E. Motor and Drive Mounting: Out of air stream.

F. Motor: Open drip proof or TEFC to suit the application

G. Bearings: ABMA 9 life at 200,000 hours.

H. Accessories:

1. Belt guard.
2. Motor cover.
3. Inlet safety screen.
4. Outlet safety screen.
5. Flexible duct connector.
6. Filter box with throwaway type filter.
7. Flanged inlet and outlet.
8. Inlet and Outlet ductwork companion flange.
9. Disconnect Switch: NEMA 250 Type 1, heavy duty enclosure.
10. Fan speed controller.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section or approved equal - Administrative Requirements: Coordination and project conditions.

3. Scroll Drain: 1/2 inch steel pipe coupling welded to low point of fan scroll.

2.2 INLINE CEILING FANS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Greenheck Corp.
2. Loren Cook Company
3. Twin Cities.
4. Or approved equal.

B. Configuration: Inline.

C. Centrifugal Fan Unit: Direct driven with galvanized steel housing lined with 1/2 inch acoustic insulation, resilient mounted motor, gravity backdraft damper in discharge opening, integral inlet and outlet duct collar.

D. Disconnect Switch: Fan-mounted toggle switch for thermal overload protected motor.

E. Wheel: Double width, double inlet Centrifugal forward curved type constructed of injection molded or polypropylene resin.

F. Motor: Open drip proof type with permanently lubricated sealed bearings and thermal overload protection, mounted on rubber-shear isolators.

2.3 CENTRIFUGAL SQUARE INLINE FANS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Greenheck Corp.
2. Loren Cook Company.
3. Twin Cities.
4. Or approved equal.

D. Housing:

1. Steel continuously welded, braced and designed to minimize turbulence with spun inlet bell and shaped cut-off.

2. Factory finish before assembly to manufacturer's standard. For fans handling air downstream of humidifiers, furnish two additional coats of paint.

3. Bolted construction with horizontal flanged split housing, where indicated.

4. Fabricate plug fans without volute housing, in lined steel cabinet.

E. Bearings and Sleeves:

1. Bearings: Pillow block type, self-aligning, grease-lubricated roller bearings, or ABMA 11, L-10 life at 120,000 hours.

2. Shafts: Hot rolled steel, ground and polished, with key way, protectively coated with lubricating oil, and shaft guard.

3. V-Belt Drive: Cast iron or steel sheaves, dynamically balanced, keyed. Variable and adjustable pitch sheaves for motors 15 hp and under, selected so required rpm is obtained with sheaves set at mid-position. Fixed sheave for 20 hp and over or fan controlled by VFD, matched belts (minimum 2 belts), and drive rated as recommended by manufacturer or minimum 1.5 times nameplate rating of motor.

4. Belt Guard: Fabricate to SMACNA Standard; 0.106 inch thick, 3/4 inch diamond mesh wire screen welded to steel angle frame or equivalent, prime coated. Secure to fan or fan supports without short circuiting vibration isolation, with provision for adjustment of belt tension, lubrication, and use of tachometer with guard in place.

F. Accessories:

1. Inlet/Outlet Screens: Galvanized steel welded grid.

2. Access Doors: Shaped to conform to scroll, with quick opening latches and gaskets.

PART 2 - PRODUCTS

2.1 CENTRIFUGAL FANS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Greenheck Corp.
2. New York Blower
3. Twin Cities.
4. Or approved equal.

B. Performance:

1. Performance Base: Sea level conditions.
2. Temperature Limit: Maximum 300 degrees F for non-smoke control systems and 600 degrees F for smoke control systems.
3. Static and Dynamic Balance: Eliminate vibration or noise transmission to occupied areas.

C. Wheel and Inlet:

1. Backward Inclined: Steel construction with smooth curved inlet flange, back plate, backward curved blades welded to flange and back plate; cast steel hub riveted to back plate and keyed to shaft with set screws.
2. Forward Curved: Galvanized steel construction with inlet flange, back plate, shallow blades with inlet and tip curved forward in direction of airflow, welded to flange and back plate; steel hub swaged to back plate and keyed to shaft with set screw.
3. Airfoil Wheel: Steel construction with smooth curved inlet flange, back plate die formed hollow airfoil shaped blades continuously welded at tip flange, and back plate; cast steel hub riveted to back plate and keyed to shaft with set screws.
4. Wheels shall be continuously welded construction.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three (3) years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum 3 years' experience.

1.7 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.8 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Protect motors, shafts and bearings from weather and construction dust.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.10 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish 5-year manufacturer's warranty for fans.

1.11 MAINTENANCE

A. Section General Conditions - Execution and Closeout Requirements: Requirements for maintenance.

1.12 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish two (2) sets of belts for each fan.

B. Shop Drawings: Indicate size and configuration of fan assembly, mountings, weights, ductwork and accessory connections.

C. Product Data: Submit data on each type of fan and include accessories, fan curves with specified operating point plotted, power, RPM, sound power levels for both fan inlet and outlet at rated capacity, electrical characteristics and connection requirements.

D. Manufacturer's Installation Instructions: Submit fan manufacturer's instructions.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

F. Submit motor data in accordance with 230513.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts list and wiring diagrams.

1.5 QUALITY ASSURANCE

A. Performance Ratings: Conform to AMCA 210 and bear AMCA Certified Rating Seal.

B. Sound Ratings: AMCA 301, tested to AMCA 300, and bear AMCA Certified Sound Rating Seal.

C. UL Compliance: All fans shall be UL listed and labeled, designed, manufactured, and tested in accordance with UL 705. Fans used for smoke control shall comply with UL 705 File No. MH17511. Fans used for grease removal shall comply with UL 762 File No. MH11745.

D. Balance Quality: Conform to AMCA 204.

E. Energy Recovery Unit Wheel Energy Transfer Rating: Meet ARI 1060.

F. Perform Work in accordance with NYCBC.

1.2 REFERENCES

A. American Bearing Manufacturers Association:

1. ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.

2. ABMA 11 - Load Ratings and Fatigue Life for Roller Bearings.

B. Air Movement and Control Association International, Inc.:

1. AMCA 99 - Standards Handbook.

2. AMCA 204 - Balance Quality and Vibration Levels for Fans.

3. AMCA 210 - Laboratory Methods of Testing Fans for Aerodynamic Performance Rating.

4. AMCA 300 - Reverberant Room Method for Sound Testing of Fans.

5. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data.

C. American Refrigeration Institute:

1. ARI 1060 - Air-to-Air Energy Recovery Ventilation Equipment Certification Equipment Program.

D. National Electrical Manufacturers Association:

1. NEMA MG 1 - Motors and Generators.

2. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

E. Underwriters Laboratories Inc.:

1. UL 705 - Power Ventilators, Smoke Control File No. MH17511.

2. UL 762 Grease Removal File No. MH11745.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

SECTION 23 34 00

HVAC FANS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Centrifugal fans.
2. Inline ceiling fans.
3. Centrifugal square inline fans.

B. Related Sections:

1. Section 23 05 13 - Common Motor Requirements for HVAC Equipment: Product requirements for motors for placement by this section.
2. Section 23 05 48 - Noise and Vibration Controls for HVAC Piping and Equipment: Product requirements for resilient mountings and snubbers for fans for placement by this section.
3. Section 23 05 49: Seismic Provisions and Seismic Restraints: Product requirements for resilient mountings and snubbers for fans for placement by this section.
4. Section 23 07 00 - HVAC Insulation: Product requirements for power ventilators for placement by this section.
5. Section 23 09 00 - Instrumentation and Control for HVAC: Product requirements for control components to interface with fans.
6. Section 23 31 00 - HVAC Ducts and Casings: Product requirements for hangers for placement by this section.
7. Section 23 33 00 - Air Duct Accessories: Product requirements for duct accessories for placement by this section.
8. Section 26 05 00 - Equipment Wiring Connections: Execution and product requirements for connecting equipment specified by this section.

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C. Install static pressure gages to measure across filters and filter banks, (inlet to outlet). On multiple banks, provide manifold and single gage.

D. Provide instruments with scale ranges selected according to service with largest appropriate scale.

E. Install thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.

F. Adjust thermometers to final angle, clean windows and lenses, and calibrate to zero.

G. Install thermometers in the following locations:

1. Each supply air zone.
2. Outside air.
3. Return air.
4. Mixed air.

3.4 DEMONSTRATION

A. Section General Conditions - Execution and Closeout Requirements: Requirements for demonstration and training.

B. Demonstrate re-setting of fire dampers and fire smoke dampers to Owner's representative.

3.5 STATIC PRESSURE AND FILTER GAGES:

A. Install filter and static pressure gages in the following locations:

1. Built up filter banks.
2. Unitary filter sections.
3. Supply fan discharge.

END OF SECTION

6. Before and after each automatic control damper.

7. Before and after each fire damper, smoke damper, combination fire and smoke damper.

8. Downstream of each VAV box.

9. Install at locations for cleaning kitchen exhaust ductwork in accordance with NFPA 96 and NYCMC.

D. Access Door Sizes: Install minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access, and as indicated on Drawings. Install 4 x 4 inch for balancing dampers only. Review locations prior to fabrication.

E. Install temporary duct test holes where indicated on Drawings and required for testing and balancing purposes. Cut or drill in ducts. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

F. Install fire dampers, combination fire and smoke dampers and smoke dampers at locations as indicated on Drawings and where required. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.

1. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92A UL555 and UL555S.

2. Install dampers square and free from racking with blades running horizontally.

3. Do not compress or stretch damper frame into duct or opening.

4. Handle damper using sleeve or frame. Do not lift damper using blades, actuator, or jack shaft.

5. Install bracing for multiple section assemblies to support assembly weight and to hold against system pressure. Install bracing as needed.

3.3 INSTALLATION - THERMOMETERS

A. Install thermometers in air duct systems on flanges.

B. Locate duct-mounted thermometers minimum 10 feet downstream of mixing-dampers, coils, or other devices causing air turbulence.

A. Dial Gages: 3-1/2 inch diameter dial in metal case, diaphragm actuated, black figures on white background, front calibration adjustment, 2 percent of full scale accuracy.

B. Accessories: Static pressure tips with compression fittings for bulkhead mounting, 1/4 inch diameter tubing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify rated walls are ready for fire damper and fire smoke damper installation. Verify the framed opening size in dry walls.

C. Verify ducts and equipment installation is ready for accessories.

D. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

3.2 INSTALLATION

A. Install in accordance with NFPA 90A, and follow SMACNA HVAC Duct Construction Standards - Metal and Flexible. Refer to Section 23 31 00 for duct construction and pressure class.

B. Install dampers and accessories where indicated on Drawings.

C. Access Doors: Install access doors at the following locations and as indicated on Drawings:

1. Spaced every 50 feet of straight duct.
2. Upstream of each reheat coil.
3. Before and after each duct mounted filter.
4. Before and after each duct mounted coil.
5. Before and after each duct mounted fan.

C. Connector: Fabric crimped into metal edging strip.

1. Fabric: UL 181 Class 0 listed fire-retardant neoprene coated woven glass fiber fabric conforming to NFPA 90A, minimum density 30 oz per sq yd.

2. Net Fabric Width: Minimum 6 inches wide; maximum 10 inches wide.

3. Metal: 3 inch wide and 24 gage galvanized steel.

D. High Density Vinyl Sheet: Minimum 0.55 inch thick, 0.87 lbs. per sq ft, 10 dB attenuation in 10 to 10,000 Hz range.

2.9 DUCT TEST HOLES

A. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Furnish extended neck fittings to clear insulation.

B. Provide tappings in ducts for thermometers where specified. In addition, provide an airtight plugged tapping located as follows:

1. Upstream of each reheat coil.

2. Downstream of each reheat coil.

3. In each supply and return air duct at each floor.

2.10 DIAL THERMOMETERS

A. Thermometer: ASTM E1, stainless steel case, bimetallic helix actuated with silicone fluid damping, white with black markings and black pointer hermetically sealed lens, stainless steel stem.

1. Size: 3 inch.

2. Lens: Clear Lexan.

3. Accuracy: 1 percent.

4. Calibration: Degrees F.

2.11 STATIC PRESSURE GAGES

H. Finish: Mill galvanized.

2.6 VOLUME CONTROL DAMPERS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

B. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized frame channel with suitable hardware.

C. End Bearings: Except in round ductwork 12 inches and smaller, furnish end bearings. On multiple blade dampers, furnish oil-impregnated nylon or sintered bronze bearings. Furnish closed end bearings on ducts having pressure classification over 2 inches wg.

D. Quadrants:

1. Furnish locking, indicating quadrant regulators on single and multi-blade dampers.

2. On insulated ducts mount quadrant regulators on standoff mounting brackets, bases or adapters.

3. Where rod lengths exceed 30 inches furnish regulator at both ends.

2.7 REMOTE CABLE CONTROL VOLUME DAMPERS

A. Provide cable control system for all volume dampers located above gpysum board and other inaccessible ceilings.

B. Bowden cable control kit shall provide all required hardware that shall be mounted onto all rectangular and round volume dampers and provide all interlocking gears and cabling for ceiling mounted control. Coverplate shall be 7/8" diameter cold rolled steel cover with zinc plating for painting by General Contractor. Provide five (5) 12" wrenches for operation.

2.8 FLEXIBLE DUCT CONNECTIONS

A. Provide a suitable flexible connection in both the intake and discharge sides of each fan and air handling unit, where they connect to ductwork.

B. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

5. Access doors located on the bottom of ducts shall have cam fasteners in lieu of hinges in order to avoid interference with ceiling channel supports.

6. Provide access doors upstream and downstream of reheat coils.

7. Provide access door for all dampers including volume dampers, fire dampers, smoke dampers, combination dampers and motorized dampers.

8. Access panels with sheet metal screw fasteners are not acceptable.

2.5 DYNAMIC FIRE DAMPERS

A. Fabricate in accordance with NFPA 90A and UL 555.

B. Fire Resistance: see drawings.

C. Dynamic Closure Rating: Dampers classified for dynamic closure to 2000 fpm and 4 inches wg static pressure.

D. Construction:

1. Integral Sleeve Frame: Minimum 14 gage roll formed galvanized steel. Length: 12 inches.

2. Blades:

a. Style: Curtain type.

b. Action: Spring closure upon fusible link release.

c. Material: Minimum 24 gage roll formed, galvanized steel.

3. Closure Springs: Type 301 stainless steel, constant force type.

E. Fusible Link Release Temperature: 212 degrees F.

F. Mounting: Vertical or horizontal as indicated on Drawings.

G. Duct Transition Connection, Damper Style:

1. B style - rectangular connection, blades out of air stream, high free area.

2. G style - A style connection, grille mounting tabs at end of sleeve for grille.

2. Mounting: External.

3. Each combination fire smoke damper shall be equipped with a UL Classified "Fire Stat" to permit damper to reopen during dynamic smoke control and shall mechanically and electrically close damper upon reaching the damper's maximum degradation test temperature in accordance with UL555S. Damper can be opened via the Fire Alarm System for smoke purge. The damper operation and construction shall meet requirements of UL555S, latest edition.

4. All wiring material required to interconnect the operator with detection and/or alarm or other systems shall be furnished by this Contractor.

M. Fall-safe design shall enable damper to automatically assume the desired position when power is interrupted.

N. Finish: Mill galvanized.

O. Damper switch package to remotely indicate blade positions.

P. Factory installed sleeve and mounting angles per local codes. Furnish silicone caulk factory applied to sleeve at damper frame to comply with leakage rating requirements.

2.4 DUCT ACCESS DOORS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

B. Fabrication: Rigid and close fitting of galvanized steel or stainless steel with sealing gaskets and quick fastening locking devices. For insulated ductwork, furnish minimum 1 inch thick insulation with sheet metal cover, minimum 22 gage interior casing.

1. Less than 12 inches square, secure with sash locks.

2. Up to 18 inches Square: Furnish two hinges and two sash locks.

3. Up to 24 x 48 inches: Three hinges and two compression latches.

4. Larger Sizes: Furnish additional hinge.

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Ruskin.
2. Greenheck.
3. Air Balance, Inc.
4. Or approved equal.

B. Fabricate in accordance with NFPA 90A, UL 555, and UL 555S.

C. Fire Resistance: see drawings.

D. Leakage Rating: Class I, maximum of 8 cfm at 4 inches wg differential pressure.

E. Damper Temperature Rating: 350 degrees F for smoke control systems.

F. Frame: 13 gage, galvanized steel.

G. Blades:

1. Style: Airfoil-shaped, single piece, double skin.
2. Action: Opposed.
3. Orientation: Horizontal.
4. Material: Minimum 16 gage equivalent thickness, galvanized steel.
5. Width: Maximum 6 inches.

H. Bearings: Stainless steel pressed into frame.

I. Seals: Silicone blade edge seals and flexible stainless steel jamb seals.

J. Linkage: Concealed in frame.

K. Release Device: Close in controlled manner and allow damper to be automatically reset.

L. Actuator:

1. Type: Electric 120 volt, 60 hertz, two-position, fail close.

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five-year manufacturer warranty for duct accessories.

1.12 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish two (2) of each size and type of fusible link.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR ALL ACCESSORIES

A. All accessories shall have a pressure rating equivalent to the duct system that they are installed in.

B. Material construction shall match system that accessories are installed in.

2.2 BACK-DRAFT DAMPERS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Ruskin.

2. Greenheck.

3. Air Balance, Inc.

4. Or approved equal.

B. Product Description: Multi-Blade, back-draft dampers: Parallel-action, gravity-balanced, Galvanized 16 gage thick steel. Blades, maximum 6 inch width, center pivoted, with felt or flexible vinyl sealed edges. Blades linked together in rattle-free manner with 90-degree stop, steel ball bearings, and plated steel pivot pin. Furnish dampers with adjustment device to permit setting for varying differential static pressure.

2.3 COMBINATION FIRE AND SMOKE DAMPERS

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.7 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.8 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Protect dampers from damage to operating linkages and blades.

C. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.

D. Storage: Store materials in a dry area indoor, protected from damage.

E. Handling: Handle and lift dampers in accordance with manufacturer's instructions. Protect materials and finishes during handling and installation to prevent damage.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.10 COORDINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work where appropriate with building control Work.

1.11 WARRANTY

5. Volume control dampers.

6. Cable control dampers.

7. Duct access doors.

8. Duct test holes.

E. Product Data: For fire dampers, smoke dampers, and combination fire and smoke dampers, submit the following:

1. Include UL ratings, dynamic ratings, leakage, pressure drop and maximum pressure data.

2. Indicate materials, construction, dimensions, wiring diagrams and installation details.

3. Damper pressure drop ratings based on tests and procedures performed in accordance with AMCA 500.

F. Manufacturer's Installation Instructions: Submit for Fire and Combination Smoke and Fire Dampers.

G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of access doors, test holes.

C. Operation and Maintenance Data: Submit for Combination Smoke and Fire Dampers.

1.5 QUALITY ASSURANCE

A. Dampers tested, rated and labeled in accordance with the latest UL requirements.

B. Damper pressure drop ratings based on tests and procedures performed in accordance with AMCA 500.

C. Perform Work in accordance with NYCBC and NYCMC.

1. AMCA 500 - Test Methods for Louvers, Dampers, and Shutters.

B. ASTM International:

1. ASTM E1 - Standard Specification for ASTM Thermometers.

C. National Fire Protection Association:

1. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.

2. NFPA 92A - Recommended Practice for Smoke-Control Systems.

D. Sheet Metal and Air Conditioning Contractors:

1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

2. SMACNA – Fire, Smoke and Radiation Damper Installation Guide

E. Underwriters Laboratories Inc.:

1. UL 555 - Standard for Safety for Fire Dampers.

2. UL 555C - Standard for Safety for Ceiling Dampers.

3. UL 555S - Standard for Safety for Smoke Dampers.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers, duct access doors and duct test holes.

C. Product Data: Submit data for shop fabricated assemblies and hardware used.

D. Product Data: Submit for the following. Include where applicable electrical characteristics and connection requirements.

1. Fire dampers including locations and ratings.

2. Smoke dampers including locations and ratings.

3. Backdraft dampers.

4. Flexible duct connections.

SECTION 23 33 00

AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Back-draft dampers.
2. Combination fire-and-smoke dampers.
3. Duct access doors.
4. Dynamic fire dampers.
5. Volume control dampers.
6. Remote cable control damper.
7. Flexible duct connections.
8. Duct test holes.
9. Dial thermometers.
10. Static pressure gages.

B. Related Sections:

1. Section 23 09 00 - Instrumentation and Control for HVAC: Execution and Product requirements for connection and control of Combination Smoke and Fire Dampers for placement by this section.
2. Section 23 31 00 - HVAC Ducts and Casings: Requirements for duct construction and pressure classifications.
3. Section 26 05 03 - Equipment Wiring Connections: Execution requirements for connection of electrical Combination Smoke and Fire Dampers specified by this section.

1.2 REFERENCES

A. Air Movement and Control Association International, Inc.:

D. It is the intent that the permanent HVAC systems will not be used for temporary heating and cooling. Contractors shall provide temporary heating and cooling as required to meet construction requirements.

E. After final cleaning of HVAC system and building, the system shall be flushed with 100% outdoor air for a two-week time period in accordance with ASHRAE Standard 62. After flush-out procedure, permanent final filters shall be installed in their respective systems.

F. After completion of the job, Contractor shall submit a letter indicating that the IAQ measures noted in this project have been met. The letter shall include specific dates for all cleaning, flushing and filter replacements.

3.7 SCHEDULES

A. Ductwork Material Schedule:

AIR SYSTEM	**MATERIAL**
Supply	Galvanized Steel
Supply	Galvanized Steel
Return and Spill	Galvanized Steel
General Exhaust	Galvanized Steel
Outside Air Intake	Galvanized Steel

B. Ductwork Pressure Class Schedule:

AIR SYSTEM	**PRESSURE CLASS**
Constant Volume Supply	3 inch wg regardless of velocity.
Variable Air Volume Supply (downstream of VAV boxes)	2 inch wg regardless of velocity.
Variable Air Volume Supply (upstream of VAV boxes)	6 inch wg
Return and Relief, Spill	3 inch wg
General Exhaust	3 inch wg

Note: Minimum pressure class for systems other than those listed above shall be 2" w.g.

END OF SECTION

3.6 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT PLAN

A. The Contractor shall incorporate all protective measures as required to prevent the contamination of the duct system and air distribution system. Air pollutants as described in the "SMACNA-IAQ Guidelines for Occupied Buildings Under Construction" Tables 2-2 and 2-3 shall be prevented from entering the duct system and air distribution system. Preventative measures including, but not limited to the following, shall be incorporated:

1. All stored ductwork and air distribution equipment shall be kept dry and clean.
2. Sealing of all ductwork and louvers prior to finish cleaning of building.
3. Utilization of temporary filters.
4. Sealing of fans, fan coil units, etc.
5. Duct and equipment cleaning.
6. Provisions for temporary construction exhaust fans to remove dust, odors, etc.
7. HVAC protection as defined in Chapter 3 of the above noted SMACNA manual.
8. Source control as defined in the above noted SMACNA manual.
9. Pathway interruption as defined in the above noted SMACNA manual.
10. Housekeeping as defined in the above noted SMACNA
11. Scheduling as defined in the above noted SMACNA manual.

B. Contractor shall coordinate systems installation with General Contractor and develop construction Indoor Air Quality plan. Plan shall be submitted to Professional for review. Plan shall identify methods to prevent contamination of the duct system along with schedule/phasing issues.

C. If the Contractor does not meet the requirements of this section, the entire duct system shall be cleaned as noted in paragraph 3.5 of this Section.

3. Tests shall be made prior to insulation of system being tested using suitable test equipment including test blower, "U" tube, orifice, tubing and cocks, arranged to indicate the amount of air leakage.

4. The leakage tests of the ductwork shall be made with pressure in the system, obtained by operation of the test blower.

5. All joints shall be inspected and checked for audible leakage, repaired if necessary and retested.

6. Contractor shall test ductwork using SMACNA leakage test methods to limit amount of leakage per sq. ft. of ductwork prescribed for Leakage Class 6 or 6" WG Duct Design.

3.5 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.

B. Scope of Work:

1. Mechanical Contractor shall provide all labor, materials, facilities, equipment and services to thoroughly clean HVAC system including all supply air and exhaust ductwork, associated air devices, turning vanes, dampers, reheat coils, etc. Mechanical Contractor shall remove, store and re-install ceiling tiles as required for access to systems. Mechanical Contractor shall provide and install duct access doors as required for proper access. Mechanical Contractor shall repair or replace all damaged ceiling tiles, wall penetrations, ceiling penetrations, floor penetrations, insulation, control components or other damaged items to match existing.

2. Determine cleaning method to prevent damage to existing systems. Notify Engineer of proposed method and impact on system prior to start. Also notify Engineer of any system defects discovered during cleaning process..

C. Clean duct systems with high power vacuum machines. Protect equipment with potential to be harmed by excessive dirt with filters, or bypass during cleaning. Install access openings into ductwork for cleaning purposes.

D. The duct system shall be inspected and certified by an air system cleaning specialist, member of NADCA, to confirm that it meets all NADCA standards.

3.3 INTERFACE WITH OTHER PRODUCTS

A. Install openings in ductwork where required to accommodate thermometers and controllers. Install pitot tube openings for testing of systems. Install pitot tube complete with metal can with spring device or screw to prevent air leakage. Where openings are provided in insulated ductwork, install insulation material inside metal ring.

B. Connect diffusers to low pressure ducts with 18 inches maximum length of flexible duct held in place with strap or clamp.

C. Connect air outlets and inlets to supply ducts with 18 inches maximum length of flexible duct. Do not use flexible duct to change direction.

3.4 DUCT PRESSURE TEST

A. Pressure Testing of Ductwork

1. Air pressure testing during erection shall include separate air leakage tests of plenum, the horizontal distribution system ductwork and, after all ductwork is installed and the central station apparatus is erected, leakage testing of the entire System. The testing shall apply to all ductwork in systems constructed to 3" w.g. or higher pressure classes.

2. Test all ductwork at corresponding pressure class to which it is constructed. Duct leakage shall be limited to the following:

Average Size of Run	100 ft. Run	
Diameter or Equivalent	(A	B)
12 inches or less	10	1"
20 inches or less	15	2"
30 inches or less	25	6"
40 inches or less	30	9"
50 inches or less	30	9"

(A) Permissible loss in cfm.
(B) Corresponding differential gauge reading (0.875 inch diameter orifice plate).

J. Install residue traps in kitchen hood exhaust ducts at base of vertical risers with provisions for clean out.

K. Kitchen hood exhaust ducts: Use stainless steel for ductwork exposed to view and stainless steel or carbon steel where ducts are concealed.

L. Coordinate with all affected trades to insure that no ceilings, equipment or other materials other than as specifically provided herein are supported from ductwork or the ductwork hanger system.

M. Coordinate with others as necessary to insure that access doors have been provided in hung ceilings, shaft wall, or other construction, of ample size for proper operation and maintenance of the installation.

N. While the drawings shall be adhered to as closely as possible, the right is reserved to vary the run and size of ducts during the progress of the work if required to meet structural conditions.

O. Sheet metal sub-contractor shall install all ductwork in strict adherence to the ceiling height schedules indicated on the Architect's drawings. Sheet metal sub-contractor shall consult with the Heating, Fire Protection, Electric and Plumbing sub-contractors and shall, in conjunction with the above contractors, establish the necessary space requirements for each trade. The sheet metal ductwork shall, whether indicated or not, rise and/or drop and/or change in shape to clear any and all conduits, lighting fixtures, sprinklers, plumbing and heating piping to maintain the desired ceiling heights.

P. Transition pieces from rectangular to round at fan discharge shall be 16 gauge all-welded construction. Provide suitable angle reinforcement. Branches off medium and high pressure duct mains shall have conical taps.

Q. Provide watertight stainless steel or copper counter flashings around all ducts passing through openings in exterior wall or through roof.

R. Provide a fire damper and sheetmetal sleeve for each duct penetration through fire rated walls. Wherever ducts penetrate Mechanical Equipment Room walls, floor and ceiling slabs, and no fire smoke or fire damper is required, the entire space between duct and wall sleeve or slab opening shall be tightly packed with approved soundproof material. Each face of opening shall further be caulked airtight with approved non-hardening resilient caulking.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify sizes of equipment connections before fabricating transitions.

3.2 INSTALLATION

A. Install and seal ducts in accordance with NYCBC, NYCMC, NFPA 96 and SMACNA HVAC Duct Construction Standards - Metal and Flexible. All seams and joints shall be sealed to meet SMACNA Seal Class A.

B. During shipping, storage on-site and throughout construction, install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system throughout the entire fabrication and installation process.

C. Provide internally insulated (lined) ductwork in accordance with Section 23 05 48, Noise and Vibration Controls for HVAC Piping and Equipment.

D. Use crimp joints with beaded sleeve couplings for joining round duct sizes 8 inch and smaller. Use flanged joints for ducts larger than 8 inches.

E. Install duct hangers and supports in accordance with Section 23 05 29.

F. Use double nuts and lock washers on threaded rod supports.

G. Set plenum doors 6 to 12 inches above floor. Arrange door swing so fan static pressure holds door in closed position.

H. Casings: Install floor-mounted casings on 4 inch high concrete curbs. Refer to Section 03 30 00. At floor, rivet panels on 8 inch centers to angles. Where floors are acoustically insulated, furnish liner of 18 gage galvanized expanded metal mesh supported at 12 inch centers, turned up 12 inches at sides with sheet metal shields.

I. Install kitchen range hoods in accordance with NYCMC and NFPA 96.

C. Duct sealants shall meet the latest VOC requirements of the South Coast Air Quality Management District (Rule #1168) and the content of VOC shall not exceed 250 grams per liter.

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finished in a workmanlike manner. All welding burns shall be filed and scraped clean. Excess sealants and filler material shall be removed. Duct supports shall have a finished appearance.

D. See Section 23 05 48 for Noise and Vibration Controls for HVAC Piping and Equipment.

E. Fabricate ducts having pressure class equal to or greater than the static pressure of the fans or equipment to which the duct is connected.

F. Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide turning vanes. Where acoustical lining is indicated, furnish turning vanes of perforated metal with glass fiber insulation.

G. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream unless noted otherwise.

H. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.

I. Provide standard 45-degree lateral wye takeoffs. When space does not allow 45-degree lateral wye takeoff, use 90-degree conical tee connections.

2.13 DUCT SEALANTS

A. Use the following sealants for joints and seams and for acoustic lining and vapor barrier application to all ductwork unless called for otherwise:

B-F #30-02 for sealing high and low pressure ductwork
3M-425 for taping joints in vapor-proof barriers
B-F #85-20 for attaching acoustic lining
B-F #30-36 for binding edges on acoustic lining
B-F #30-35 as a vapor barrier cement on insulation

B. Use equivalent sealants if any of the above cannot provide flame spread rating of 25 and smoke developed rating 50 or less.

shall be of double construction, filled with insulation 1" thick. Door openings in casings shall have angle frames to provide a true and uniform seating surface for the gasketed doors.

B. Each door shall be equipped with three (3) six screw "T" shaped extra heavy zinc plated hinges with brass pins as manufactured by Ferrum Co. No. 245 or approved equal. Provide three (3) cast zinc lever type fasteners. Ventlock No. 310 or approved equal. Inside release levers shall be provided for each door.

2.11 INSULATED PANELS

A. Provide insulated panels for all spaces to be blanked off inside fan housings and for unused portions of louvers and where noted on the drawings.

B. Inside and outside sheets of panels shall be constructed of alloy 25 hard aluminum sheet 20 B & S gauge. Insulation shall be 1-1/2" thick polyurethane.

C. Sections over 24" long shall be internally braced with inside Z-bars.

D. Panels shall be assembled and installed in such a manner as to be completely airtight and rigid.

2.12 DUCTWORK FABRICATION

A. Fabricate and support rectangular ducts in accordance with NYCBC, NYCMC, NFPA 96 and SMACNA HVAC Duct Construction Standards - Metal and Flexible. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

B. Ductwork shall be continuous, shall be built with joints and seams presenting a smooth surface on the inside and neatly finished on the outside. All joints and seams for supply, exhaust, make-up and return air ductwork shall be sealed airtight with approved non-hardening resilient caulking compound. "Airtight" shall mean duct leakage not exceeding 5% of design air quantity. Should duct leakage exceed this limit, Contractor shall reseal as required and rebalance systems at no cost to Owner. ALL ductwork shall be sealed with high pressure duct sealant. Seal Class A, as defined by SMACNA, shall be provided for all ductwork.

C. Ductwork is exposed to view and considered an architectural component of the project. External tapes are not allowed and sealants/welds shall be

requested by the engineer, the plenum manufacturer shall arrange to have a copy of all pertinent acoustical laboratory reports forwarded directly from the laboratory to the engineer.

2. When tested according to ANSI/ASTM C423-66 or a subsequent version of this standard, the panel assembly shall have minimum sound absorption coefficients, as shown in the following table, in the 1/3 octave band center frequencies. The coefficients used shall be those reported by the acoustical laboratory.

Sound Absorption Coefficients
1/3 Octave Band

Center Frequency (Hz)	125	250	500	1000	2000	4000	NEC
	0.63	1.09	1.17	1.08	1.03	0.97	1.00

3. When tested according to ANSI/ASTM E90-70 or a subsequent version of this standard, the panel assembly shall have minimum airborne sound transmission losses, as shown in the following table, in the combined full octave band center frequencies.

Sound Transmission Losses
Octave Band

Center Frequency (Hz)	125	250	500	1000	2000	4000	8000
	16	24	35	45	53	58	37

G. Thermal Performance:

1. Insulating materials used in all prefabricated panel assemblies shall have the following maximum thermal conductance at a mean temperature of 75°F: 0.06 Btu per hour per square foot per degree Fahrenheit.

2.10 ACCESS DOORS FOR CASING AND PLENUMS

A. Access doors not less than 20" x 48" shall be provided in equipment casings and plenums. They shall consist of No. 16 USS gauge galvanized steel sheets mounted on angle frames with crossbracing to prevent sagging or warping, and shall have sponge rubber gaskets.

Door shall be installed on angle or channel frames, extended where required to finish flush with insulation. In insulated casings, the doors

open against the air pressure differential. Doors shall seat against neoprene gasket materials, installed around the entire perimeter of the door frame in such a manner that door operation will provide direct compression with no sliding action between the door and gasket.

7. Doors shall be furnished with windows, which are composed of double-glazed layers of wire-reinforced safety-glass, separated by an air space, and sealed against acoustical and air leakage by interior and exterior rubber seals.

8. Openings for pipe and conduits shall be field cut to ensure proper positioning. All framing members, collars and bellmouth fittings shall be insulated, welded and sealed according to the plenum manufacturer's published installation details.

E. Structural Performance:

1. The entire plenum installation shall be designed by the plenum manufacturer to be self-supporting. Where roof spans and wall loadings require additional structural strength, it shall be provided by heavier panel skins, additional internal longitudinal reinforcing members or additional structural members and necessary supporting pipe columns. The installer shall furnish and install all structural members and pipe columns according to the drawings and published installation details provided by the plenum manufacturer.

2. The finished plenum installation shall be above to withstand a positive internal static pressure of 6 inches wg and a negative internal static pressure of 6 inches wg. Installations subjected to the effects of weather shall be able to withstand a wind loading of 100 pounds per square foot.

3. Under the conditions specified in the previous section, the assembled structure shall not exhibit any panel joint deflections in excess of L/200, where L is the unsupported span length of any panel section within the completed plenum.

F. Acoustical Performance:

1. The plenum manufacturer shall provide certified testing data obtained from an acoustical laboratory, listing sound absorption and transmission loss characteristics of the panel assembly. When

3. All mechanical joints and external trim items shall be sealed with a UL-Classified duct sealant in accordance with manufacturer's recommendations. In order to show that joints have been sealed properly, enough sealant shall be used to that excess sealant is extruded from all completed external joints.

4. For enclosures to be installed indoors, joints and trim shall be sealed with a solvent-based duct sealant that is a polymeric rubber formulated to withstand temperatures from -20 to +150°F. Sealant shall be formulated such that surface preparation or solvent cleaning is not necessary. Sealant shall have a UL Classification marking with a flame spread of 15 and smoke developed of 20 when applied to 18-gauge galvanized steel and a flame spread of 10 and smoke developed of 0 when applied to organic reinforced cement board, both at a coverage of 31 square feet per gallon. Sealant shall exceed 750 hours without becoming brittle under ASTM-D572 test conditions (oxygen bomb).

5. For enclosures to be installed indoors and outdoors, joints and trim shall be sealed with a solvent-based duct sealant that is a neoprene-phenolic mastic formulated to withstand temperatures from 02- to +300°F. Sealant shall be formulated such that surface preparation or solvent cleaning is not necessary. Sealant shall have a UL Classification marking with a flame spread of 5 and smoke developed of 0 when applied to 18-gauge galvanized steel and a flame spread of 5 and smoke developed of 5 when applied to inorganic reinforced cement board, both at a coverage of 53 square feet per gallon. Sealant shall exceed 1,000 hours under ASTM-D572 test conditions (oxygen bomb) without becoming brittle under 500 hours in QUV accelerated-exterior-aging apparatus without degradation (under ASTM-C732 test conditions.

6. Personnel access doors shall be provided where specified on drawings and shall be 24 inches wide by 60 inches high unless otherwise indicated. All doors shall be the same nominal thickness as the prefabricated standard door panel in which they are mounted. All access door panels and doors shall be constructed with a solid inner and outer shall (minimum 20-gauge thickness). Each door shall be installed in the door panel at the factory and shall have a minimum of two ball-bearing hinges and two wedge-lever door latches. All levers shall be operable from the interior and exterior sides of the door panels. All doors shall be installed to

3. The outer shell shall be constructed of galvanized steel with a minimum 20-gauge thickness.

4. The inner shall be constructed of galvanized steel with a minimum 22-gauge thickness.

5. Perforated materials shall be 3/32-inch-diameter round holes with staggered spacing, 3/16 inch on center. The perforated material shall have a 23 percent open area.

6. All perimeter and internal longitudinal steel channel members shall be constructed of ASTM Type A-446 structural quality galvanized steel with a minimum 18-gauge thickness of ASTM Type A-526 commercial-quality galvanized steel with a minimum 16-gauge thickness.

7. All steel panel surfaces, internal channels, and trim items shall be fabricated from zinc-coated steel with a hot-dipped galvanized coating (minimum G-90 coating class as determined by ASTM A-525) and shall meet all requirements of ASTM A-526 for commercial-quality galvanized carbon steel.

8. Each panel assembly shall be completely filled with acoustical/thermal insulating material that is non-combustible, inert, mildew-resistant and vermin-proof. Insulation shall not settle within the panel assembly. No insulating materials shall be used that have a flame spread greater than 25 or a smoke developed greater than 50.

D. Components and Installation:

1. All plenum base channels shall be installed on a level concrete curb, the dimensions of which shall be determined from plan-view shop drawings of the system provided by the system manufacturer. Spacing of base channel attachments shall be as outlined in the manufacturer's standard details of assembly.

2. All assembly trim items shall be constructed of hot-dipped galvanized steel (minimum 18-gauge thickness) and furnished in standard lengths to be field cut to the required dimensions. Spacing of sheet metal screws, application of duct sealant and positioning of trim shall be in accordance with the plenum manufacturer's published erection and installation details.

J. Provide angles above and below access doors and frames for access doors.

2.9 DOUBLE WALL PLENUMS

A. General:

1. Double-wall (insulated) pressurized plenum equipment enclosures shall be provided for all mixed air, return air and supply air discharge plenums. All panels and components shall be prefabricated and supplied by a nationally recognized manufacturer with published standards of construction, assembly and technical performance. The manufacturer shall have produced a standardized prefabricated panel system for at least 10 years. Construction and performance of the installed system and components shall conform to all specifications listed in this document. The system and components shall not be susceptible to damage from extended exposure to airflow, pressure differentials, vibration, air temperature or humidity.

B. Joint Construction:

1. Panels shall be of "snap-lock" construction, such that adjacent panels are held together rigidly with an integral, continuous self-locking joint on both inside and outside panel surfaces. These joints shall not require screws, H-connectors, tape or any other type of additional fasteners or connectors.

2. For plenums in contact with air having temperature less than 60°F. during the summer, thermal break joints shall be provided.

C. Panel Construction:

1. All panels shall be 4 inches thick, with a solid galvanized steel exterior shell, and a perforated interior galvanized steel shell.

2. The outer and inner shells shall be tack or spot welded to perimeter and internal longitudinal steel channels and box-end internal closures, in such a manner and spacing that the panel assembly will not fail at the maximum operating loads specified in the Structural Performance specifications given in this document.

shall be pitched to the drain. Provide water seal in drain lines to carry lines to nearest indirect drain.

E. Casing or plenums shall be provided with steel supports, of type approved by Architect to properly support the equipment and to maintain pitch to the drains. Where insulated, they shall be arranged with adequate means of attaching the insulation, including the bottom, if any.

F. The Contractor shall provide heavy rigid plates with all required drilling and cutouts, heavy braced to reduce vibration, for the installation of thermometers, thermostats and other instruments.

G. Longitudinal reinforcing angles shall be installed on the inside in accordance with the following schedule:

Height of Side				Diagonal Bracing
Walls or Width of Roof	No. Angles	Angle Spanning	Length of Casing	Pairs of Braces
Up to 6'	0	-	Any	None
Up to 8'	1	Middle	Any	None
8' to 12'	2	1/3 points	Any	None
Over 12'	Variable	4' Centers	3&4 Panels	1
			5&6 Panels	2
			7&8 Panels	3

Angle size shall be 1-1/2" x 1-1/2" x 1/8" to 12' casing length, and 1-1/2" x 1/2" x 3/16" over 12' casing length.

NOTE: Provide knee-bracing for top of casing wherever required.

H. All joints shall be caulked with Minnesota Mining Formula EC 1057 or Alumastic to make them airtight.

I. Casing or plenums shall be supported on galvanized steel legs. The bottom at the floor and at any other connection to masonry shall be riveted to 1-1/2" x 1-1/2" x 1/8" galvanized steel angles which shall be secured to masonry with expansion shields and caulked tight with cement.

37 inches to 60 inches	18
62 inches and larger	16

2.5 SINGLE WALL LONGITUDINALLY WELDED ROUND AND FLAT OVAL DUCTWORK FOR FUME HOOD EXHAUST AND KITCHEN HOOD EXHAUST

A. Minimum 18 gauge 316 stainless steel ductwork with fully welded longitudinal seam.

B. Transverse joints shall be fully welded.

C. Construct duct in accordance with NYCBC, NYCMC and SMACNA

2.6 TRANSVERSE DUCT CONNECTION SYSTEM

A. Product Description: SMACNA "E" rated and SMACNA "J" rated rigidity class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips.

2.7 LONGITUDINAL SEAMS

A. Rectangular ducts shall be Pittsburgh lock with sealed pocket.

B. Welded ducts shall have butt-welded seams or lap (socket) welded seams to suite the sheet thickness.

2.8 CASINGS/PLENUMS

A. Fabricate casings in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and construct for operating pressures indicated.

B. Reinforce access door frames with steel angles tied to horizontal and vertical plenum supporting angles. Furnish hinged access doors where indicated or required for access to equipment for cleaning and inspection.

C. Provide all metal housing, casings or plenums. Metal casings or plenums shall be constructed and jointed by external 1-1/2" standing seams of No. 16 USS gauge galvanized steel sheets, reinforced with 1-1/2" x 1-1/2" x 1/4" angles spaced not more than 3'-0" apart. Additional angles shall be provided wherever necessary to prevent vibration.

D. Bottom panels shall be constructed to form watertight pans not less than 6" deep, with brass drains with strainers and threaded outlets located in each compartment where required. The bottom of each compartment

38 inches to 50 inches	20
52 inches to 60 inches	18
62 inches to 84 inches	16

2.4 SINGLE WALL SPIRAL FLAT OVAL DUCTS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. McGill AirFlow Corporation.
2. Semco Incorporated
3. Tangent Air Corp.
4. Spiral Mfg. Co., Inc.
5. Or approved equal.

B. Product Description: Machine made from round spiral lockseam duct constructed of galvanized steel; rated for 10 inches wg pressure.

C. Follow requirement in Section 23 05 48 "Noise and Vibration Controls for HVAC Piping and Equipment" for internal duct insulation (liner),

D. Joints: Either fully welded or bolted flange with gasket material in accordance with manufacturer's recommendations.

E. Construct duct with the following minimum gauges and in accordance with NYCBC, NYCMC and SMACNA:

Major Axis Dimension	**Gauge**
7 inches to 24 inches	24
25 inches to 48 inches	22
50 inches to 70 inches	20
72 inches to 82 inches	18
84 inches and larger	16

F. Construct fittings with the following minimum gauges:

Major Axis Fitting Dimension	**Gauge**
7 inches to 36 inches	20

duct mains provided that a six sided sheetmetal box is installed at the diffuser with dimensions 2" larger than the diffuser inlet collar size. For example: For a 10" neck diffuser, provide a sheetmetal box of 12" x 12" x 12" connecting one side to the diffuser and adjacent side to the flexible duct. Provide spin collar and damper for each diffuser take-off where required. Support the sheet metal box directly from the structure.

2.3 SINGLE WALL SPIRAL ROUND DUCTS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. McGill AirFlow Corporation.
2. Semco Incorporated.
3. Spiral Mfg. Co., Inc.
4. Or approved equal.

B. Product Description: UL 181, Class 1, round spiral lockseam duct constructed of galvanized steel.

C. Follow requirement in Section 23 05 48 "Noise and Vibration Controls for HVAC Piping and Equipment" for internal duct insulation (liner).

D. Construct duct with the following minimum gages and in accordance with NYCBC, NYCMC and SMACNA:

Diameter	**Gauge**
3 inches to 14 inches	26
15 inches to 26 inches	24
28 inches to 36 inches	22
38 inches to 50 inches	20
52 inches to 84 inches	18

E. Construct fittings with the following minimum gages and in accordance with NYCBC, NYCMC and SMACNA:

Diameter	**Gauge**
3 inches to 14 inches	24
15 inches to 26 inches	22
28 inches to 36 inches	20

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Clevaflex
2. Flexmaster
3. Or approved equal.

B. UL 181, Class 1, constructed with interior liner of round corrugated aluminum duct with exterior fiberglass insulation and vinyl film vapor barrier.

1. Pressure Rating: 10 inches wg positive or negative.
2. Maximum Velocity: 4000 fpm.
3. Temperature Range: -20 degrees F to 210 degrees F.
4. Thermal Resistance: 4.2 square feet-hour-degree F per BTU.
5. Furnish each flexible duct section with integral clamping devices for connection to round or oval fittings.
6. Join each flexible duct section to main trunk duct through sheet metal fittings. Construct fittings of galvanized steel and equip with factory installed volume damper having positive locking regulator. Provide fittings installed in lined ductwork with insulation guard.
7. Flexible metal duct connections shall, unless noted otherwise, be equal in size to the unit inlet connections, or shall be provided with adapters to match flexible hose to the unit inlet.
8. At points of connection between the flexible duct and unit, permacel EZ-4719 or Minnesota Mining sealing compound shall be placed on the metallic surface and the flexible ductwork clipped over. A stainless steel clamp shall be placed over the connections, similar to Ideal Type 52 worm gear drive.
9. Flexible ducts shall not be used for supporting diffusers from overhead supply ducts. Also, do not use hose ducts at VAV box inlets.
10. Up to 18 inches long flexible metal duct may be used between conventional air diffusers and low pressure, constant volume supply

B. Convene minimum one (1) week prior to commencing work of this section.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements.

B. Do not install duct sealant when temperatures are less than those recommended by sealant manufacturers.

C. Maintain temperatures during and after installation of duct sealant.

1.10 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.11 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

PART 2 - PRODUCTS

2.1 DUCT MATERIALS

A. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G90 zinc coating of in conformance with ASTM A90/A90M.

B. Aluminum Ducts: ASTM B209; aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T6 or of equivalent strength.

C. Stainless Steel Ducts: ASTM A167, Type 316.

D. Concrete Ducts: ASTM C14; hub and spigot concrete sewer pipe with ASTM C443 joints, rubber gaskets.

E. Fasteners: Rivets, bolts, or sheet metal screws.

F. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.2 INSULATED FLEXIBLE DUCTS

9. Submit shop drawings indicating duct runs, material, extent of internal lining, fire dampers, volume dampers access doors and elevation of all ducts.

10. Also submit a book of Shop Standards for Sheetmetal Fabrication, for approval, before starting fabrication of any portion of ductwork.

C. Product Data: Submit data for duct materials, duct liner and duct connectors

D. Samples: Submit two (2) samples of typical shop fabricated duct fittings.

E. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA HVAC Air Duct Leakage Test Manual.

1.5 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and flexible.

B. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three (3) years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum 3 years' experience.

1.8 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

2. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

D. Underwriters Laboratories Inc.:

1. UL 181 - Factory-Made Air Ducts and Connectors.

E. National Air Duct Cleaners Association

1. NADCA Standards for duct cleaning.

1.3 PERFORMANCE REQUIREMENTS

A. Variation of duct configuration or sizes other than those of equivalent or lower loss coefficient is not permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.4 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Submit duct fabrication drawings, drawn to scale not smaller than 3/8 inch equals 1 foot, on drawing sheets same size as Contract Documents, indicating:

1. Fabrication, assembly, and installation details, including plans, elevations, sections, details of components, and attachments to other work.

2. Duct layout, indicating pressure classifications and sizes in plan view. For exhaust duct systems, indicate classification of 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 walls.

7. Terminal unit, coil, and humidifier installations.

8. Hangers and supports, including methods for building attachment, vibration isolation, and duct attachment.

1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

2. ASTM A90/A90M - Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.

3. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

4. ASTM A568/A568M - Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.

5. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

6. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

7. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

8. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

9. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. National Fire Protection Association:

1. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.

2. NFPA 90B - Standard for the Installation of Warm Air Heating and Air Conditioning Systems.

3. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.

C. Sheet Metal and Air Conditioning Contractors:

1. SMACNA - HVAC Air Duct Leakage Test Manual.

SECTION 23 31 00

HVAC DUCTS AND CASINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Duct Materials.
2. Flexible ducts.
3. Insulated flexible ducts.
4. Single wall spiral round ducts.
5. Single wall spiral flat oval ducts.
6. Transverse duct connection system.
7. Casings.
8. Ductwork fabrication.
9. Duct cleaning.

B. Related Sections:

1. Section 03 33 00 - Cast-In-Place Concrete: Product requirements for concrete for placement by this section.
2. Section 09 90 00 - Painting and Coating: Execution requirements for Weld priming, weather resistant, paint or coating specified by this section.
3. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for hangers, supports and sleeves for placement by this section.
4. Section 23 33 00 - Air Duct Accessories: Product requirements for duct accessories for placement by this section.

1.2 REFERENCES

A. ASTM International:

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14. Branch lines.

15. Other locations indicated on Drawings or specified.

D. Install all steam and condensate specialties required by Con Edison's rules and regulations. As a minimum, install strainers upstream of:

1. Automatic control valves

2. Steam traps

3. Branch blow-off valve for each strainer

E. In high pressure and medium pressure mains, install 3/4 inch nipple in bottom of main, extending 3/4 inch into and above bottom of pipe. Provide dirt pocket with 1/2 inch high pressure thermostatic trap.

F. Terminate relief valves to outdoors 2 feet minimum above roof. Provide drip pan elbow with drain connection to nearest floor drain.

G. When connecting several relief valve vents to common header, size header cross sectional equal to sum of individual vent outlet areas.

3.3 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting installed construction.

B. Remove thermostatic elements from steam traps during temporary and trial usage, and until system has been operated and dirt pockets cleaned of sediment and scale.

C. Do not install steam pressure gauges until after systems are pressure tested.

END OF SECTION

3. Provide gate valve and strainer at inlet, and gate valve [and check valve] at discharge.

4. Provide minimum 10 inch long, line size dirt pocket between apparatus and trap.

5. Other locations indicated on Drawings or specified.

B. Install thermostatic steam traps on the following pieces of equipment:

1. Steam radiation units.

2. Convectors.

3. Unit ventilators.

4. Other similar terminal heating units.

5. Other locations indicated on Drawings or specified.

C. Install float and thermostatic steam traps on the following pieces of equipment:

1. Main headers and branch lines less than 15 psig.

2. Unit heaters.

3. Unit ventilators.

4. Heat exchangers.

5. Heating coils.

6. Steam separators.

7. Flash tanks.

8. Steam jacketed equipment.

9. Direct steam injected equipment.

10. De-aerators.

11. Absorption chillers.

12. Process equipment.

13. Main headers.

2.8 STEAM AIR VENTS

A. 125 psig WSP:

1. Balanced Pressure Type: Cast brass body and cover; access to internal parts without disturbing piping; stainless steel bellows, stainless steel valve and seat.

B. 225 psig WSP:

1. Balanced Pressure Type: ASTM A126 cast iron body and cover; access to internal parts without disturbing piping; phosphor bronze bellows, stainless steel valve and seat.

2.9 SAFETY RELIEF VALVES

A. Valve: Iron body, stainless steel valve spring, stem, and trim, direct pressure actuated, capacities ASME certified and labeled.

B. Accessories: Drip-pan elbow.

PART 3 - EXECUTION

3.1 INSTALLATION - GAGES

A. Install pressure gages with pulsation dampers. Provide ball valve to isolate each gage. Install siphon on gages in steam systems. Extend nipples and siphons to allow clearance from insulation.

B. Provide instruments with scale ranges selected according to service with largest appropriate scale.

C. Install gages in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.

D. Adjust gages to final angle, clean windows and lenses, and calibrate to zero.

3.2 INSTALLATION - STEAM SYSTEM SPECIALTIES

A. Steam Traps:

1. Provide minimum ¾ inch size on steam mains and branches.

2. Install with union or flanged connections at both ends.

2.5 FLOAT AND THERMOSTATIC TRAPS

A. Trap:

1. Construction: ASTM A126, or semi-steel body and bolted cover, stainless steel or bronze bellows type air vent, stainless steel float, stainless steel lever and valve assembly.

2. Rating: 150 psig WSP.

3. Features: Access to internal parts without disturbing piping, bottom drain plug.

4. Accessories: Gage glass with shut-off cocks.

2.6 THERMODYNAMIC TRAPS

A. Trap:

1. Construction: Stainless steel body, disc, and cap.

2. Rating: 300 psig WSP.

3. Features: Stainless steel insulating cap.

2.7 THERMOSTATIC TRAPS

A. Pressure Balanced:

1. Trap: ASTM A395/A395M cast iron body and bolted or screwed cover for 225 psig WSP. Phosphor bronze bellows, integral stainless steel strainer.

B. Freeze Proof:

1. Trap: Cast iron body for 300 psig WSP, bronze bellows, stainless steel valve and seat, external adjustment.

C. Bimetallic:

1. Trap: ASTM A105/A105M forged steel body and cover, for 300 psig WSP, bimetal element with stainless steel components, integral Type 304 stainless steel strainer screen, 1/4 inch blow down valve.

2.2 PRESSURE GAGE TAPS

A. Needle Valve: Brass, 1/4 inch NPT for minimum 300 psi.

B. Ball Valve: Stainless Steel, 1/8 inch NPT for 250 psi.

C. Pulsation Damper: Pressure snubber, brass with 1/4 inch NPT connections.

D. Siphon: Steel, Schedule 40, 1/4 inch NPT angle or straight pattern.

E. Scale ranges shall be:
Steam Systems - 0 PSI to (2 x Operating Pressure) PSI
(Minimum 0 PSI to 30 PSI)

2.3 STRAINERS

A. Size 2 inch and Smaller:

1. Screwed iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.

B. Size 2-1/2 inch to 4 inch:

1. Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.

C. Size 5 inch and Larger:

1. Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

2.4 INVERTED BUCKET TRAPS

A. Trap:

1. Construction: ASTM A126 or semi-steel body with bolted cover stainless steel bucket, stainless steel seats and plungers, and stainless steel lever mechanism with knife edge operating surfaces.

2. Rating: 250 psig WSP.

3. Features: Access to internal parts without disturbing piping, top test plug, bottom drain plugs.

B. Do not install instruments when areas are under construction, except rough in, taps, supports and test plugs.

1.8 FIELD MEASUREMENTS

A. Verify field measurements before fabrication.

1.9 MAINTENANCE MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance materials.

B. Furnish two (2) bottles of red gage oil for static pressure gages.

1.10 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish two (2) pressure gages with pulsation damper.

C. Furnish two (2) service kits for each size and type of steam trap.

PART 2 - PRODUCTS

2.1 PRESSURE GAGES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Trerice.

2. Ashcroft

B. Gage: ASME B40.1 with bourdon tube, rotary brass movement, brass socket, front calibration adjustment, black scale on white background.

1. Case: Cast aluminum.

2. Bourdon Tube: Brass.

3. Dial Size: 4-1/2 inch and 8-1/2 inch diameter.

4. Mid-Scale Accuracy: One percent.

5. Scale: Both psi and kPa.

1.3 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of actual locations of components and instrumentation, flow controls and flow meters.

C. Operation and Maintenance Data: Submit instructions for calibrating instruments, installation instructions, assembly views, servicing requirements, lubrication instruction and replacement parts list.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of Project.

B. Installer: Company specializing in performing Work of this section with minimum three years' experience.

1.5 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.6 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Accept piping specialties on site in shipping containers with labeling in place. Inspect for damage.

C. Provide temporary protective coating on cast iron and steel valves.

D. Protect systems from entry of foreign materials by temporary covers, caps and closures, completing sections of the work, and isolating parts of completed system until installation.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements.

E. Underwriters Laboratories Inc.:

1. UL 8506 – Steam Generator System, Heat Recovery

2. UL 8501 – Boiler Operation.

F. Con Edison Steam Service Rule Book.

1.2 PERFORMANCE REQUIREMENTS

A. Steam Traps:

1. Select to handle minimum of three times maximum condensate load of apparatus served, and in no cases less than 200 pounds per hour capacity.

2. Pressure Differentials:

a. Low Pressure Systems (5 psi and less): 1/4 psi

B. Section General Conditions - Submittal Procedures: Submittal procedures.

C. Product Data: Submit for manufactured products and assemblies used in this Project.

1. Manufacturer's data and list indicating use, operating range, total range, accuracy, and location for manufactured components.

2. Submit product description, model, dimensions, component sizes, rough-in requirements, service sizes and finishes.

3. Submit schedule indicating manufacturer, model number, size, location, rated capacity, load served, and features for each piping specialty.

4. Submit electrical characteristics and connection requirements.

D. Manufacturer's Installation Instructions: Submit hanging and support methods, joining procedures, application, selection, and hookup configuration. Include pipe and accessory elevations.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

SECTION 23 22 16

STEAM AND CONDENSATE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pressure gages.
2. Pressure gage taps.
3. Strainers.
4. Steam traps.
5. Steam air vents.
6. Steam safety valves.

B. Related Sections:

1. Section 23 05 03 - HVAC Piping: Execution requirements for piping connections to products specified by this section.

C. American Society of Mechanical Engineers:

1. ASME B40.1 - Gauges - Pressure Indicating Dial Type - Elastic Element.

D. ASTM International:

1. ASTM A105/A105M - Standard Specification for Carbon Steel Forgings for Piping Applications.
2. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
3. ASTM A216/A216M - Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service.
4. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures.

B. Test for concentration of glycol and water solution and submit written test results.

3.4 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean and flush glycol system before adding glycol solution.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section General Conditions - Execution and Closeout Requirements: Requirements for protecting installed construction.

B. Do not install hydronic pressure gauges until after systems are pressure tested.

END OF SECTION

B. Where large air quantities accumulate, provide enlarged air collection standpipes.

C. Install manual air vents at system high points.

D. For automatic air vents in ceiling spaces or other concealed locations, install vent tubing to nearest drain.

E. Provide drain valves at all coils, pieces of equipment and at all low points in system. Pipe to local floor drain.

F. Provide air separator on suction side of system circulation pump and connect to expansion tank.

G. Provide drain and hose connection with valve on strainer blow down connection.

H. Support pump fittings with floor mounted pipe and flange supports.

I. Provide radiator valves on water inlet for the following terminal heating unit types: radiation, unit heaters, and fan coil units.

J. Provide radiator-balancing valves on water outlet for the following terminal heating unit types: radiation, unit heaters, and fan coil units.

K. Provide relief valves on pressure tanks, low-pressure side of reducing valves, heat exchangers, and expansion tanks.

L. Select system relief valve capacity greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment.

M. Pipe relief valve outlet to nearest floor drain.

N. Where one line vents several relief valves, make cross sectional area equal to sum of individual vent areas.

O. Feed glycol solution to system through make-up line with pressure regulator, venting system high points.

3.3 FIELD QUALITY CONTROL

A. Section General Conditions - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

C. Install pressure gages with pulsation dampers. Provide needle valve or ball valve to isolate each gage. Extend nipples to allow clearance from insulation.

D. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inches for installation of thermometer sockets. Allow clearance from insulation.

E. Install thermometer sockets adjacent to controls systems thermostat, transmitter, or sensor sockets. Install at the following locations:

1. In inlet and outlet water connections at each water coil bank in each air handling unit.

2. In inlet and outlet of hot water boilers.

3. Supply, return and mixed air duct of each air handling unit.

4. In supply and return water connection to each heating coil provide a thermometer and pressure gauge.

5. Inlet and outlet of each cooling tower.

6. Chilled water and condenser water header.

7. At other locations shown on drawings.

8. Inlet and outlet of each boiler and chiller.

F. Coil and conceal excess capillary on remote element instruments.

G. Provide instruments with scale ranges selected according to service with largest appropriate scale.

H. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.

I. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.

3.2 INSTALLATION - HYDRONIC PIPING SPECIALTIES

A. Locate test plugs adjacent to thermometers and thermometer sockets and pressure gage taps as indicated on Drawings.

D. Relief valves 2" and smaller shall be bronze, screwed, semi-finished and valves 2-1/2" and larger shall be iron body, bronze mounted and flanged.

2.14 DRAIN VALVES

A. Provide drain valves with hose bibb end at all low points of water systems. Drain valves shall be gate type. Minimum 3/4" drain size shall be used up to 4" pipe size. 2" drain size shall be used for pipes 5" size and over. Also provide a fill valve for each water system, with a back-flow preventer as described below. All drain and fill valves shall have caps or plugs as applicable.

2.15 WATER RELIEF VALVES

A. Where required provide ASME water relief valve of. Each valve shall be provided with manual lifting lever capable of opening the valve as desired. A discharge line shall be run to floor drain from each valve. No shutoff valve shall be placed between relief valve and system

PART 3 - EXECUTION

3.1 INSTALLATION - THERMOMETERS AND GAGES

A. Install one pressure gage for each pump, locate taps before strainers and on suction and discharge of pump; pipe to gage.

1. In inlet and outlet of water coil.
2. In inlet and discharge side of each pump.
3. At each expansion tank.
4. At inlet and outlet of each cooling tower.
5. Inlet and outlet of each duplex oil strainer and condenser water filter.
6. Other locations as shown on the drawings.
7. At inlet and outlet of each chiller.
8. Inlet and outlet of each boiler.

B. Install gage taps in piping.

B. Direct reading with insert pitot tube, threaded coupling, for 150 psig working pressure, maximum 240 degrees F, 5 percent accuracy.

C. Cast iron, wafer type, orifice insert flow meter for 250 psig working pressure, with read-out valves equipped with integral check-valves and caps with gaskets.

D. Calibrated, plug type balancing valve with precision-machined orifice, readout valves equipped with integral check valves and caps with gaskets, calibrated nameplate and indicating pointer.

E. Cast iron or bronze, globe style, balancing valve with hand wheel with vernier type ring setting and memory stop, drain connection, readout valves equipped with integral check valves and caps with gaskets.

F. Portable meter consisting of case containing one, 3 percent accuracy pressure gage with 0-60 feet pressure range for 500 psig maximum working pressure. Color-coded hoses for low and high-pressure connections, and connectors suitable for connection to read-out valves.

2.12 RADIATOR VALVES

A. Angle or straight pattern, rising stem, inside screw globe valve for 125 psig working pressure, with bronze body and integral union for screwed connections, renewable composition disc, plastic wheel handle for shut-off service, and lock-shield key cap and set screw memory bonnet for balancing service.

2.13 RELIEF VALVES

A. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.

B. Provide one or more relief or safety valves on the low pressure side of the pressure reducing valve station. The capacity of the relief valve shall be such that the pressure rating of the lower pressure piping and equipment will not be exceeded if the reducing valve sticks open.

C. Steam pressure relief valves on piping and equipment unless otherwise specified shall be of the pop safety type. They shall have enclosed springs and side outlets. Valve discharge piping shall be run to the high roof of the main buildings.

1. Flanged iron or steel body to suite the working pressure (minimum 175 psig), Y pattern with 3/64 inch stainless steel perforated screen.

C. Size 5 inch and Larger:

1. Flanged iron or steel body to suite the working pressure (minimum 175 psig), basket pattern with 1/8 inch stainless steel perforated screen.

2.10 AUTOMATIC FLOW CONTROL VALVES

A. In chilled water supply (inlet) pipe to each chilled water coil for all air handling units and all AC units, provide an automatic flow control valve as specified below:

1. Flow control valves shall be factory calibrated, direct acting, automatic pressure compensating type. Each valve shall limit flow rates to within ± 5 accuracy, regardless of system pressure fluctuations. Valve control mechanism shall consist of a tamper proof, brass or stainless steel cartridge assembly with open chambers and unobstructed flow passages. Cartridge assembly shall include a self-cleaning, spring-loaded moving cup guided at two separate points and shall utilize the full available differential pressure to actuate without hysterisis or binding. Differential pressure ranges shall be minimum 3 to 40 psig. Each valve to be provided with a metal tag, chain and stamped for system identification. Pressure taps and quick disconnect valves shall be provided with ferrous bodies. All hydronic system flow control valves shall be of one manufacturer. Flow control valves shall be Autoflow or Griswold and shall be of 250 psig design.

2. Furnish a portable flow measuring apparatus, complete with carrying case, pressure gauge, 3-way valve, hoses and connections. Unit to be compatible with automatic flow control valves to indicate pressure differential to determine flow rate through the valve.

2.11 FLOW METERS

A. Orifice type by-pass circuit with direct reading gage, soldered or flanged piping connections for 125 psig working pressure, with shut off valves, and drain and vent connections.

1. Neoprene core for temperatures up to 200 degrees F.
2. Nordel core for temperatures up to 350 degrees F.
3. Viton core for temperatures up to 400 degrees F.

B. Test Kit:

1. Carrying case, internally padded and fitted containing:
   a. Two 3-1/2 inch diameter pressure gages.
   b. One gage adapters with 1/8 inch probes.
   c. Two 1-1/2 inch dial thermometers.
      1) Scale range: 0 to 200 degrees F.

2.8 AIR VENTS

A. Manual Type: Short vertical sections of 2 inch diameter pipe to form air chamber, with 1/8 inch brass needle valve at top of chamber.

B. Float Type:

1. Brass or semi-steel body, copper, polypropylene, or solid non-metallic float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.

C. Where the hot and cold water system is trapped and air is liable to be pocketed, furnish and install a manual vent to properly relieve the system of air. The discharge from these vents shall be piped with copper tubing to the nearest slop sink, floor drain or to a location easily accessible from the floor.

2.9 STRAINERS

A. Size 2 inch and Smaller:

1. Screwed brass, iron or steel body to suite the working pressure (minimum 175 psig), Y pattern with 1/32 inch stainless steel perforated screen.

B. Size 2-1/2 inch to 4 inch:

2.5 STEM TYPE THERMOMETERS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Weksler
2. Taylor
3. Mueller
4. Or approved equal.

B. Thermometer: ASTM E1, adjustable angle, red appearing mercury, lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device.

1. Size: 9 inch scale.
2. Window: Clear [glass] [Lexan].
3. Stem: Brass, 3-1/2 inch long.
4. Accuracy: ASTM E77 2 percent.
5. Calibration: Both degrees F and degrees C.

C. Scale ranges should be as follows:

Hot water	-	30°F to 240°F
Condenser water	-	20°F to 120°F
Chilled water	-	0°F to 100°F

2.6 THERMOMETER SUPPORTS

A. Socket: Brass separable sockets for thermometer stems with or without extensions, and with cap and chain.

B. Flange: 3 inch outside diameter reversible flange, designed to fasten to sheet metal air ducts, with brass perforated stem.

2.7 TEST PLUGS

A. 1/4 inch NPT or 1/2 inch NPT brass fitting and cap for receiving 1/8 inch outside diameter pressure or temperature probe with:

5. Labeling: Metal tag indicating design flow rate, reading for design flow rate, metered fluid, line size, station or location number.

B. Meter Set: Dry single diaphragm type gage with magnetic drive, 2-1/2 inch x 6 inch dial, stainless steel wetted metal parts, and direct reading of flow rate, with two 10 foot long nylon test hoses with fittings.

C. Portable Meter Set: Dry single diaphragm type gage with magnetic drive, 2-1/2 inch x 6 inch dial, stainless steel wetted metal parts, and direct reading of flow rate. Mounted in rust-proof carrying case with two 10 foot long rubber test hoses with brass valves or quick connections for measuring stations.

2.3 PRESSURE GAGES

A. Gage: ASME B40.1, UL 404 with bourdon tube, rotary brass movement, brass socket, front calibration adjustment, black scale on white background.

1. Case: Cast aluminum.

2. Bourdon Tube: Brass.

3. Dial Size: 4-1/2 inchand 8-1/2 inch] diameter.

4. Mid-Scale Accuracy: One percent.

5. Scale: Both psi and kPa.

2.4 PRESSURE GAGE TAPS

A. Needle Valve: Brass, 1/4 inch NPT for minimum 300 psi.

B. Ball Valve: Stainless Steel, 1/8 inch NPT for 250 psi.

C. Pulsation Damper: Pressure snubber, brass with 1/4 inch NPT connections.

D. Siphon: Steel, Schedule 40, 1/4 inch NPT angle or straight pattern.

E. Scale ranges shall be:

Oil Pumps - 0 PSI to 125 PSI
Other Systems- 0 PSI to (2 x Operating Pressure) PSI
(Minimum 0 PSI to 30 PSI)

B. Furnish two (2) pressure gages with pulsation damper dial thermometers.

PART 2 - PRODUCTS

2.1 POSITIVE DISPLACEMENT METERS (LIQUID)

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Preso Meter
2. Lincoln Meter
3. Carlon Meter

B. AWWA C701, positive displacement disc type suitable for fluid with bronze case and cast iron frost-proof, breakaway bottom cap, hermetically sealed register, remote reading to AWWA C706.

C. Meter: Brass body turbine meter with magnetic drive register.

1. Service: Cold water, 122 degrees F and Hot water, 200 degrees F.
2. Nominal Flow: Refer to drawings.
3. Pressure Drop at Nominal Flow: 1 psi.
4. Maximum Operating Pressure: 150 psi.
5. Accuracy: 1-1/2 percent.
6. Maximum Counter Reading: 100 million gallons.

2.2 LIQUID FLOW METERS

A. Measuring Station: Type 316 stainless steel pitot type flow element with safety shut-off valves and quick coupling connections.

1. Support: Inserted through welded threaded couplet with isolation valve and insert-retract mechanism.
2. Pressure rating: 275 psi.
3. Maximum temperature: 400 degrees F.
4. Accuracy: Plus 0.55 percent to minus 2.30 percent.

1.7 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Accept piping specialties on site in shipping containers with labeling in place. Inspect for damage.

C. Provide temporary protective coating on cast iron and steel valves.

D. Protect systems from entry of foreign materials by temporary covers, caps and closures, completing sections of the work, and isolating parts of completed system until installation.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements.

B. Do not install instruments when areas are under construction, except rough in, taps, supports and test plugs.

1.9 FIELD MEASUREMENTS

A. Verify field measurements before fabrication.

1.10 MAINTENANCE

A. Section General Conditions - Execution and Closeout Requirements: Maintenance.

B. Furnish service and maintenance of glycol fluid and glycol charging components for one (1) year from Date of Substantial Completion.

1.11 MAINTENANCE MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance materials.

B. Furnish two (2) bottles of red gage oil for static pressure gages.

1.12 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

3. Submit schedule indicating manufacturer, model number, size, location, rated capacity, load served, and features for each piping specialty.

4. Submit electrical characteristics and connection requirements.

C. Manufacturer's Installation Instructions: Submit hanging and support methods, joining procedures, application, selection, and hookup configuration. Include pipe and accessory elevations.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of actual locations of components and instrumentation, flow controls and flow meters.

C. Operation and Maintenance Data: Submit instructions for calibrating instruments, installation instructions, assembly views, servicing requirements, lubrication instruction and replacement parts list.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of Project.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.6 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

2. ASME Section VIII - Boiler and Pressure Vessel Code - Pressure Vessels.

B. ASTM International:

1. ASTM E1 - Standard Specification for ASTM Thermometers.

2. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers.

C. American Water Works Association:

1. AWWA C700 - Cold-Water Meters - Displacement Type, Bronze Main Case.

2. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service.

3. AWWA C702 - Cold-Water Meters - Compound Type.

4. AWWA C706 - Direct-Reading, Remote-Registration Systems for Cold-Water Meters.

5. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

D. Underwriters Laboratories Inc.:

1. UL 393 - Indicating Pressure Gauges for Fire-Protection Service.

2. UL 404 - Gauges, Indicating Pressure, for Compressed Gas Service.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit for manufactured products and assemblies used in this Project.

1. Manufacturer's data indicating use, operating range, total range, accuracy, and location for manufactured components.

2. Submit product description, model, dimensions, component sizes, rough-in requirements, service sizes, and finishes.

SECTION 23 21 16

HYDRONIC PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Positive displacement meters.
2. Liquid flow meters.
3. Pressure gages.
4. Pressure gage taps.
5. Thermometers.
6. Thermometer supports.
7. Test plugs.
8. Flexible connectors.
9. Air vents.
10. Strainers.
11. Flow controls.
12. Flow meters.
13. Radiator valves.
14. Relief valves.
15. Drain Valves

1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B40.1 - Gauges - Pressure Indicating Dial Type - Elastic Element.

3. One (1) set of B-size, laminated as-built drawings.

4. Two (2) sets of 30"x42"inch 1\16"=1' scale drawing showing all points of fire alarm locations. One set shall be submitted with closeout documents. Second set shall be mounted in frame with a lexan cover in security office over security console. These drawing must be submitted to project Engineer for approval.

D. Turnover of all software database hard/soft copies shall be required prior to project closeout. This shall include all possible 3-SDU software logs, compact discs/diskettes containing exported project files, hard copies of all device maps, the revision number of the version of 3-SDU used, and all required passwords, codes and instructions to accessing and modifying same. The CD's shall contain all system data files as programmed (as built) to provide a complete and operation system in accordance with this specification and applicable codes and standards. DDC may contract for additional materials, alterations, program changes and services, for this system, to other authorized distributors of the manufacturer. Manufacturers that do not comply with this provision of the specification shall not be considered as equal. The turnover of all database information shall occur prior to End-User training.

END OF SECTION

to occur six months subsequent to final written acceptance of system by DDC and Engineer and the second to occur six month after the first. Warranty shall begin subsequent to final written acceptance of system by DDC Engineer. Warranty service shall include two-hour response by the factory-authorized NICET Level III service representative. Offer an extended four-year inspection/ warranty contract from the end of the base warranty service. The price for this inspection contract shall be submitted during the final certification process on the fire alarm system. Contractor shall provide a separate price for a four-year extended warranty contract.

3.9 REMOVAL OF EXISTING FIRE ALARM SYSTEM

A. The new fire alarm system shall have been approved by all Authorities Having Jurisdiction and shall have been operating satisfactorily for at least fifteen (15) days prior to the decommissioning and removal of the existing fire alarm system components that become obsolete after the new system is installed, tested and approved.

B. Upon removal of existing fire alarm system devices (manual fire alarm stations, bells, horns, smoke detectors, panels, conduits, wiring, etc.), the resultant openings shall be sealed with approved materials or covered by steel plates and affixed to the existing backboxes with tamperproof screws and painted to match the surrounding surface.

3.10 DOCUMENTATION AND TRAINING

A. The contractor shall compile and provide to the owners three (3) complete manual on the completed system to include SITE SPECIFIC operating and maintenance instruction, catalog cuts of all equipment and components, as-built wiring diagrams and a manufacturer's suggested spare parts list.

B. In addition to the above manuals, the Electrical Contractor shall provide the services of the manufacturer's trained representative for three (3) separate calendar days for a period of eight (8) hours per day to instruct the owners' designated personnel on the operation and maintenance of the entire system

C. As-built drawings shall consist of the following:

1. Complete revision of all previously submitted drawings

2. Point-to-point depiction of all device wiring on the device layout floor plans.

G. The fire alarm system vendor shall test the system in accordance with the manufacturer's requirements and NFPA 72 as amended by the NYC Building Code. The vendor shall provide completed reports to the Consulting Engineer for review and approval prior to final acceptance.

H. Each individual system operation on a circuit by circuit basis shall be tested for its complete operation. The procedure for testing the entire fire alarm system shall be set forth with the consent of the code enforcement official, the Engineer and the manufacturer.

3.5 CLEANING

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.

3.6 DEMONSTRATION

A. Startup Services: Engage a factory-authorized NICET Level III service representative to provide startup service and to demonstrate and train DDC' maintenance personnel as specified below.

1. Train DDC' maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, adjusting and preventive maintenance. Provide a minimum of 16 hours' non-consecutive training.

2. Training Air: Use the approved final version of the operation and maintenance manual as a training aid.

3. Schedule training with DDC Engineer with at least 7 days' advance notice.

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 three (3) requested adjustment visits to the site for this purpose.

3.8 WARRANTY

A. Provide a one-year warranty including parts and labor for each aspect of the fire alarm system repair, and two (2) bi-annual system tests, the first

6. Test each initiating and indicating device for alarm operation and proper response at the control unit. Test smoke detectors with canned 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.

A. 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.

B. 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.

C. Tag all equipment, stations and other components at which tests have been satisfactorily completed.

D. The Contractor or fire alarm equipment vendor shall have no less than two (2) NICET Level II fire alarm technicians dedicated to this project.

E. The Contractor and the Fire Alarm System Vendor shall, upon the request of the Consulting Engineer or End-User, attend any and all project meetings for the purpose of accurately determining progress.

F. It shall be the responsibility of the installing contractor to assure that construction debris does not adversely affect any sensing devices installed as part of this project. Should it be deemed necessary by the Consulting Engineer, End-User or AHJ, the installing contractor shall be responsible for the cleaning of all smoke detectors prior to final acceptance.

3.4 TESTS

procedure based on NYC Codes and NFPA 72 testing requirements. Submit these procedures to the DDC Engineer for approval. Revise and resubmit procedures until approved by DDC. Provide forms for systematic recording of acceptance test results based on those testing procedures for each individual device.

C. Report of Pretesting: After pretesting is complete, provide a letter certifying the installation is complete and fully operable, including the system printout of test and names and titles of the witness to the preliminary test.

D. Final Test Notice: provide a 10-day minimum notice in writing when the system is ready for final acceptance testing. Final test shall include a repeat of all items indicated for minimum system test in the presence of DDC Engineer and Authority having jurisdiction. It is the Contractor's responsibility to contact all parties involved. Final test shall be conducted by Contractor, Building Department and Engineer after pretesting.

E. Minimum System Tests: Test the system according to the procedures outlined in New York City Electrical Code, New York City Building code and 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 indicating 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 indicating devices. Observe proper signal transmission according to class of wiring used.

attention of the Resident Engineer, in writing, shall be the exclusive liability of the Contractor.

U. The existing fire alarm system shall remain in operation until such time that approval has been granted for its removal. The Contractor shall be responsible for the upkeep of the existing system until such time that it can be removed.

V. The Contractor shall be responsible for the removal of the existing fire alarm system components and controls that become obsolete after the new installation upon the approval of Authorities Having Jurisdiction, the Resident Engineer and Consultant Engineer. DDC reserves the right to retain any existing fire alarm system components. All existing fire alarm system components requiring special handling for disposal (due to radioactivity) shall be the responsibility of the Contractor. The Contractor shall provide written proof of proper disposal of these components. Failure to do so shall result in non-payment for this service.

3.2 GROUNDING

A. The Contractor shall ground cable shields and equipment according to the system manufacturer's instructions to eliminate shock hazard.

B. The Contractor shall ground the equipment, 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.

C. The Contractor shall provide a 5-ohm ground at the main equipment location. Measure, record and report all ground resistance.

3.3 FIELD QUALITY CONTROL

A. The system shall be installed and fully tested under the supervision of a trained manufacturer's representative, at no additional cost to DDC. The system shall be demonstrated to perform all functions as specified.

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. Pretesting shall include all items indicated for minimum system test. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new ones and retest until satisfactory performance and conditions are achieved. Prepare test

J. All low voltage wiring terminated to the fire alarm system shall be PLENUM RATED with no exceptions and no less than No. 12 AWG in size for NAC circuits and 16 AWG for Initiating Circuits, and solid copper.

K. All wiring shall be color-coded throughout, to the NYC Electrical Code standards.

L. Power-limited/Non-power-limited NEC wiring standards SHALL BE OBSERVED.

M. All junction box covers shall be painted red and labeled INTERIOR FIRE ALARM SYSTEM.

N. Fire alarm system wiring shall not co-mingle with any other system wiring in the facility. Conduits shall not be shared under any circumstance. Only when fire alarm wiring enters the enclosure of a monitored or controlled system will co-habitation be permitted (i.e. at fan starters). This will be field reviewed by the Project Engineer.

O. Auxiliary relays shall be appropriately labeled to indicate "FIRE ALARM SYSTEM" and their specific function (i.e. FAN S-1 SHUTDOWN).

P. All fire alarm wiring shall be continuous and unspliced. Terminations shall only occur at fire alarm devices or control panel enclosures under terminal screws. All other splicing methods are specifically disallowed.(i.e. wirenuts).

Q. All fire alarm wiring shall be installed using a dedicated system of supports (i.e. bridle rings). Fire alarm wiring shall not be bundled or strapped to existing conduit, pipe or wire in the facility. This will be field reviewed by the Project Engineer

R. All fire alarm wiring shall be sleeved when passing through any wall, using conduit sleeves (1" min.) with bushings, and fire stopped in accordance with Code.

S. The system shall be arranged to receive power from one three wire 120 Vac, 20 A supply. All low voltage operation shall be provided from the FCS.

T. All fire alarm devices shall be accessible for periodic maintenance. Should a device location indicated on the drawings not meet this requirement, it shall be the responsibility of the Contractor to bring it to the attention of the Resident Engineer, in writing. Failure to bring such issues to the

A. The entire system shall be installed in a workmanlike manner, in accordance with approved manufacturer's wiring diagram. The contractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets and similar devices necessary for the complete installation. All wiring shall be of the type recommended by the manufacturer, approved by the local Fire Department and specified with in.

B. All penetration of floor slabs and firewalls shall be sleeved (1" conduit minimum) fire stopped in accordance with all local fire codes.

C. End of Line Resistors shall be furnished as required for mounting as directed by the manufacturer. Devices containing end-of-line resistors shall be appropriately labeled. Devices should be labeled so removal of the device is not required to identify the EOL device.

D. All manual pull stations shall be mounted 48 inches above the finished floor, as measured on handle. All manual pull stations that provide central station connection shall include a white strip per NYC code requirements.

E. All audio/visual devices shall be mounted 80 inches above the finished floor, as measured to the bottom of the devices or no less than 6 inches from the ceiling, whichever is lower. Audiovisual devices shall be mounted per RS17-5.

F. No area smoke detectors shall be mounted within 36 inches of any HVAC supply, return air register or lighting fixture.

G. No area smoke detector shall be mounted within 12 inches of any wall. All detectors shall be installed in strict accordance with NFPA 72.

H. All mechanical rooms, wiring closets, etc. or areas with no hung ceilings shall be piped with 3/4" conduit. All device plenum rated wiring shall be mechanically protected with conduit.

All areas in public view shall be in metal conduit. All boxes must be painted red and labeled "INTERIOR FIRE ALARM".

I. All addressable modules shall be mounted within 36 inches of the monitored or controlled point of termination. This shall include, but is not necessarily limited to, fan shutdown or door release. Label all addressable modules as to their function.

electrical box with extension ring using the 2 screws provided with ring.

O. Remote Relays

1. Multi-Voltage Control Relays, MR-100 Series

2. Provide remote control relays connected to supervised ancillary circuits for control of fans, dampers, door releases, etc. Relay contact ratings shall be SPDT and rated for 10 amperes at 115 Vac. A single relay may be energized from a voltage source of 24 Vdc, 24 Vac, 115 Vac, or 230 Vac. A red LED shall indicate the relay is energized. A metal enclosure shall be provided.

P. Multi-Voltage Control Relays, MR-200 Series

1. Provide remote control relays connected to supervised ancillary circuits for control of fans, dampers, door releases, etc. Relay contact ratings shall be DPDT and rated for 10 amperes at 115 Vac. A single relay may be energized from a voltage source of 24 Vdc, 24 Vac, 115 Vac, or 230 Vac. A red LED shall indicate the relay is energized. A metal enclosure shall be provided.

Q. Wall Mounted, 1504/1505/1508/1509 Series

1. Provide flush, semi-flush or surface wall mounted electromagnetic doorholder/releases rated at 24 Vac/dc as directed by the Consulting Engineer. Finish shall be brushed zinc.

2.6 NYC WARDEN STATION, 6830-NY

A. Provide NYC/MEA approved warden stations installed for Flush (6830-NY-F) or surface (6830-NY-S) installation as directed by the project engineer. Warden Station shall be NYC MEA approved, painted RED and include armored cable and an in-use LED as required by NYC code RS17-3A. Warden Stations shall be mounted in a manner as indicated on the plans and as required by FDNY. Warden stations shall be located as required by NYC code at or near each main standpipe riser on each floor.

PART 3 - EXECUTION

3.1 INSTALLATION

M. Strobes, Genesis Series

1. Provide strobes manufactured by EST, Cat No. G1 Genesis Series. Screw terminals shall be provided for wiring. The strobes shall have a red faceplate. They shall provide 75 cd (75 cd per UL1971) synchronized flash outputs. Strobes shall mount in a North American 4" square box. The strobe shall have lens markings oriented for wall mounting. A ceiling mount version shall be utilized as necessary and shown on the project plans.

N. Speakers and Speaker Strobes, Genesis Series (Basis of Design)

1. Provide speakers with a 4" cone as manufactured by EST, Cat. No. G4-S7 Genesis Series or approved equal. The rear of the speaker shall be completely sealed protecting the cone during and after installation. Screw terminals shall be provided for wiring and the speaker housings shall be red and include "FIRE" labeling. Speakers shall be provided for use with 70V systems and shall provide power taps at 1/4w, 1/2w, 1w, and 2w. Speakers shall provide UL confirmed 85 dBA sound output at 2w. The Contractor shall verify the speakers provide 15 dBA above ambient noise levels and shall provide additional speakers are wiring as required to meet this requirement. Speakers shall mount in a North American 4" electrical box with extension ring using the 2 screws provided with ring. It must not be necessary to completely remove the screws to facilitate mounting.

2. Provide speaker/strobes with a 4" cone as manufactured by EST, Cat. No. G4-S7 Series or approved equal. The rear of the speaker shall be completely sealed protecting the cone during and after installation and screw terminals shall be provided for wiring. Speaker/strobe housings shall be red and include "FIRE" labeling. Speakers shall be provided for use with 70V systems and shall provide power taps at 1/4w, 1/2w, 1w, and 2w. Speaker/strobes shall provide UL confirmed 85 dBA sound output at 2w. The Contractor shall verify the speakers provide 15 dBA above ambient noise levels and shall provide additional speakers and wiring as required to meet this requirement. Strobes shall provide 75 cd (75 cd per UL1971) synchronized flash outputs. The strobe shall have lens markings oriented for wall mounting. Ceiling mounted Speaker/Strobes shall have lens markings with correctly oriented lettering. Speaker/strobes shall mount in a North American 4"

their integral, factory assembled single or two stage input module. A green LED shall flash to confirm communication with the loop controller. A red LED shall flash to display alarm status. The station shall be capable of storing up to 24 diagnostic codes, which can be retrieved for troubleshooting assistance. Input circuit wiring shall be supervised for open and ground faults. The fire alarm pull station shall be suitable for operation in the following environment:

a. Temperature: 32°F to 120°F (0°C to 49°C)

b. Humidity: 0-93% RH, non-condensing

2. Manual Pull Station, SIGA-270

3. Provide intelligent single action, single stage fire alarm stations SIGA-270. The fire alarm station shall be of metal construction with an internal toggle switch. Provide a locked test feature. Finish the station in red with silver "PULL IN CASE OF FIRE" English lettering. The manual station shall be suitable for mounting on North American 2 ½" (64mm) deep 1-gang boxes and 1 ½" (38mm) deep 4" square boxes with 1-gang covers. All manual stations which, when activated dial the central station, shall be mechanically identified with a white stripe per NYC code.

L. Notification Appliances – General

1. All appliances shall be UL Listed for Fire Protective Service.

2. All strobe appliances or combination appliances with strobes shall be capable of providing the "Equivalent Facilitation" which is allowed under the Americans with Disabilities Act accessibly guidelines (ADA(AG)), and shall be UL 1971, arranged per NYC Building Code.

3. All appliances shall be by GE Security (Formerly Edwards System Technology) or approved equal.

4. Any appliances, which do not meet the above requirements, and are submitted, for use must show written proof of their compatibility for the purposes intended. Such proof shall be in the form of documentation from all manufacturers which clearly states that their equipment (as submitted) are 100% compatible with each other for the purposes intended.

a. Normally-Open Alarm Latching (Manual Stations, etc.)

b. Normally-Open Active Non-Latching (Monitor, Fans, Dampers, Doors, etc.)

c. Normally-Open Active Latching (Supervisory)

I. Single Input Signal Module, SIGA-CC1

1. Provide intelligent single input signal modules SIGA-CC1. The Single Input (Single Riser Select) Signal Module shall provide one (1) supervised Class B output circuit capable of a minimum of 2 personalities, each with a distinct operation. When selected as a telephone power selector, the module shall be capable of generating its own "ring tone". The module shall be suitable for mounting on North American 2 ½" (64mm) deep 2-gang boxes and 1 ½" (38mm) deep 4" square boxes with 2-gang covers, or European 100mm square boxes. The single input signal module shall support the following operations:

a. Audible/Visible Signal Power Selector (Polarized 24 Vdc @ 2A, 25Vrms @50w or 70 Vrms @ 35 Watts of Audio)

b. Telephone Power Selector with Ring Tone (Fire Fighter's Telephone)

J. Control Relay Module, SIGA-CR

1. Provide intelligent control relay modules SIGA-CR. The Control Relay Module shall provide one form "R" dry relay contact rated at 2 amps @ 24 Vdc to control external appliances or equipment shutdown. The control relay shall be rated for pilot duty and releasing systems. The position of the relay contact shall be confirmed by the system firmware. The control relay module shall be suitable for mounting on North American 2 ½" (64mm) deep 1-gang boxes and 1 ½" (38mm) deep 4" square boxes with 1-gang covers.

K. Intelligent Manual Pull Stations—General

1. It shall be possible to address each Signature Series fire alarm pull station without the use of DIP or rotary switches. Devices using DIP switches for addressing shall not be acceptable. The manual stations shall have a minimum of 2 diagnostic LEDs mounted on

The personality of multifunction modules shall be programmable at site to suit conditions and may be changed at any time using a personality code downloaded from the Analog Loop Controller. The modules shall have a minimum of 1 diagnostic LED mounted behind a finished cover plate. An LED shall flash to confirm communication with the loop controller and shall be steady on to indicate an alarm condition. Alternate LED displays shall be acceptable. The module shall be capable of storing up to 24 diagnostic codes, which can be retrieved for troubleshooting assistance. Input and output circuit wiring shall be supervised for open and ground faults. The module shall be suitable for operation in the following environment:

a. Temperature: 32°F to 120°F (0°C to 49°C)

b. Humidity: 0-93% RH, non-condensing

G. Single Input Module, SIGA-CT1

1. Provide intelligent single input modules SIGA-CT1. The Single Input Module shall provide one (1) supervised Class B input circuit capable of a minimum of 4 personalities, each with a distinct operation. The module shall be suitable for mounting on North American 2 ½" (64mm) deep 1-gang boxes and 1 ½" (38mm) deep 4" square boxes with 1-gang covers. The single input module shall support the following circuit types:

a. Normally-Open Alarm Latching (Manual Stations, etc.)

b. Normally-Open Active Non-Latching (Monitor, Fans, Dampers, Doors, etc.)

c. Normally-Open Active Latching (Supervisory)

H. Dual Input Module, SIGA-CT2

1. Provide intelligent dual input modules SIGA-CT2. The Dual Input Module shall provide two (2) supervised Class A input circuits each capable of a minimum of 4 personalities, each with a distinct operation. The module shall be suitable for mounting on North American 2 ½" (64mm) deep 1-gang boxes and 1 ½" (38mm) deep 4" square boxes with 1-gang covers. The dual input module shall support the following circuit types:

to 3.5%. The photo detector shall be suitable for operation in the following Environment:

a. Temperature: 32°F to 120°F (0°C to 49°C)

b. Humidity: 0-93% RH, non-condensing

c. Elevation: no limit

D. Standard Detector Mounting Bases, SIGA-SB / SIGA-SB4

1. Provide standard detector mounting bases SIGA-SB suitable for mounting on North American 1-gang, 3½" or 4" octagon box and 4" square box. The base shall, have the following minimum requirements:

a. Removal of the respective detector shall not affect communications with other detectors.

b. The base shall be capable of supporting one (1) Signature Series SIGA-LED Remote Alarm LED Indicator. Provide remote LED alarm indicators where shown on the plans.

E. Duct Detector Housing, SIGA-DH

1. Provide smoke detector duct housing assemblies SIGA-DH to facilitate mounting an intelligent analog Photoelectric Detector SIGA-PS along with a standard detector mounting base. Provide for variations in duct air velocity between 300 and 4000 feet per minute (300 to 1000 feet per minute for ion-photo-heat detector). Protect the measuring chamber from damage and insects. Provide an air exhaust tube and an air sampling inlet tube, which extends into the duct air stream up to ten feet. Provide drilling templates and gaskets to facilitate locating and mounting the housing. Provide five one gang knockouts for mounting optional Signature Series modules. Finish the housing in baked red enamel. Where duct-mounted smoke detectors are located above finished ceilings or in remote locations provide Remote Alarm LED Indicators SIGA-LED.

F. Intelligent Modules—General

1. Intelligent modules shall be individually addressable devices, utilized for monitoring and/or controlling devices or equipment.

detector to both 24 hour long-term and 4 hour short-term environmental changes. The microprocessor shall monitor the environmental compensation value and alert the system operator when the detector approaches 80% and 100% of the allowable environmental compensation value. Differential sensing algorithms shall maintain a constant differential between selected detector sensitivity and the "learned" base line sensitivity. The base line sensitivity information shall be updated and permanently stored at the detector approximately once every hour.

7. The intelligent analog detectors shall be suitable for mounting on a common detector-mounting base.

8. The Fire alarm system shall have the ability to set elevator lobby Ionization or Multi Sensing smoke detectors for alarm verification. Detector in the alarm verification mode shall indicate, by point in a text format at the main control and at the remote LCD annunciators.

C. Photoelectric Smoke Detector, SIGA-PS

1. Provide intelligent photoelectric smoke detectors SIGA-PS. The analog photoelectric detector shall utilize a light scattering type photoelectric smoke sensor to sense changes in air samples from its surroundings. The integral microprocessor shall dynamically examine values from the sensor and initiate an alarm based on the analysis of data. Systems using central intelligence for alarm decisions shall not be acceptable. The detector shall continually monitor any changes in sensitivity due to the environmental affects of dirt, smoke, temperature, aging and humidity. The information shall be stored in the integral processor and transferred to the analog loop controller for retrieval using a laptop PC or the SIGA-PRO Signature Program/Service Tool. The photo detector shall be rated for ceiling installation at a minimum of 30 ft (9.1m) centers and be suitable for wall mount applications. The photoelectric smoke detector shall be suitable for direct insertion into air ducts up to 3 ft (0.91m) high and 3 ft (0.91m) wide with air velocities of at least 2000 ft/min up without requiring specific duct detector housings or supply tubes.

2. The percent smoke obscuration per foot alarm set point shall be field selectable to any of five sensitivity settings ranging from 1.0%

B. Intelligent Detectors—General

1. The System Intelligent Detectors shall be capable of full digital communications using both broaDDCt and polling protocol. Each detector shall be capable of performing independent fire detection algorithms. The fire detection algorithm shall measure sensor signal dimensions, time patterns and combine different fire parameters to increase reliability and distinguish real fire conditions from unwanted deceptive nuisance alarms. Signal patterns that are not typical of fires shall be eliminated by digital filters. Devices not capable of combining different fire parameters or employing digital filters shall not be acceptable.

2. Each detector shall have an integral electronic device capable of making alarm decisions based on fire parameter information stored in the detector head or the control panel to which the device is connected. Distributed intelligence shall improve response time by decreasing the data flow between detector and analog loop controller. Detectors not capable of making independent alarm decisions shall be acceptable. Maximum total analog loop response time for detectors changing state shall be 0.5 seconds.

3. Each detector shall have a separate means of displaying communication and alarm status. An LED shall flash to confirm communication with the analog loop controller. An LED shall be steady on to indicate alarm status. Alternate LED displays shall be acceptable.

4. The detector shall be capable of identifying up to 32 diagnostic codes. This information shall be available for system maintenance.

5. Each smoke detector shall be capable of transmitting pre-alarm and alarm signals in addition to the normal, trouble and need cleaning information. It shall be possible to program control panel activity to each level. Each smoke detector may be individually programmed to operate at any one of five (5) sensitivity settings.

6. Each detector microprocessor shall contain an environmental compensation algorithm, which identifies and sets ambient "Environmental Thresholds" approximately six times an hour. The microprocessor shall continually monitor the environmental impact of temperature, humidity, other contaminates as well as detector aging. The process shall employ digital compensation to adapt the

Licensee, Project Program Compilation date, Compiler Version, Project Revision Number, and the time and date of the History Report.

F. Allow the user to disable/enable devices, zones, actions, timers and sequences. Protect the disable function with a password.

G. Allow the user to activate/restore outputs, actions, sequences, and simulate detector smoke levels. The use of 'canned' smoke, when used in accordance with manufacturer, NFPA 72 and NYC Code requirements, is an acceptable method for simulating smoke detector levels.

H. Allow the service user to enter time and date, reconfigure an external port for download programming, initiate auto programming and change passwords. Protect these functions with a password.

I. THE END-USER SHALL RETAIN COMPLETE RIGHTS AND OWNERSHIP TO ALL SOFTWARE RUNNING IN THE SYSTEM AT ALL TIMES. The fire alarm equipment vendor shall provide useable hard and soft copies of the software database to the End-User at the time of final system acceptance. The database provided shall be useable by any authorized and certified distributor of the product line, and shall include all applicable passwords necessary for total and unrestricted use and modification of the database. The extent of hardcopy database documentation to be provided shall be defined by the Consulting Engineer prior to final system acceptance.

2.5 COMPONENTS

A. Intelligent Devices—General

1. Each remote device shall support its functionality and serviceability. Each device shall store as required for its functionality the following data: device serial number, device address, device type, personality code, date of manufacture, hours in use, time and date of last alarm, amount of environmental compensation left/used, last maintenance date, job/project number, current detector sensitivity values, diagnostic information (trouble codes) and algorithms required to process sensor data and perform communications with the loop controller.

2. Each device shall be capable of electronic addressing, either automatically or application programmed assigned, to support physical/electrical mapping and supervision by location as required by UL and NFPA Standards.

7. Transmit an alarm condition, via the integral central station communicator, to central station/NYC Fire Department (as required by the AHJ).

C. The new fire alarm system wiring shall be electrically supervised to automatically detect and report trouble conditions to the FIRE COMMAND STATION. Any opens, grounds or disarrangement of system wiring and shorts across alarm signaling wiring shall automatically:

1. Update the control/display as described above (A.1.)

2. Transmit a trouble condition, via the integral central station communicator, to central station/Local Fire Department (as required by the AHJ).

3. Visually and audibly annunciate a general trouble condition at the Fire Command Station. The visual indication shall remain on until the trouble condition is repaired.

2.4 SUPPORT FOR INSTALLER AND OWNER MAINTENANCE

A. Provide a coded one-man walk test feature. Allow audible or silent testing. Signal alarms and troubles during test. Allow receipt of alarms and programmed operations for alarms from areas not under test.

B. Provide internal system diagnostics and maintenance user interface controls to display/report the power, communication, and general status of specific panel components, detectors, and modules.

C. Provide loop controller diagnostics to identify common alarm, trouble, ground fault, Class A fault, and map faults. Map faults include wire changes, device type changes by location, device additions/deletions and conventional open, short, and ground conditions. Ground faults on the circuit wiring of remote module shall be identified by device address.

D. Allow the user to display/report the condition of addressable analog detectors. Include device address, device type, percent obscuration, and maintenance indicator. The maintenance indicator shall provide the user with a measure of contamination of a device upon which cleaning decisions can confidently be made.

E. Allow the user to report history for alarm, supervisory, monitor, trouble, smoke verification, watchdog, and restore activity. Include Facility Name,

red, supervisory - yellow, trouble - yellow, monitor - yellow. When an unseen event exists for a given type, the indicator shall be lit.

3. For each event, the display shall include the current time, the total number of events, the type of event, the time the event occurred and up to a 42-character custom user description.

4. The user shall be able to review each event by simply selecting scrolling keys (up-down) for each event type.

5. New alarm, supervisory or trouble events shall sound a silencing audible signal at the control panel.

B. Operation of any alarm-initiating device shall automatically:

1. Update the control/display as described above (A.1.)

2. Sound all audible speaker appliances on the fire floor, floor above and floor below and in addition activate a simultaneous inquiry tone for the rest of the building speakers. Single channel "flip flop" operation does not meet NYC code and WILL NOT BE PERMITTED. While performing this sequence, FDNY personnel shall have the ability to manually page to any floor without disrupting the alarm sequence (i.e. 3 channel is required). Audible devices shall have the ability to be silenced per NYC code.

3. Activate all strobe appliances on the fire floor, floor above and floor below. ALL STROBE APPLIANCES THROUGHOUT THE FLOOR SHALL BE SYNCHRONIZED WITH EACH OTHER, and in the appropriate floor and floor above. Visual devices shall be non-silenced unless the system is successfully reset.

4. Operate control relay contacts to shutdown all HVAC units serving the floor of alarm initiation.

5. Operate control relay contacts to return all elevators that serve the floor of alarm initiation to the ground floor. If the alarm originates from the ground floor, operate control circuits contacts to return all elevators to the floor above or to a level as directed by the NYC Building Code and the NYC fire department.

6. Operate control relay contacts to release all magnetically held smoke doors throughout the building.

need for addition control components (power supplies, signal circuit modules, batteries, etc.).

D. The network riser shall be wired NFPA Style 7 (Class A with isolation).

E. Each of the following types of remote equipment associated with the fire alarm system shall be provided with a form 'R' control relay contact as shown on the drawings, but shall be typically as follows:

1. HVAC Fan Systems: Provide one (1) shutdown control relay contact for each HVAC fan system.

2. HVAC Supply Fans: Provide one (1) shutdown control relay contact for each HVAC supply fan.

3. HVAC Return Fans: Provide one (1) shutdown control relay contact for each HVAC return fan.

F. Provide a dedicated 24VDC circuit to feed all auxiliary relays required for inductive loads. Circuits shall be supervised via an end-of-line relay and addressable input module. Auxiliary relays shall not derive their power from the starter or load being controlled. Power for auxiliary relays shall not be drawn from the Fire Command Station or Data Gathering Panels. Provide a separate UL Listed power supply.

G. Each control or data gathering panel shall have a dedicated 20Amp-120VAC feed. An appropriate fuse cut out shall be included, wired as required by the Building Code for the City of NY and as indicated on the drawings.

2.3 FIRE ALARM SYSTEM SEQUENCE OF OPERATION

A. The system shall identify any off normal condition and log each condition into the system database as an event.

1. The system shall automatically display on the control panel Liquid Crystal Display the first event of the highest priority by type. The priorities and types shall be alarm, supervisory, trouble, and monitor.

2. The system shall have a Queue operation, and shall not require event acknowledgment by the system operator. The system shall have a labeled color coded indicator for each type of event; alarm -

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Acceptable manufacturers are the following:

1. GE Security (Formerly Edward System Technology).

2. Or approved equal.

B. Unless otherwise noted, the catalog numbers used are those of Edwards Systems Technology (EST) by GE Security "or equal", and constitute the type and quality of equipment to be furnished. For a list of EST authorized fire alarm vendors, contact Dana Ferrer at GE Security – dana.ferrer@ge.com.

C. New audible devices and warden stations shall be compatible with the existing and new system equipment.

D. Each Notification Appliance Circuits (Speaker and Strobe) shall be split (A/B) per the Title 1 of the Rules of the City of New York Chapter 4000.

2.2 CIRCUITTING GUIDELINES

A. In order to leave space for future devices, each Signaling Line Circuit (SLC) shall be circuited so device loading is not to exceed 60% of the loop capacity. The loop shall have a Class A operation. Each DGP shall include a SLC loop on a per floor basis. T-Tapping a selected loop to cover an alternate floor will not be accepted.

B. Where it is necessary to interface conventional initiating devices, provide intelligent input modules to supervise the device with Class B zone wiring.

C. Each of the following types of alarm notification appliances shall be circuited as shown on the drawings but shall be typically as follows:

1. Audible Signals: Provide sufficient spare capacity to assure that the addition of five (5) audible devices can be supported without the need for addition control components (power supplies, signal circuit modules, amplifiers, batteries, etc.).

2. Visual Signals Provide sufficient spare capacity to assure that the addition of three (3) visual devices can be supported without the

4. Indicating Devices: Quantity equal to 5 percent of the number of units of each type installed, but not less than 1 of each type.

5. 10% speaker strobe combination.

B. Above and beyond the extra materials furnished in Item A, Contractor shall provide twenty (20) smoke detectors and ten (10) duct smoke detectors with A total 1000 feet of conduit, wiring and other furnishings and materials required with installation, programming included at no extra cost to the DDC Engineer.

C. Contractor shall provide a unit price for the devices including other furnishings and materials required with installation, programming included at no extra cost to the DDC for each of the following:

1. Smoke detector

2. Duct smoke detector

3. Combination type Strobe and speaker

4. Pull station

5. Warden Station

6. Conduit and wire for 100 feet

1.10 GUARANTEE

A. The equipment manufacturer shall directly guarantee the system equipment to the DDC Engineer for a period of one (1) year from the date of final acceptance of the fire alarm system.

B. Guarantee all wiring and raceways to be free from inherent mechanical or electrical defects for one (1) year from the date of final acceptance of the fire alarm system.

C. Upon completion of the installation of fire alarm system equipment, provide to the DDC Engineer a signed written statement, substantially in form as follows:

"The undersigned, having engaged as the Fire Alarm Contractor on the 253 Broadway project confirms that the fire alarm system equipment was installed in accordance with the wiring diagrams, instructions and directions as required by the manufacturer."

1.8 SEQUENCING AND SCHEDULING

A. The Contractor shall prepare and gain approval by the DDC Engineer on installation schedule based on DDC Engineer's priorities prior to the start of work. Any deviation from the agreed work schedule, unless requested in writing and approved, shall not be acceptable. Minimizing impact on normal business activities shall be the contractor's responsibility. Contractor shall assume that 'off-hour' work will be required.

B. Existing Fire Alarm Equipment: Maintain full operational system until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until new equipment is accepted. Remove tags from new equipment when put into service and tag existing fire alarm equipment "NOT IN SERVICE" until removed from the building.

C. Install new Fire Alarm devices with all necessary hardware and software, and programmed for sequence of operation. Maintain existing equipment fully operational as found, until new equipment has been installed, programmed and prepared for cutover.

D. Existing Equipment Removal: After acceptance of the new combined fire alarm system, remove existing disconnected fire alarm equipment and restore damaged surfaces to the original conditions. Package operational fire alarm and detection equipment that has been removed; deliver to DDC Engineer. Remove from site and legally dispose of remainder of existing material.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below, before installation begins, that match products installed with protective covering for storage, and identified with labels clearly describing contents.

1. Lamps for Strobe Units: Quantity equal to 10 percent of the number of units installed, but not less than 1.

2. Smoke Detectors, Thermal Detectors and Manual Pull Stations: Quantity equal to 10 percent of the number of units of each type installed, but not less than 1 of each type.

3. Detector Bases: Quantity equal to 2 percent of the number of units of each type installed, but not less than 1 of each type.

O. The Contractor shall submit all the necessary and required documents to the NYC Fire Department and shall obtain all the approvals. The Contractor shall be responsible for requesting NYC Fire Department to inspect and test the system, and to correct all violations issued as a result of the testing at no additional cost to DDC. The Electrical Fire Alarm Contractor shall be responsible for obtaining the Fire Department's final approval and shall forward the final approval documentation to DDC at the completion of the work.

P. The Contractor shall submit a record of all field tests of the system.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: All work shall be performed by skilled workers. The Contractor or Subcontractor performing the work of this section must be an experienced NICET Level III installer. The installer shall have recent experience in installing fire alarm systems including programming, system pre-testing and the final system tests. The installer shall be approved by and have recent documented experience with the fire alarm system manufacturer. The Contractor shall be licensed by the State of New York and approved by the NYC Fire Department for fire alarm installation.

B. Single-Source Responsibility: The Contractor shall obtain all fire alarm components from a single source who assumes the responsibility for the compatibility of the system components.

C. Compliance with Local Requirements: The Contractor shall comply with the applicable building code, local ordinances and regulations, and the requirements of the Authorities Having Jurisdiction.

D. Comply with NFPA 72.

E. Listing and Labeling: Provide systems and equipment specified in this Section that are listed and labeled.

1. The terms "Listed" and "Labeled": As defined in the New York City Electrical Code, New York City Building Code and NFPA 72.

2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

alarm current draw, totals for all categories, and the calculated battery requirements. Battery calculations shall also reflect all control panel component, and auxiliary relay current draws. Failure to provide these calculations shall be grounds for the complete rejection of the submittal package.

K. The table of contents, product data sheets, sequences of operation, battery calculations, installation instructions, licenses, NICET certifications and B-Size (blackline) reduced shop drawings shall be submitted by the fire alarm vendor as part of a single, spiral bound submittal book. The submittal book shall have laminated covers indicating the project address, SED number, system type, and the Contractor. The book shall consist of labeled dividers, and shall not exceed 9 ½" in width, and 11 ½" in height. No less than four (4) sets of submittal booklets shall be provided to the consulting engineer for review and comment. Additional copies may be required at no additional cost to DDC.

L. The Contractor shall submit scale drawing sets along with the submittal booklets. These drawings may be either D-Size or E-Size drawings and of a sufficient resolution to be completely read. The sets shall be bound and folded so as to not take up more than 100 square inches of space. No less than four (4) sets of scale drawing sets shall be submitted to the Resident Engineer and Consultant Engineer for review and comment. Additional copies may be required at no additional cost to DDC.

M. Maintenance data for the fire alarm systems shall be included in the operation and maintenance manual. The Contractor shall include data for each type of product, including all features and operating sequences, both automatic and manual. Include recommendations for spare parts to be stocked at the site. The Contractor shall submit the names, address and telephone numbers of service organizations that carry a stock of repair parts for the system to be furnished.

N. Submission to Authorities Having Jurisdiction: In addition to the routine submission of the above material, make an identical submission to the Authorities Having Jurisdiction. Include copies of annotated drawings as needed to depict component locations to facilitate the review. Upon receipt of comments from the Authorities Having Jurisdiction, submit the comments to the Resident Engineer and Consultant Engineer for review. Resubmit if required to make clarifications or revisions in order to obtain an approval.

where conduit penetrations shall be made, so as to avoid conflicts with the internally mounted batteries.

5. See paragraph 3.10, DOCUMENTATION AND TRAINING, for other documents relating to this section.

6. The Contractor shall device typical wiring diagram drawing(s) which depict all system components, and their respective field wiring termination points. The wire type, gauge, and jacket shall also be indicated. When an addressable module is used in multiple configurations for monitoring or controlling various types of equipment, different device typical diagrams shall be provided.

7. The Contractor shall devise layout floor plans for every area served by the fire alarm system. Floor plans in AutoCAD (latest edition) shall indicate accurate locations for all control and peripheral devices. The drawings shall be no less than 1/8 inch scale. All addressable devices shall be depicted with a discrete address, which corresponds with that indicated on the riser diagram. All notification appliances shall also be provided with a circuit address, which corresponds to that depicted on the riser diagram. The Contractor shall indicate on the floor plans the location and routing of all riser conduits and all raceways that will be exposed to view. Indicate where the conduit will be concealed above the hung ceilings or in furred walls and where the plenum cable is run without the conduit. If individual floors need to be segmented to accommodate the 1/8" scale requirements, key plans and break-lines shall be provided on the plans in an orderly and professional manner.

8. Contained in the title block of each drawing shall be symbol legends with device counts, wire tag legends, circuit schedules for all addressable and notification appliance circuits, the project name/address, and a drawing description which corresponds to that indicated in the drawing index on the coversheet drawing. A section of each drawing title block shall be reserved for revision numbers and notes. The initial submission shall be Revision 0, with Revision A, B, or C as the project modifications require.

J. The Contractor shall submit battery calculations on a per power supply/charger basis. These calculations shall clearly indicate the quantity of devices, the device part numbers, the supervisory current draw, the

C. The Contractor shall submit the manufacturer's original printed product data, catalog cuts and the description of any special installation procedures. Photocopied and/or illegible product data sheets shall not be acceptable. All product datasheets shall be highlighted or stamped with arrows to indicate the specific components being submitted for approval.

D. The Contractor shall submit the manufacturer's installation instruction manual for the specified system.

E. The Contractor shall submit samples of various items when requested.

F. The Contractor shall submit a copy of its NYS License to perform fire alarm work.

G. The Contractor must be approved by the Fire Department of the City of New York for fire alarm work.

H. The Contractor shall submit copies of the NICET Level II Fire Alarm certifications for the two- (2) technicians assigned to this project.

I. The Contractor shall submit shop drawings as follows:

1. Submit a coversheet with the project name, address and drawing index.

2. Submit a general notes drawing with peripheral device backbox size information, part numbers, device mounting height information, and the names, addresses, point of contact, and telephone numbers of all contract project team members.

3. The Contractor shall device a riser diagram, which individually depicts all the addressable devices, and notification appliances. It shall include a specific, proposed point descriptor above each addressable device. It shall further include a specific, discrete point address, which shall correspond to addresses depicted on the device layout floor plans. The drawing shall provide wire specifications, and tags shown on all conductors with conduit and wire sizes depicted on the riser diagram. All circuits shall have designations that shall correspond with those required on the control panel and floor plan drawings.

4. The Contractor shall submit control panel termination drawing(s) depicting internal component placement and all internal and field termination points. The drawing shall provide a detail indicating

J. The requirements of the City of New York Building Department and the City of New York Fire Department.

1.4 RELATED DOCUMENTS

A. The Contractor shall secure permits and approvals prior to the installation.

B. Prior to the commencement and after the completion of the work, the Contractor shall notify all Authorities Having Jurisdiction.

C. The Contractor shall submit a letter of approval from the New York City Fire Department for the installation before requesting the acceptance of the system.

1.5 RELATED WORK

A. The Contractor performing the work of this section shall coordinate this work with the related work of other Sections. The work and/or equipment provided in other sections and related to the fire alarm system shall include, but not be limited to:

1. The installation of new duct smoke detectors wired and connected to the new system by the Contractor performing the work.

2. The existing air handling fan control circuits and status contacts.

3. Raceway and Boxes: Section 26 05 33

4. Wiring Devices: Section 26 27 26

1.6 SUBMITTALS

A. The Contractor shall submit a list of all types of equipment and components provided. This shall be incorporated as part of a Table of Contents, which will also indicate the manufacturer's part number, the description of the part, and the part number of the manufacturer's product datasheet on which the information can be found.

B. The Contractor shall submit a description of the operation of the system (Sequence of Operation). The sequence of operation shall be project specific, and shall provide individual sequences for every type of alarm, supervisory, or trouble condition, which may occur as part of the normal or off-normal system use.

7. Addressable control module.

8. Visual notification appliances; strobes with lexan covers.

9. Combination audible/visual notification appliances.

10. Air handling systems shutdown control.

11. Addressable monitor module.

12. Relay.

1.3 APPLICABLE CODES AND STANDARDS

A. All equipment shall be UL listed for its intended use.

B. National Electric Code, with New York City latest Amendments.

C. National Fire Protection Association Standards: NFPA 72 and NFPA 101

D. Local and State Building Codes and the local Authorities Having Jurisdiction.

E. Utilize MEA/BSA/OTCR approved Fire Alarm equipment.

F. Underwriters Laboratories Inc.: The system and all components shall be listed by Underwriters Laboratories Inc. for use in a fire protective signaling system under the following standards as applicable:

UL 864/UOJZ,	APOU Control Units for Fire Protective Signaling Systems.
UL 268	Smoke Detectors for Fire Protective Signaling Systems.
UL 268A	Smoke Detectors for Duct Applications.
UL 217	Smoke Detectors Single Station.
UL 464	Audible Signaling Appliances.
UL 1638	Visual Signaling Appliances.
UL 38	Manually Activated Signaling Boxes.
UL 1971	Standard for Signaling Devices for the Hearing Impaired.
UL 1481	Power Supplies for Fire Protective Signaling Systems.

G. Americans with Disabilities Act (ADA)

H. International Standards Organization (ISO): ISO-9001

I. The latest provisions of and amendments to Local Law No. 5, Local Law No. 16 and Local Law No. 58 of the City of New York.

SECTION 28 31 00

FIRE DETECTION AND ALARM

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. The requirements of the contract documents, including the General Condition and Division 1 - Specific Requirements shall apply to the work of this section.

1.2 SCOPE

A. The work covered by this section of the specification shall include all labor, equipment, materials and services to furnish and install a new Fire Alarm devices on the 9th Floor. The new devices shall be arranged to connect to the new DGP on the 8th Floor with exception of speakers and warden stations that will be connected to the existing EVAX fire alarm audio system. The existing EVAX system equipment shall be modified as required for connection of the new devices. The Fire Alarm equipment and devices shall be provided with all necessary hardware, software and programmed for a complete and operational system.

B. The Contractor shall be responsible for providing all raceway, conductors, devices, equipment, etc. The Contractor shall be a licensed Fire Alarm Contractor in the City of New York.

C. The new system shall consist of, but not be limited to, the following:

1. Addressable manual fire alarm stations.

2. Addressable analog area smoke detectors.

3. Addressable analog duct smoke detectors with remote LED (Light Emitting Diode) lamp.

4. Audible notification appliances; speakers with lexan covers.

5. Motorized fire/smoke damper control with remote LED (Light Emitting Diode) lamp.

6. Warden station.

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3.2 INSTALLATION

A. Install surface-mounted exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.

B. Install wall-mounted exit signs at height as indicated on Drawings.

C. Provide signs with directional chevrons as indicated on the drawings. Chevrons shall be factory etched into the exit sign.

D. Connect exit signs to branch circuit as indicated on the Drawings.

E. Ground and bond exit signs in accordance with Section 26 05 26.

3.3 FIELD QUALITY CONTROL

A. Section - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Operate each unit after installation and connection. Inspect for proper connection and operation.

3.4 PROTECTION OF FINISHED WORK

A. Section General Conditions - Execution and Closeout Requirements: Protecting finished work.

END OF SECTION

PART 2 - PRODUCTS

2.1 EXIT SIGNS

A. Manufacturers: Subject to the requirements of the specification, the following manufacturers products may be incorporated into the project:

1. Lightalarms
2. Dual-Lite
3. Sure-Lites, Cooper Lighting
4. Or approved equal.

B. Product Description: Edge Lit, LED Exit sign fixture with integral battery back-up and improved diagnostics.

C. Housing: Die-cast aluminum.

D. Face: Single or double face etched acrylic with 8" red letters with white background.

E. Directional Arrows: As indicated on Drawings.

F. Mounting: Wall or Ceiling mounted as indicated on the Drawings.

G. Battery: Nickel-cadmium type, with 1.5 hour capacity per UL 924.

H. Battery Charger: Solid-state with integral diagnostics to monitor and test the battery on a scheduled basis. Diagnostic LED's shall be provided to indicated normal and off-normal conditions and shall have a label adjacent to the LED's to indicate the diagnostic legend.

I. Lamps: LED, 2.5 W per face, maximum.

J. Input Voltage: 120/277 volts.

PART 3 - EXECUTION

3.1 EXISTING WORK

A. Disconnect and remove abandoned emergency lighting units, exit signs, lamps, and accessories.

SECTION 26 52 00

EMERGENCY LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes emergency lighting units and exit signs.

B. Related Sections:

1. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

2. Section 26 05 33 - Raceway and Boxes for Electrical Systems.

1.2 REFERENCES

A. National Electrical Manufacturers Association:

1. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SYSTEM DESCRIPTION

A. Exit signage.

1.4 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit dimensions, ratings, and performance data.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.6 MAINTENANCE MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish four replacement lamps for each lamp type installed.

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J. Install specified lamps in each luminaire.

3.03 FIELD QUALITY CONTROL

A. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

B. Replace blemished, damaged or unsatisfactory luminaires as directed.

3.04 ADJUSTING

A. Re-lamp luminaires that have failed lamps at Substantial Completion.

3.05 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photometric control surfaces as recommended by manufacturer.

D. Clean finishes and touch up damage.

END OF SECTION

6. Splices in internal wiring shall be made with approved insulated "Wire Nut" type mechanical connectors, suitable for the temperature and voltage conditions to which they will be subjected.

7. All luminaires shall be completely wired at the factory.

8. All luminaires shall be properly grounded using the branch circuit grounding conductor as required by NFPA 70.

9. Secure ballasts firmly in luminaire to prevent vibrations.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrate and supporting grids for luminaires.

B. Examine each luminaire to determine suitability for lamps specified.

3.02 INSTALLATION

A. Provide luminaires at locations and of types as indicated on the Contract Drawings.

B. Coordinate luminaire locations with Architectural Plans, reflected ceiling plans and other reference data prior to installation.

C. Each luminaire shall be packaged with complete instructions and illustrations showing how to install. Install luminaires in strict conformance with the manufacturer's recommendation and instructions.

D. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prohibit movement.

E. Install wall mounted luminaires at height as indicated on Drawings.

F. Install accessories furnished with each luminaire.

G. Connect luminaires to branch circuit outlets provided under Section 26 05 34 as indicated.

H. Make wiring connections to branch circuit using building wire or cable with insulation suitable for temperature conditions within luminaire.

I. Bond luminaires and metal accessories to branch circuit equipment grounding conductor.

8. Sound Rating: 'A' or better.

9. Other Requirements: UL listed, ETL certified, Class 'P' thermally protected, PCB free, output frequency greater than 40 KHz.

10. Line Transient Withstand: ANSI/IEEE C62.41, Category A.

11. Warranty: One full year from the date of acceptance for parts and replacement labor.

12. Acceptable Manufacturers: Advance, Universal, Osram-Sylvania.

2.07 LAMPS

A. All luminaires shall be provided with lamps as indicated in the luminaire schedule.

B. Fluorescent Lamp Manufacturers:

1. General Electric.

2. Osram-Sylvania.

3. Phillips.

2.08 WIRING

A. All wiring shall comply with the following:

1. All wiring within luminaires or from the luminaire to the splice with the building wiring shall be as specified under "WIRES AND CABLES".

2. Wiring shall be concealed within the luminaire construction except where the luminaire design or mounting dictates otherwise.

3. Joints in wiring within luminaires and connections of the luminaire wiring to the wiring of the building shall be as specified in Section 26 05 19.

4. Wiring channels and wireways shall be free from projections, screw points and rough or sharp edges throughout, and all points or edges over which conductors may pass and be subject to injury or wear shall be rounded or bushed.

5. Insulated bushings shall be installed at points of entrance and exit of wiring.

2. Harmonic Distortion: Total harmonic distortion shall not exceed 10 percent.

3. Electronic ballasts shall operate 1 or 2 lamp combinations as indicated in the luminaire schedule. Ballasts shall be parallel wire type.

4. Ballast Factor: .87 minimum.

5. Power Factor: .95 or higher.

6. Lamp Current Crest Factor: 1.7 maximum (ANSI standard).

7. Sound Rating: 'A' or better.

8. Other Requirements: UL listed, ETL certified, Class 'P' thermally protected, PCB free, output frequency greater than 20KHz.

9. Line Transient Withstand: ANSI/IEEE C62.41, Category A.

10. Warranty: One full year from the date of acceptance for parts and replacement labor.

11. Acceptable Manufacturers: Advance, Universal, Osram-Sylvania.

C. Compact Fluorescent, Full Output Type.

1. Description: Ballasts shall be solid-state electronic, high-frequency, programmed start, full output type for use with T-4, four-pin compact fluorescent lamps. Ballasts shall provide normal rated life for specified lamps and shall have end-of-life lamp shut-off circuitry. The end-of-life circuitry shall automatically reset when new lamps are installed.

2. Harmonic Distortion: Total harmonic distortion shall not exceed 10 percent.

3. Electronic ballasts shall operate 1 or 2 lamp combinations as indicated in the luminaire schedule. Ballasts shall be parallel wire type.

4. Input Voltage: 120/277 (dual voltage).

5. Ballast Factor: .87 minimum.

6. Power Factor: .95 or higher.

7. Lamp Current Crest Factor: 1.7 maximum (ANSI standard).

steel of the thickness specified and given a suitable primer and white color coat or coats properly applied to meet the following requirements and tests:

1. Initial reflection factor shall be not less than 92%.

2. Exposure to 100% humidity at 110°F, for 100 hours (Cook Box Test) shall demonstrate no blistering or other effect.

3. Except for stainless steel give ferrous metal surfaces a five-stage phosphate treatment or other acceptable base bonding treatment before final painting and after fabrication.

2.05 LENSES

A. Glass used for lenses shall be impact and heat-resistant tempered borosilicate glass. The glass shall be crystal clear in quality with a transmittance of not less than 88%, unless otherwise indicated.

B. Where optical lenses are used, they shall be free from spherical and chromatic aberrations and other imperfections which may hinder the functional performance of the lenses.

C. All lenses, louvers, or other light diffusing elements shall be removable, but positively held so that hinge or other normal motion will not cause them to drop out.

D. All lenses shall be installed (turned over to the Owner) clean and free of dust or finger prints.

E. All lenses are subject to Engineer's approval.

2.06 BALLASTS

A. General: Ballasts shall be compatible with the specified lamps. The input voltage shall be compatible with the building voltage as indicated on the Contract Drawings.

B. Fluorescent, full output type.

1. Description: Ballasts shall be solid-state electronic, high-frequency, full output type for use on 265mA, rapid start T-8 lamps. Ballasts shall provide normal rated life for specified lamps and shall be equipped with end-of-life lamp shut-off circuitry. The end-of-life circuitry shall automatically reset when new lamps are installed.

I. Provide finished product with smooth ground metal edges; tight fitting connections, hinges, closures; clean, trims and frames.

J. Provide access for servicing the installed luminaire and for replacement of electrical components without requiring removal of the luminaire.

2.02 GENERAL LUMINAIRE CONSTRUCTION

A. Fluorescent luminaire housings shall be die-formed of code gauge sheet steel (minimum) or as specified, with integral end plates and trim flanges, coordinated with ceiling construction unless otherwise noted. Socket plates shall be of the same gauge as housing. Wireway covers shall provide ready access to electrical components without the use of tools. All metal parts shall be cleaned, primed and finished after fabrication to prevent corrosion. Finish with a high reflectance, white powder coat baked enamel, unless otherwise noted. All units shall carry the UL label.

B. All materials, accessories, and other related luminaire parts shall be new and free from defects which in may impair their character, appearance, strength, durability and function.

C. Enclosed luminaire doors shall be provided as follows:

1. Positive light seal.

2. Concealed safety hinges.

3. Inconspicuous "positive spring loaded" holding latches.

4. Hinge shall be capable of being installed on either side of the luminaire.

5. Removable without use of tools.

2.03 SURFACE MOUNTED LUMINAIRE

A. Surface mounted luminaire shall be provided with required mounting stand-off brackets and accessories. Locations of luminaires in mechanical areas shall be coordinated with Mechanical Contractor.

2.04 FINISHES

A. Completely form painted reflectors before application of primer and enamel color coat or coats. Reflectors and reflector bodies for fluorescent lamp luminaires having baked-on white synthetic enamel finish shall be made of

PART 2 - PRODUCTS

2.01 LUMINAIRES

A. General: Provide luminaires of sizes, types and ratings, indicated or scheduled; complete with, but not limited to, housings, solid-state electronic ballasts, starters, wiring and lamps.

B. Provide thickness of sheet metal so that all luminaires are rigid, stable and will resist deflection, twisting, warping under normal installation procedures, re-lamping and maintenance.

1. All luminaire housings shall be made of code gauge sheet steel, unless a heavier gauge is specified.

2. Tempered glass lenses shall be 1/4" thick minimum.

C. Manufacture luminaires to the specifications described above and hereafter and as indicated in the luminaire schedule, drawings and all contract documents.

D. The luminaire schedule contains a general description of the luminaire construction requirements. Manufacturers' catalog numbers are provided to indicate the luminaire series and options specified. Where a conflict exists between the written description and the model number, the Contractor shall request clarification from the Engineer.

E. Minor details, not usually indicated on the drawings nor specified, but that are necessary for the proper execution and completion of the luminaires, shall be included, the same as if they were herein specified or indicated on the Drawings.

F. All luminaire designs shall include as applicable, plaster frames, trim rings, shrouds, flanges, backboxes, support hardware and any other components required for a complete and proper installation of the luminaires. The Contractor shall coordinate with members of other trades, ceiling or mounting surface construction, trim and any other pertinent details, as applicable.

G. The Contractor shall coordinate and detail all necessary structural supports and support hardware required for the safe attachment of all luminaires to mounting surfaces.

H. Provide neoprene gaskets, stops and barriers where required to prevent light leak or water and water vapor penetration.

equipment. All luminaires shall be assembled, wired and equipped, at place of manufacture.

B. Reflector cones, baffles, louvers, lenses, and decorative elements of luminaires shall be packed separate from the luminaire housing by the Manufacturer.

C. All luminaires, when installed shall be free of dents, warps, light leaks and any other irregularities. Blemished, damaged or unsatisfactory luminaires shall be replaced in a manner satisfactory to the Architect.

D. Reflectors, cones or baffles shall be absolutely free of indentations, finger prints, dents, warps, and any other irregularities caused by shipping, manufacturing or installation process.

1.08 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Conform to requirements of the New York City Building Code.

C. Conform to requirements of the New York State Energy Code.

D. National Appliance Energy Conservation Act of 1987, Amendments of 1988 (Public Law 100-357 dated June 28, 1988): Requirements for Energy Efficient Ballasts.

E. The Energy Policy Act of 1992.

F. Furnish products listed and classified by a Nationally Recognized Testing Laboratory (NRTL) as suitable for purpose specified and shown. NRTL's are defined under the regulations of the Occupational Health and Safety Administration (OSHA).

1.09 EXTRA MATERIALS

A. Provide two of each plastic or tempered glass lens.

B. Provide one case of replacement lamps for each fluorescent lamp type installed. Minimum quantity of lamps shall be 24 of each type, unless otherwise specified.

C. Provide two of each ballast type.

2. In the event the submissions are disapproved, the luminaire may be picked up by the Contractor. The Contractor shall immediately make a new submission of a luminaire meeting the contract requirements.

3. Samples shall be labeled with the name of the project, luminaire type and a description of the submitted item. Samples will not be returned.

4. Upon request, the Contractor shall install, at no cost to the City of New york, the submitted samples at the location designated by the Engineer.

D. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements.

E. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Upon request, furnish for review by the Engineer, an itemized schedule of unit equipment costs for all luminaire types to be provided under the contract.

G. Submit a list of all interior spaces with the respective luminaire type and ceiling type scheduled to be installed within the space. The purpose of this list is to insure proper coordination between ceiling type and luminaire trim.

1.06 QUALITY ASSURANCE

A. Materials, equipment and appurtenances as well as workmanship provided under this Section shall conform to the highest commercial standards as specified herein and as indicated on the Drawings. Luminaire parts and components not specifically identified or indicated shall be made of materials most appropriate to their use or function and resistant to corrosion and thermal and mechanical stresses encountered in the normal application and function of the luminaires.

B. All lamps of a given type shall be the product of one manufacturer.

C. All ballasts for luminaires of a given type shall be product of one manufacturer.

1.07 DELIVERY AND HANDLING

A. All lighting equipment delivered to the project shall be complete, including mounting devices, ballasts, sockets, transformers, wiring and any other components necessary for the proper operation and installation of the

1.05 SUBMITTALS

A. Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.

B. Product Data: Provide luminaire cut sheets with all information including, but not limited to, the following information in a clearly legible manner:

1. Manufacturer's name and address.
2. Catalog number of item.
3. Input voltage.
4. Ballast data, including manufacturer, catalog number, and power factor.
5. All dimensions.
6. Complete information on options.
7. Housing material, thickness, construction, type of finish and available color.
8. Photometric data including coefficient of utilization.
9. Cut sheets of lamps, indicating manufacturer, lamp type, wattage, lamp color and catalog number.
10. Manufacturers catalog cuts will be acceptable only if they represent the luminaire types exactly as specified, without any modifications in construction or electrical characteristic. Catalog cuts shall include luminaire type, luminaire illustration with mounting details, dimensions, materials, components description and certification of suitability for use in locations indicated.

C. When a substitute luminaire is proposed for use in lieu of the specified product, the Engineer may request a sample be submitted in addition to the normal shop drawings. Sample luminaires shall be equipped with lamps and a 10' cord with a ground plug (NEMA 5-15P, 120 volts). All costs for samples shall be the responsibility of the Contractor.

1. In the event sample is approved, then the luminaire submitted and provided under the contract shall be identical with the approved sample luminaire. No luminaire used as a sample will be allowed to be installed on the project unless directed by Engineer. Samples will not be returned.

SECTION 26 51 00
INTERIOR LIGHTING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This Section specifies requirements for luminaires, lamps and accessories.

B. The Contractor shall provide all labor, materials, equipment and services required to furnish and install all lighting systems, luminaires, lamps, accessories and all related work in strict accordance with the contract documents.

C. The Contractor shall be responsible for all luminaire quantities, lengths and clearances required and shall inform, the Engineer in writing, at the time the bid submission is made, of any discrepancies or variances found with luminaires or details specified herein or in the luminaire schedule and other contract documents, which affect installation or location of luminaires.

1.02 RELATED DOCUMENTS

A. The General Documents and General Requirements apply to this Section. Consult them in detail for applicable instructions.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Raceways and Boxes for Electrical System: Section 26 05 33

B. Low-Voltage Power Conductors and Cables: Section 26 05 19

C. Floor Boxes for Electrical Systems: Section 26 05 34

D. Hangers and Support: Section 26 05 29

1.04 REFERENCE STANDARDS

A. ANSI C82.1 - Ballasts for Fluorescent Lamps - Specifications.

B. ANSI/NFPA 70 - National Electrical Code.

C. ANSI/NFPA 101 - Life Safety Code.

D. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

E. UL 1598 - Luminaires

3. UL Class L fuses – 200,000 RMS symmetrical amperes.

PART 3 - EXECUTION

3.1 PREPARATION

A. Maintain access to existing enclosed switches and other installations remaining active and requiring access.

3.2 INSTALLATION

A. Install enclosed switches plumb. Provide supports in accordance with Section 26 05 29.

B. Height: 5 feet (1500 mm) to operating handle.

C. Install fuses for fusible disconnect switches. Refer to Section 26 28 13 for product requirements.

D. Connect auxiliary contact to control circuit of variable speed drive to turn off drive when switch is opened.

E. Install engraved plastic nameplates in accordance with Section 26 05 53.

F. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

3.3 FIELD QUALITY CONTROL

A. Section General Conditions - Quality Requirements.

B. Inspect and test in accordance with NETA ATS, except Section 4 – Division of Responsibility.

C. Perform inspections and tests listed in NETA ATS, Section 7.5.1.1 – Switches, Air, Low-Voltage.

3.4 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean existing enclosed switches to remain.

END OF SECTION

2. Exterior Locations: NEMA Type 3R.

D. Provide auxiliary contact in each switch for connection to variable speed drive control circuit.

E. Switches shall be furnished with copper isolated neutral bus and copper ground bus in each switch.

F. Service Entrance: Switches identified for use as service equipment are to be labeled for this application. Provide neutral bonding provisions for service entrance rated switches.

G. Furnish switches with entirely copper current carrying parts.

2.3 NON-FUSIBLE SWITCH ASSEMBLIES

A. Product Description: NEMA KS 1, Type HD with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter switch. Handle lockable in OFF position.

B. Enclosure: NEMA KS 1, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard enamel unless otherwise noted.

1. Interior Dry Locations: Type 1.

2. Exterior Locations: Type 3R.

C. Switches shall be furnished with copper isolated neutral bus and copper ground bus in each switch.

D. Provide auxiliary contact in each switch for connection to variable speed drive control circuit.

E. Furnish switches with entirely copper current carrying parts.

2.4 SWITCH RATINGS

A. Switch Rating: Horsepower rated for AC or DC as indicated on Drawings.

B. Short Circuit Current Rating:

1. UL Class RK-1 fuses – 200,000 RMS symmetrical amperes.

2. UL Class J fuses – 200,000 RMS symmetrical amperes.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of enclosed switches and ratings of installed fuses.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Allen-Bradley.
2. General Electric Company.
3. Schneider Electric/Square D.
4. Siemens.
5. Or Approved Equal.

2.2 FUSIBLE SWITCH ASSEMBLIES

A. Product Description: NEMA KS 1, Type HD with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter switch. Handle lockable in OFF position.

B. Fuse clips: Designed to accommodate only NEMA FU 1, Class R fuses.

C. Enclosure: NEMA KS 1, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard enamel unless otherwise noted.

1. Interior Dry Locations: NEMA Type 1.

SECTION 26 28 19

ENCLOSED SWITCHES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible.
2. Non-fusible switches.

B. Related Sections:

1. Section 26 05 29 - Hangers and Supports for Electrical Systems.
2. Section 26 05 53 - Identification for Electrical Systems.
3. Section 26 28 13 - Fuses.

1.2 REFERENCE STANDARDS

A. National Electrical Manufacturers Association:

1. NEMA FU 1 - Low Voltage Cartridge Fuses.
2. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).

B. International Electrical Testing Association:

1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

C. Underwriter's Laboratory, Inc:

1. UL-98 - Enclosed and Dead-Front Switches.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit switch ratings and enclosure dimensions.

2. Mersen ATDR (600V).

3. Littelfuse Type KLDR (600V).

B. Description: Time-delay fuse; rejection type.

2.6 FUSE PERFORMANCE REQUIREMENTS

A. Main Service Switches Larger than 600 amperes: UL Class L (time-delay).

B. Motor Load Feeder Switches: UL Class RK1 (time-delay).

C. General Purpose Branch Circuits: UL Class RK1 (time-delay).

D. Motor Branch Circuits: Class RK1 (time delay).

E. Lighting Branch Circuits: UL Class CC (time delay).

F. Motor Control Transformers: UL Class CC (time-delay).

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install fuse with label oriented so manufacturer, type, and size are easily read.

B. Promptly replace all fuses cleared during construction for whatever cause.

3.2 FUSE TYPE

A. The type of fuses required for each application, are given in the Specification Sections where equipment requiring fuses are specified.

B. If the fuse type is not identified, provide UL Class RK-1 fuses.

END OF SECTION

F. Voltage: Rating suitable for circuit phase-to-phase voltage.

G. Substitution Limitations:

1. Section General Conditions - Product Requirements: Requirements for substitutions for other manufacturers and products.

2.2 CLASS RK1 (TIME DELAY) FUSES

A. Manufacturers:

1. Bussmann Type LPN-RK (250V) or Type LPS-RK (600V).

2. Mersen A2D-R (250V) or A6D-R (600V).

3. Littelfuse Type LLN-RK (250V) or Type LLS-RK (600V).

B. Description: Dual-Element, time-delay, current limiting, rejection type.

2.3 CLASS J (TIME DELAY) FUSES

A. Manufacturers:

1. Bussmann Type LPJ (600V).

2. Littelfuse Type JTD (600V).

B. Description: Dual element, time-delay fuse; current limiting.

2.4 CLASS L (TIME DELAY) FUSES

A. Manufacturers:

1. Bussmann Type KRP-C (600V).

2. Littelfuse Type KLP-C (600V).

3. Mersen A4BQ (600V).

B. Description: Time-delay (minimum 4 sec at 500% of rating), current limiting, machined end bells with o-ring inlays, silver plated terminals.

2.5 CLASS CC (TIME DELAY) FUSES

A. Manufacturers:

1. Bussmann Type LP-CC (600V).

B. Project Record Documents: Record actual sizes, ratings, and locations of fuses.

1.5 MAINTENANCE MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Requirements for maintenance materials

B. Extra Materials:

1. Furnish 10% but not less than six spare fuses of each Class, size, and rating installed.

1.6 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.1 FUSES - GENERAL

A. Subject to compliance with the requirements of the Specification, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:

1. Cooper Industries - Bussmann.

2. Mersen.

3. Littelfuse.

4. Or Approved Equal.

B. Dimensions and Performance: NEMA FU 1, Class as specified or as indicated on Drawings.

C. All fuses shall have an interrupting rating of 200,000 amperes RMS Symmetrical.

D. All fuses shall be UL Listed.

E. All fuses utilized on the project shall be products of one manufacturer.

SECTION 26 28 13

FUSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fuses.

B. Related Sections:

1. Section 26 28 19 – Enclosed Switches.
2. Section 26 51 00 – Interior Lighting.

1.2 REFERENCE STANDARDS

A. National Electrical Manufacturers Association:

1. NEMA FU 1 - Low Voltage Cartridge Fuses.

B. Underwriter's Laboratories, Inc.

1. UL 248-8 – Low-Voltage Fuses – Part 8: Class J Fuses.
2. UL 248-10 – Low-Voltage Fuses – Part 10: Class L Fuses.
3. UL 248-12 – Low-Voltage Fuses – Part 12: Class R Fuses.
4. UL 248-14 – Low-Voltage Fuses – Part 14: Supplemental Fuses.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data sheets showing electrical characteristics, including time-current curves.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

3.5 FIELD QUALITY CONTROL

A. General Conditions and Addendum to General Conditions - Field inspecting, testing, adjusting, and balancing.

B. Inspect each wiring device for defects.

C. Operate each wall switch with circuit energized and verify proper operation.

D. Verify each receptacle device is energized.

E. Test each receptacle device for proper polarity.

F. Test each GFCI receptacle device for proper operation.

3.6 ADJUSTING

A. General Conditions and Addendum to General Conditions - Testing, adjusting, and balancing.

B. Adjust devices and wall plates to be flush and level.

3.7 CLEANING

A. General Conditions and Addendum to General Conditions - Final cleaning.

B. Clean exposed surfaces to remove splatters and restore finish.

C. Replace receptacles and switches that have been paint over.

END OF SECTION

B. Verify outlet boxes are installed at proper height.

C. Verify wall openings are neatly cut and completely covered by wall plates.

D. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

A. Clean debris from outlet boxes.

3.3 INSTALLATION

A. Install devices plumb and level.

B. All devices in CMU walls shall be flush mounted with concealed conduit runs.

C. Install switches with OFF position down.

D. Install receptacles with grounding pole on bottom.

E. Connect wiring device grounding terminal to branch circuit equipment grounding conductor.

F. Install decorative plates on switch, receptacle, and blank outlets in finished areas.

G. Connect wiring devices by wrapping solid conductor around screw terminal. Install solid conductor for branch circuits 10 AWG and smaller. When stranded conductors are used in lieu of solid, use crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under device screws.

H. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.4 INTERFACE WITH OTHER PRODUCTS

A. Coordinate locations of outlet boxes provided under Section 26 05 33 to obtain mounting heights as specified and as indicated on drawings.

B. Coordinate installation of wiring devices with floor box service fittings provided under Section 26 05 34.

4. Pass & Seymour No. IG5362.

E. Duplex GFCI Convenience Receptacle, NEMA 5-20R:

1. Cooper No. VGF20.
2. Hubbell No. GF20_L.
3. Leviton No. 7899.
4. Pass & Seymour No. 2095SI.

2.4 WALL PLATES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's other products that may be incorporated into the project:

1. Cooper Wiring Devices.
2. Hubbell.
3. Pass & Seymour.
4. Leviton.

B. Decorative Cover Plate: 302 stainless-steel. Cover plates for wiring devices installed in millwork shall be selected by the Architect.

C. Weatherproof Cover Plate: In-use type, thermoplastic for single GFI receptacle or light switch.

1. Cooper No. WIU-2.
2. Hubbell No. RW57500.
3. Leviton No. 5976-CL.
4. Pass & Seymour No. WIUC10CL.

PART 3 - EXECUTION

3.1 EXAMINATION

A. General Conditions and Addendum to General Conditions - Coordination and project conditions.

2. Wide double blade contacts designed to maintain positive pressure against both sides of plug or cap having flat fingers. Contacts shall be solid brass.

3. Polarized grounding type with grounding contacts bonded to receptacle mounting strap, except isolated ground receptacles. Mounting strap shall be nickel plated brass.

4. Contacts separated by impact resisting molded plastic insulating material.

5. Receptacles shall be back and side wired; provide a green base ground screw terminal and a nylon face.

6. General Receptacle Types: Rating in amperes, number of poles and wires, voltage, NEMA configuration, description and manufacturer's catalog numbers as indicated below.

7. Configuration: NEMA WD 6.

8. GFCI Receptacle: Duplex convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements. GFCI receptacles shall be feed-though type.

9. Color or receptacles shall be white. The color of wiring devices installed in millwork shall be as selected by the Architect from the manufacturer's standard colors.

C. Duplex Convenience Receptacle, NEMA 5-20R:

1. Cooper No. CR5362.

2. Hubbell No. HBL5362.

3. Leviton No. 5362.

4. Pass & Seymour No. PS5362.

D. Isolated Ground Duplex Receptacle, NEMA 5-20R:

1. Cooper No. IG5362.

2. Hubbell No. IG5362.

3. Leviton No. 5362-IG.

3. Leviton No. CSB3-20

4. Pass & Seymour No. CSB20AC3.

F. Four-way Switch:

1. Cooper No. CSB420.

2. Hubbell No. CSB420

3. Leviton No. CSB4-20

4. Pass & Seymour No. CSB20AC4.

G. Pilot Light Switch, Single Pole, red polycarbonate handle (Switch Handle glows when in ON position):

1. Cooper No. 2221PL.

2. Hubbell No. HBL1221PL.

3. Leviton No. 1221-PLR.

4. Pass & Seymour No. PS20AC1RPL.

2.3 RECEPTACLES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's other products that may be incorporated into the project:

1. Cooper Wiring Devices.

2. Hubbell.

3. Leviton.

4. Pass & Seymour (LeGrand).

5. Or Approved Equal.

B. Product Description:

1. NEMA WD 1, Heavy-duty; general use receptacle.

3. Leviton

4. Pass & Seymour (LeGrand)

5. Or Approved Equal.

B. Description:

1. Heavy-duty, AC only general-use snap switch, quiet operation type, back and side wired.

2. Voltage: 120/277 volts, AC.

3. Current: 20 amperes.

4. Horsepower rating: 1 HP@120V; 2 HP@277V.

5. Body and Handle: Thermoplastic with a nylon toggle handle. Handle color shall be White. The color of wiring devices installed in millwork shall be as selected by the Architect from the manufacturer's standard colors.

C. Single Pole Switch:

1. Cooper No. CSB120.

2. Hubbell No. CSB120.

3. Leviton No. CSB1-20

4. Pass & Seymour No. CSB20AC1.

D. Double Pole Switch:

1. Cooper No. CSB220.

2. Hubbell No. CSB220.

3. Leviton No. CSB2-20

4. Pass & Seymour No. CSB20AC2.

E. Three-way Switch:

1. Cooper No. CSB320.

2. Hubbell No. CSB320.

1.3 SUBMITTALS

A. General Conditions and Addendum to General Conditions - Submittal procedures.

B. Product Data: Submit manufacturer's catalog information showing dimensions, colors and configurations.

C. Samples: Submit two samples of each wiring device and wall plate illustrating materials, construction, color and finish.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.

1.5 EXTRA MATERIALS

A. General Conditions and Addendum to General Conditions - Spare parts and maintenance products.

B. Furnish two (2) of each style, size and finish wall plate.

PART 2 - PRODUCTS

2.1 GENERAL

A. Products provided under this Section shall be from one manufacturer for identical catalog items (i.e. receptacles); wherever possible, provide uniformity of manufacturer for similar types of items.

B. Plugs shall be of same manufacturer and grade as receptacles.

C. The color of the wiring devices shall be as selected by the Architect from the manufacturer's standard colors.

2.2 WALL SWITCHES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's other products that may be incorporated into the project:

1. Cooper Wiring Devices

2. Hubbell

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This section includes requirements for wiring devices in accordance with the Contract Documents. The "GENERAL CONDITIONS" shall apply to all work under the Contract. The work of this Section shall include but not limited to the following:

1. Wall switches
2. Receptacles
3. Device plates

B. Related Sections:

1. Section 26 05 33 - Raceway and Boxes for Electrical Systems: Outlet boxes for wiring devices.
2. Section 26 05 33 - Raceway and Boxes for Electrical Systems: Service fittings for receptacles installed on floor boxes.
3. Section 26 05 33 - Raceway and Boxes for Electrical Systems: Poke-through receptacles.

1.2 REFERENCES

A. National Electrical Manufacturers Association:

1. NEMA WD 1 - General Requirements for Wiring Devices.
2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

B. Underwriter's Laboratories, Inc.:

1. UL 943 – Standards for Ground-Fault Circuit Interrupters.

3.3 FIELD QUALITY CONTROL

A. Section General Conditions - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform circuit breaker inspections and tests listed in NETA ATS, Section 7.6.

D. Perform switch inspections and tests listed in NETA ATS, Section 7.5.

E. Perform controller inspections and tests listed in NETA ATS, Section 7.16.1.

3.4 ADJUSTING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for starting and adjusting.

B. Measure steady state load currents at each panelboard feeder; rearrange circuits in panelboard to balance phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.

3.5 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean existing panelboards to remain.

END OF SECTION

c. For doors greater than 48-inches – Provide three locks.

E. Finishes: Finish in manufacturer's standard gray enamel.

F. Branch Circuit panelboards shall be Square D Type NQ, or approved equal for 208/120 volts. Circuit breakers shall be Square D Type QOB-VH, or approved equal.

PART 3 - EXECUTION

3.1 DEMOLITION

A. Disconnect panelboards and load centers as indicated on the drawings. Remove conduit and conductors feeding panelboards or load centers back to the source.

B. Maintain access to existing distribution panelboard to remain active and maintain access during construction. Modify the existing distribution panel as required to accommodate work of this project.

3.2 INSTALLATION

A. Install panelboards [and load centers] in accordance with NEMA PB 1.1.

B. Install panelboards [and load centers] plumb.

C. Install recessed panelboards [and load centers] flush with wall finishes.

D. Height: 6-feet 6-inches to operating handle of highest circuit breaker. Install panelboards not less than 6-inches above the floor.

E. Install filler plates for unused spaces in panelboards.

F. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes to balance phase loads. Identify each circuit as to its clear, evident and specific purpose of use.

G. Install engraved plastic nameplates in accordance with Section 26 05 53.

H. Install spare conduits out of each recessed panelboard to accessible location above ceiling. Minimum spare conduits: 5 empty 1-inch conduits. Identify each as SPARE.

I. Ground and bond panelboard enclosure according to Section 26 05 26. Connect equipment ground bars of panels in accordance with NFPA 70.

C. Short Circuit Rating:

1. For 240 volt panelboards - 22,000 amperes RMS symmetrical.

D. Materials:

1. Panelboard Bus: Copper current carrying components, ratings as indicated on Drawings. Furnish an insulated copper neutral bus in each panelboard with a neutral.

2. Furnish copper ground bus in each panelboard. Ground bus shall be bare, un-insulated and suitably bolted to the cabinet. Provide suitable lugs for each feeder ground conductor and each outgoing branch or feeder circuit.

3. Multiple cable lugs for incoming feeder cables shall be furnished where required. Lugs shall be secured to bus by stud bolts. Multiple section panels shall have sub-feed or feed-through lugs with full capacity taps to adjacent panel section.

4. Molded Case Circuit Breakers: UL 489, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, listed as Type SWD for lighting circuits; Type HACR for air conditioning equipment circuits; Class A ground fault interrupter circuit breakers as indicated on Drawings. Provide UL Class 760 arc-fault interrupter circuit breakers as indicated on Drawings. Do not use tandem circuit breakers.

5. Enclosure: NEMA PB 1, Type 1.

6. Cabinet Box: 6 inches (153 mm) deep, 20 inches (508 mm) wide unless otherwise noted. Box shall be fabricated from code gauge galvanized sheet steel without pre-punched knockouts.

7. Cabinet Front: Door-in-door trim, bolted to the cabinet. Finish in manufacturer's standard gray enamel. Each door shall be provided with Yale 511S locks with 47 key. Locks shall be provided as follows:

   a. For doors less than 30-inches – Provide one lock.

   b. For Doors 30 to 48-inches – Provide two locks.

1. Furnish two of each panelboard key. Panelboards keyed alike to Owner's current keying system.

1.6 QUALITY ASSURANCE

A. Qualifications

1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.1 GENERAL

A. Dead-front panelboards incorporating the number, rating and type of circuit over-current protection indicated and as shown on the Contract Drawings shall be provided in the enclosure specified for either surface or flush mounting as indicated on the Drawings.

2.2 MANUFACTURERS

A. Subject to the requirements of this specification, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

1. Schneider Electric/Square D.
2. General Electric Company.
3. Siemens.
4. Approved Equal.

2.3 BRANCH CIRCUIT PANELBOARDS

A. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.

B. All interiors shall be completely factory assembled with switching and protective devices, connectors, etc. They shall be so designed that switching and protective devices can be replaced without disturbing adjacent units, without removing the main bus connectors, and shall be so designed that circuits may be changed without machining, drilling or tapping.

2. UL 67 - Safety for Panelboards.

3. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures.

4. UL 1449 - Transient Voltage Surge Suppressors.

1.3 SUBMITTALS

A. Section General Conditions- Submittal Procedures: Requirements for submittals.

B. Product Data: Submit catalog data showing specified features of standard products.

C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.

D. Source Quality control submittals: Indicate results of factory tests and inspections.

E. Field Quality Control Submittals: Indicate results of Contractor furnished tests and inspections.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions- Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.

C. Operation and Maintenance Data: Submit spare parts listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Section General Conditions- Execution and Closeout Requirements: Requirements for maintenance products.

B. Extra Stock Materials:

SECTION 26 24 16

PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Branch circuit panelboards.

B. Related Requirements:

1. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
2. Section 26 05 53 - Identification for Electrical Systems.

1.2 REFERENCE STANDARDS

A. Institute of Electrical and Electronics Engineers:

1. IEEE C62.41 - Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.

B. National Electrical Manufacturers Association:

1. NEMA PB 1 - Panelboards.
2. NEMA PB 1.1 - General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.

C. International Electrical Testing Association:

1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

D. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.

E. Underwriters Laboratories Inc.:

1. UL 50 - Cabinets and Boxes

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C. Test switches after installation to confirm proper operation.

D. Confirm correct loads are recorded on directory card in each panel.

3.4 DEMONSTRATION

A. Section General Conditions - Execution and Closeout Requirements: Requirements for demonstration and training.

B. Demonstrate operation of the following system components:

1. Operation of each type of occupancy sensors.

2. Connection and maintenance of power packs.

C. Furnish 4 hours to instruct Owner's personnel in operation and maintenance of system. Schedule training with Owner, provide at least 7 days' notice to Owner's representative of training date.

END OF SECTION

I. Operation: Manual-on, Auto-off (turns light on upon sensing vacancy).

J. Manufacturer: Watt Stopper model No. CS-50 or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mount occupancy sensors as indicated on Drawings.

B. Install wiring in accordance with Section 26 05 19.

C. Use only properly color coded wire and cable. Install wire sizes as indicated on Drawings. Install line voltage wire in conduit in accordance with Section 26 05 33. Install low-voltage cable above suspended ceilings, supported from the building structure. Cable shall not be supported by the ceiling grid or tiles.

D. Mount power pack near first connection to luminaire from panel. Record location of power packs on the As-Built Drawings.

E. Identify power wiring with circuit breaker number controlling load.

F. Label each low voltage wire with relay number at each switch or sensor.

3.2 MANUFACTURER'S FIELD SERVICES

A. Section General Conditions - Quality Requirements: Requirements for manufacturer's field services.

B. Furnish services for minimum of one day for check, test, and start-up. Perform the following services:

1. Check installation of vacancy and occupancy sensors.

2. Adjust sensitivity and timing of all sensors.

3. Repair or replace defective components.

3.3 ADJUSTING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for starting and adjusting.

B. Test each system component after installation to verify proper operation.

F. Power pack module shall have dry contacts capable of switching 20-amp ballast and incandescent loads at 120 or 277 volts. Power pack shall accept 120/230/277 Volt AC, 60 Hz input.

G. Power pack shall be UL 2043 plenum rated and shall have low-voltage, Teflon coated leads rated for 300 volts.

H. Power pack and sensors shall be products of the same manufacturer and shall have a five-year warranty.

I. Sensor shall be Watt Stopper DT-300 with Watt Stopper BZ-50 power pack or approved equal.

2.2 WALL MOUNTED VACANCY SENSOR

A. Manufacturers:

1. Watt Stopper.

2. Hubbell.

3. Lightolier - Philips.

4. Or approved equal.

B. Description: Wall mounted infrared occupancy sensor for control of lighting, HVAC and exhaust fans. Unit shall be manual on, automatic off.

C. Ratings:

1. Voltage: 120 volts, AC.

2. Load: 0 to 600 watts, ballast, incandescent, LED, compact fluorescent, or low-voltage.

D. Housing: Thermoplastic with a polycarbonate sensor lens and three wire leads. Provide with a decorator type cover plate.

E. On-Off control: Air gap relay contact.

F. Mounting: Wall mounted (replaces standard switch).

G. Time delay: Adjustable, 30 seconds to 30 minutes. Set at 15 minutes.

H. Sensor technology: Passive infrared.

B. Furnish five-year manufacturer warranty for components.

1.11 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Requirements for extra materials.

B. Furnish two of each occupancy sensor type.

C. Furnish two of each power pack.

PART 2 PRODUCTS

2.1 CEILING MOUNTED OCCUPANCY SENSOR

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's other products that may be incorporated into the project:

1. Watt Stopper.
2. Hubbell
3. Lightolier – Philips.
4. Or approved equal.

B. Dual technology, ceiling mounted sensor utilizing both ultrasonic and infrared technology to turn lights on. Detection verification of both technologies is required to turn the lights on. Upon verification, either technology shall hold the lights on.

C. Sensor shall be ceiling mounted an unobtrusive appearance and 360 degrees of coverage.

D. Separate sensitivity and time delay adjustments with LED indication of sensed movement. User adjustable time-delay: 5 to 30 minutes.

E. Sensor shall operate on 24VDC furnished from a self-contained power supply and relay module. The module shall have a 1/2" snap-in nipple for 1/2" knock-outs and mounting on the outside of an enclosure or junction box.

2. Wiring diagrams reflecting field installed conditions with identified and numbered, system components and devices.

C. Operation and Maintenance Data:

1. Submit replacement parts numbers.

2. Submit manufacturer's published installation instructions and operating instructions.

3. Recommended renewal parts list.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with the requirements of the 2011 New York City Electrical Code.

B. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.

1.8 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.9 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept components on site in manufacturer's packaging. Inspect for damage.

C. Protect components by storing in manufacturer's containers indoor protected from weather.

1.10 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Requirements for warranties.

1.3 SYSTEM DESCRIPTION

A. Distributed switching control using self-contained individually mounted lighting relays.

B. Where indicated on drawings or required by applicable code, provide automatic shutoff for lighting inside building larger than 5000 square feet (465 square meters). Control shutoff by method conforming to ICC IECC.

C. Where indicated on drawings or required by applicable code, provide automatic shutoff for lighting outside building. Control shutoff by method conforming to ICC IECC.

1.4 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Requirements for submittals.

B. Shop Drawings: Indicate dimensioned drawings of lighting control system components and accessories.

1. One Line Diagram: Indicating system configuration indicating panels, number and type of switches or devices.

2. Include typical wiring diagrams for each component.

C. Product Data: Submit manufacturer's standard product data for each system component.

D. Manufacturer's Installation Instructions: Submit for each system component.

E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record the following information:

1. Actual locations of components and record circuiting and switching arrangements.

SECTION 26 09 23

LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ceiling Mounted Occupancy sensors.
2. Wall Mounted Vacancy Sensors.

B. Related Sections:

1. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
2. Section 26 05 33 - Raceway and Boxes for Electrical Systems.
3. Section 26 05 53 - Identification for Electrical Systems
4. Section 26 27 26 - Wiring Devices.

1.2 REFERENCES

A. National Electrical Manufacturers Association:

1. NEMA FU 1 - Low Voltage Cartridge Fuses.
2. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contractors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.
3. NEMA ICS 4 - Industrial Control and Systems: Terminal Blocks.
4. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.
5. NEMA ICS 6 - Industrial Control and Systems: Enclosures.
6. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).

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C. Install labels at data outlets identifying patch panel and port designation.

END OF SECTION

B. Nameplate Type Schedule:

'A'	Line 1:	Equipment Designation (1" high letters)
	Line 2:	Voltage, phase, No. wires (1/2" high letters)
	Line 3:	Incoming feeder designation (1/2" high letters)
'B'	Line 1:	Load description (1/4" high letters)
	Line 2:	Breaker trip or fuse rating (1/4" high letters)
'C'	Line 1:	Transformer KVA rating (1" high letters)
	Line 2:	Designation of panel served (1/2" high letters)
	Line 3:	Incoming feeder designation (1/2" high letters)
'D'	Line 1:	ATS designation (1" high letters)
	Line 2:	Designation of panel served (1/2" high letters)
	Line 3:	Incoming normal feeder/incoming emergency feeder designation (1/2" high letters)
'E'	Line 1:	"Spare Fuse Cabinet" (1" high letters)
'F'	Line 1:	Feeder designations (1/4" high letters)
'G'	Line 1:	Cabinet Designation (1" high letters)
'H'	Line 1:	Description of operation and equipment controlled (1/2" high letters)

3.4 LABEL INSTALLATION

A. Install label parallel to equipment lines.

B. Install label for identification of individual control device stations.

C. Install labels for permanent adhesion and seal with clear lacquer.

3.5 WIRE MARKER INSTALLATION

A. Install wire marker for each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.

B. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.

3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners.

4. Secure nameplate to equipment front using screws.

5. Secure nameplate to inside surface of door on recessed panelboard in finished locations.

3.3 NAMEPLATE SCHEDULE

A. Nameplates shall be provided for the following electrical equipment:

ITEM		NAMEPLATE TYPE
1.	Switchgear.	A
2.	Main and feeder devices in switchgear	A
3.	Switchboards	A
4.	Main and feeder devices in switchboard.	B
5.	Distribution panelboards	A
6.	Main and branch over current devices in distribution panelboards.	B
7.	Lighting, receptacle and power panelboards	A
8.	Dry type transformers	C
9.	Safety switches	B
10.	Automatic transfer switches	D
11.	Spare fuse cabinets	E
12.	Pullboxes and cable tap boxes	F
13.	Pushbuttons, pilot lights, etc. for motor controls	H
14.	Control panels	G

1. Power and Lighting Circuits: Branch circuit or feeder number as indicated on Drawings.

2. Control Circuits: Control wire number as indicated on shop drawings.

D. Legend:

1. Medium Voltage System: HIGH VOLTAGE.

2. 208 Volt System: 208/120 VOLTS.

2.4 PLASTIC NAMEPLATES

A. Laminated plastic nameplates shall be 3/4 inch by 2 inches or larger in dimension, fastened with counter-sunk, oval head, chrome plated machine screws. Lettering height shall be as noted, white, engraved and shall designate the equipment served or the specific equipment designation as shown on the contract drawings. Smaller nameplate lettering may be used where adequate nameplate mounting space is not available but in no case shall the lettering be smaller than 1/8 inch.

B. Background color shall be red for emergency life safety system panelboards, black for others. Refer to general Conditions are additional color requirements.

PART 3 - EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with Section 09 90 00 for stencil painting.

3.2 INSTALLATION

A. Install identifying devices after completion of painting.

B. Nameplate Installation:

1. Install nameplate parallel to equipment lines.

2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners.

PART 2 - PRODUCTS

2.1 NAMEPLATES

A. Manufacturers:

1. Seton.
2. Brady.
3. Or Approved Equal.

B. Product Description: Laminated three-layer plastic with engraved black letters on white background color. Yellow letters on a red background for emergency equipment. Black letters on a yellow background for standby power.

C. Letter Size: See Nameplate Type Schedule below.

D. Minimum nameplate thickness: 1/8.

2.2 LABELS

A. Manufacturers:

1. Seton.
2. Brady.
3. Approved Equal

B. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background.

2.3 WIRE MARKERS

A. Manufacturers:

1. Seton.
2. Brady.
3. Approved Equal

B. Description: Cloth tape, split sleeve type wire markers.

C. Legend:

1.3 CLOSEOUT SUBMITTALS

A. General Conditions and Addendum to General Conditions - Requirements for submittals.

B. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with NYCEC.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three (3) years' experience.

B. Installer: Company specializing in performing Work of this section with minimum three (3) years' experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. General Conditions and Addendum to General Conditions - Requirements for transporting, handling, storing, and protecting products.

B. Accept identification products on site in original containers. Inspect for damage.

C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Install labels only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

1.8 EXTRA MATERIALS

A. General Conditions and Addendum to General Conditions - Requirements for extra materials.

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This section includes requirements for identification for electrical systems in accordance with the Contract Documents. The "GENERAL CONDITIONS" shall apply to all work under the Contract. The work of this Section shall include but not limited to the following:

1. Nameplates.
2. Labels.
3. Wire markers.
4. Conduit markers.
5. Stencils.
6. Lockout Devices.

B. Related Sections:

1. Section 09 91 00 - Painting: Execution requirements for painting specified by this section.

1.2 SUBMITTALS

A. General Conditions and Addendum to General Conditions - Submittal procedures.

B. Product Data:

1. Submit manufacturer's catalog literature for each product required.
2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.

C. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures and installation.

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3.3 INSTALLATION

A. Boxes and fittings are indicated on Drawings in approximate locations unless dimensioned. Adjust box location up to 10 feet to accommodate intended purpose.

B. Floor Box Requirements: Use cast floor boxes for installations in slab on grade; formed steel boxes are acceptable for other installations.

C. Set floor boxes level.

D. Install boxes and fittings to preserve fire resistance rating of slabs and other elements, using materials and methods specified in Section 26 05 29.

E. Install protective rings on active flush cover service fittings.

F. Coordinate installation of access floor boxes with existing access floor system.

3.4 ADJUSTING

A. Section General Conditions - Execution and Closeout Requirements:Testing, adjusting, and balancing.

B. Adjust floor box flush with finish flooring material.

3.5 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Final cleaning.

B. Clean interior of boxes to remove dust, debris, and other material.

END OF SECTION

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of each floor box and poke-through fitting.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.6 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

PART 2 PRODUCTS – See drawings and General Conditions

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify locations of floor boxes and outlets in offices and work areas prior to rough-in.

C. Verify openings in access floor are in proper locations.

3.2 EXISTING WORK

A. Disconnect abandoned service fitting devices and remove service fittings. Install blank cover for abandoned floor boxes not removed.

B. Maintain access to existing floor boxes remaining active and requiring access. Modify installation or provide access panel.

C. Extend existing service fitting installations using materials and methods compatible with existing electrical installations, or as specified.

D. Clean and repair existing service fittings to remain or to be reinstalled.

SECTION 26 05 34

FLOOR BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes floor boxes; floor box service fittings; poke-through fittings; and access floor boxes.

B. Related Sections:

1. Section 07 84 00 - Firestopping: Firestopping for electrical work.
2. Section 26 05 29 - Hangers and Supports for Electrical Systems: Firestopping for electrical work.
3. Section 26 05 33 - Raceway and Boxes for Electrical Systems.
4. Section 26 27 26 - Wiring Devices: Receptacles for installation in floor boxes.

1.2 REFERENCES

A. National Electrical Manufacturers Association:

1. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit catalog data for floor boxes service fittings.

C. Samples: Submit two of each service fitting illustrating size, material, configuration, and finish.

3.5 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods in accordance with Section 07 84 00.

B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket

C. Locate outlet boxes to allow luminaires positioned as indicated on Architectural reflected ceiling plan.

D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.6 ADJUSTING

A. Section General Conditions - Execution and Closeout Requirements: Testing, adjusting, and balancing.

B. Adjust flush-mounting outlets to make front flush with finished wall material.

C. Install knockout closures in unused openings in boxes.

3.7 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Final cleaning.

B. Clean interior of boxes to remove dust, debris, and other material.

C. Clean exposed surfaces and restore finish.

END OF SECTION

3.4 INSTALLATION - BOXES

A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings or specified in section for outlet device.

B. Adjust box location up to 10 feet (3 m) prior to rough-in to accommodate intended purpose.

C. Orient boxes to accommodate wiring devices oriented as specified in Section 26 27 26.

D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

E. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.

F. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches (150 mm) separation. Install with minimum 24 inches (600 mm) separation in acoustic rated walls.

G. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

H. Install stamped steel bridges to fasten flush mounting outlet box between studs.

I. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

J. Install adjustable steel channel fasteners for hung ceiling outlet box.

K. Do not fasten boxes to ceiling support wires or other piping systems.

L. Support boxes independently of conduit.

M. Install gang box where more than one device is mounted together. Do not use sectional box.

N. Install gang box with plaster ring for single device outlets.

J. Route raceway installed above accessible ceilings parallel and perpendicular to walls.

K. Route conduit in and under slab from point-to-point.

L. Conduit in Slab Above Grade: Not Permitted.

M. Maintain clearance between raceway and piping for maintenance purposes.

N. Maintain 12 inch (300 mm) clearance between raceway and surfaces with temperatures exceeding 104 degrees F (40 degrees C).

O. Cut conduit square using saw or pipe cutter; de-burr cut ends.

P. Bring conduit to shoulder of fittings; fasten securely.

Q. Install conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

R. Install no more than equivalent of three 90 degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Provide hydraulic one-shot bender to fabricate bends in metal conduit larger than 2 inch (50 mm) size.

S. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.

T. Install fittings to accommodate expansion and deflection where raceway crosses expansion joints.

U. Install suitable 250 pound test polypropylene pull line in each empty raceway except sleeves and nipples.

V. Install suitable caps to protect installed conduit against entrance of dirt and moisture.

W. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.

X. Close ends and unused openings in wireway.

B. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.2 INSTALLATION

A. Install Work in accordance with the 2011 New York City Electric Code.

B. Ground and bond raceway and boxes in accordance with Section 26 05 26.

C. Fasten raceway and box supports to structure and finishes in accordance with Section 26 05 29.

D. Identify raceway and boxes in accordance with Section 26 05 53.

E. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.3 INSTALLATION - RACEWAY

A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.

B. Unless otherwise indicated, all raceway shall be concealed in walls or above ceilings in all finished spaces.

C. Arrange raceway supports to prevent misalignment during wiring installation.

D. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

E. Group related raceway; support using conduit rack. Construct rack using steel channel specified in Section 26 05 29; provide space on each for 25 percent additional raceways.

F. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports

G. Do not attach raceway to ceiling support wires or other piping systems.

H. Construct wireway supports from steel channel specified in Section 26 05 29.

I. Route exposed raceway parallel and perpendicular to walls.

1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch (13 mm) male fixture studs where required.

2. Provide Extension rings as required to accommodate wall thickness.

C. Cast Boxes: NEMA FB 1, Type FD, cast iron alloy with threaded hubs, zinc coated. In wet or damp locations, furnish gasketed cover, UL Listed as "in-use" for receptacles.

D. Wall Plates for Finished Areas: As specified in Section 26 27 26.

E. Wall Plates for Unfinished Areas: As specified on Section 26 27 26.

2.8 PULL AND JUNCTION BOXES

A. Subject to compliance with the requirements of the Specification, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:

1. Hammond Manufacturing.

2. Hoffman.

3. Or Approved Equal.

B. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

C. Hinged Enclosures: As specified in Section 26 27 16.

D. Surface Mounted Cast Metal Box: NEMA 250, Type 4X; flat-flanged, surface mounted junction box:

1. Material: Galvanized cast iron.

2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

E. Fittings, closures and device mountings: Furnish manufacturer's standard accessories; match finish on raceway.

2.6 WIREWAY

A. Subject to compliance with the requirements of the Specification, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:

1. Hammond Manufacturing.
2. Hoffman.
3. Schneider Electric/Square D.
4. The Wiremold Company.
5. Or Approved Equal.

B. Product Description: General purpose type wireway.

C. Knockouts: None.

D. Size: as indicated on the drawings, but not less than 6 x 6 inch (150 x 150 mm); length as indicated on Drawings.

E. Cover: Screw cover.

F. Connector: Slip-in.

G. Fittings: Lay-in type with removable side; captive screws.

H. Finish: Rust inhibiting primer coating with gray enamel finish.

2.7 OUTLET BOXES

A. Subject to compliance with the requirements of the Specification, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:

1. Hubbell/Raco.
2. Thomas & Betts/Steel City.
3. Or Approved Equal.

B. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.

2.4 ELECTRICAL METALLIC TUBING (EMT)

A. Subject to compliance with the requirements of the Specification, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:

1. Allied Tube and Conduit Corporation.
2. Triangle Wire and Cable Co.
3. Republic Conduit.
4. RobRoy Conduit.
5. Wheatland Conduit.
6. Or Approved Equal.

B. Product Description: ANSI C80.3; galvanized steel tubing.

C. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron, compression type. Die-cast zinc fittings are not permitted.

2.5 SURFACE METAL RACEWAY

A. Subject to compliance with the requirements of the Specification, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:

1. Hubbell, Inc.
2. Panduit Corporation.
3. The Wiremold Company.
4. Or Approved Equal.

B. Product Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway. Raceway shall be provided with and internal metal divided to separate low-voltage cabling from line voltage conductors.

C. Size: 4.75 x 1.75 inch (120 x 45 mm).

D. Finish: Gray enamel.

4. O-Z/Gedney.

5. Appleton Electrical Products.

6. Or Approved Equal.

D. Rigid Steel Conduit: ANSI C80.1.

E. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.2 FLEXIBLE METAL CONDUIT

A. Subject to compliance with the requirements of the Specification, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:

1. AFC Cable Systems.

2. Alflex Corporation.

3. Electri-Flex Company.

4. Or Approved Equal.

B. Product Description: Interlocked steel construction.

C. Fittings: NEMA FB 1; steel or cast iron with zinc coating. Die-cast zinc fittings are not permitted.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Subject to compliance with the requirements of the Specification, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:

1. AFC Cable Systems.

2. Alflex Corporation.

3. Electri-Flex Company.

4. Or Approved Equal.

B. Product Description: Interlocked steel construction with PVC jacket.

C. Fittings: NEMA FB 1; steel or cast iron with zinc coating. Die-cast zinc fittings are not permitted.

1.7 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

C. Protect PVC conduit from sunlight.

1.8 COORDINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Coordinate installation of outlet boxes for equipment connected under Section 26 05 03.

C. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.

PART 2 - PRODUCTS

2.1 METAL CONDUIT

A. Subject to compliance with the requirements of the Specification, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:

B. Conduit – Metallic:

1. Allied Tube and Conduit Corporation.
2. Triangle Wire and Cable Co.
3. Republic Conduit.
4. Wheatland Conduit.
5. Or Approved Equal.

C. Conduit – Metallic Fittings:

1. Bridgeport.
2. Cooper/Crouse-Hinds.
3. Thomas & Betts Corporation.

E. Exposed Dry Locations: Provide rigid steel conduit where less than 10 feet above the finished floor and in all mechanical rooms. Provide sheet-metal boxes. Provide hinged enclosure for large pull boxes.

F. Within Metal Stud walls: Provide EMT conduit with steel compression fittings, and sheet steel outlet boxes.

1.4 DESIGN REQUIREMENTS

A. Minimum Raceway Size: 3/4 inch (19 mm) unless otherwise specified.

B. All conduits shall be concealed within wall construction unless otherwise indicated on the drawings.

1.5 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit for the following:

1. Raceway fittings.

2. Conduit bodies.

3. Surface raceway.

4. Wireway.

5. Pull and junction boxes.

C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.6 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents:

1. Record actual routing of conduits larger than 2 inch (51 mm).

2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers and Box Supports.

C. Underwriters Laboratories, Inc.

1. UL 1 – Standard for Flexible Metal Conduit.

2. UL 6 – Standard for Electrical Rigid Metal Conduit.

3. UL 6A – Standard for Electrical Rigid Metal Conduit – Aluminum and Stainless Steel.

4. UL 360 – Standard for Liquid-Tight Flexible Steel Conduit.

5. UL 467 – Standard for Grounding and Bonding Equipment.

6. UL 514B – Standard for Fittings for Cable and Conduit.

7. UL 797 – Standard for Electrical Metallic Tubing – Steel.

1.3 SYSTEM DESCRIPTION

A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.

B. Outdoor Locations, Above Grade: Provide rigid steel conduit. Provide cast iron alloy metal outlet, pull, and junction boxes.

C. Wet and Damp Locations: Provide rigid steel conduit. Provide cast metal outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.

D. Concealed Dry Locations: Provide rigid steel. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.

B. Related Sections:

1. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
2. Section 26 05 29 - Hangers and Supports for Electrical Systems.
3. Section 26 05 34 - Floor Boxes for Electrical Systems.
4. Section 26 05 53 - Identification for Electrical Systems.
5. Section 26 27 16 - Electrical Cabinets and Enclosures.
6. Section 26 27 26 - Wiring Devices.
7. Section 26 05 33 - Conduits and Backboxes for Communications Systems.
8. Section 26 05 33 - Conduits and Backboxes for Electronic Safety and Security.

1.2 REFERENCES

A. American National Standards Institute:

1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
3. ANSI C80.5 - Aluminum Rigid Conduit - (ARC).

B. National Electrical Manufacturers Association:

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insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

G. Install escutcheons at finished surfaces.

3.6 FIELD QUALITY CONTROL

A. Section 01 00 00 – General Conditions: Field inspecting, testing, adjusting, and balancing.

B. Inspect installed firestopping for compliance with specifications and submitted schedule. Provide Controlled Inspections as required by the NYCBC.

3.7 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.8 PROTECTION OF FINISHED WORK

A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

E. Non-Rated Surfaces:

1. Seal opening through non-fire rated wall, partition floor, ceiling, and roof opening as follows:

   a. Install sleeve through opening and extending beyond minimum of 1 inch (25 mm) on both sides of building element.

   b. Size sleeve allowing minimum of 1 inch (25 mm) void between sleeve and building element.

   c. Install type of firestopping material recommended by manufacturer.

2. Install escutcheons floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.

3. Exterior wall openings below grade: Assemble rubber links of mechanical seal to size of conduit and tighten in place, in accordance with manufacturer's instructions.

4. Interior partitions: Seal all pipe penetrations. Apply sealant to both sides of penetration to completely fill annular space between sleeve and conduit.

3.5 INSTALLATION - SLEEVES

A. Exterior watertight entries: Seal with adjustable interlocking rubber links.

B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.

C. Set sleeves in position in forms. Provide reinforcing around sleeves.

D. Size sleeves large enough to allow for movement due to expansion and contraction.

E. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with mineral wool

1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.

2. Install surface mounted cabinets and panelboards with minimum of four anchors.

3. In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch (25 mm) off wall.

4. Support vertical conduit at every floor.

3.4 INSTALLATION - FIRESTOPPING

A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating, to uniform density and texture.

D. Fire Rated Surface:

1. Seal opening at floor, wall, partition, ceiling, and/or roof as follows:

a. Install sleeve through opening and extending beyond minimum of 1 inch (25 mm) on both sides of building element.

b. Size sleeve allowing minimum of 1 inch (25 mm) void between sleeve and building element.

c. Pack void with backing material.

d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.

2. Where cable tray, bus, cable bus duct, conduit, wireway, or trough penetrates fire rated surface, install firestopping product in accordance with manufacturer's instructions.

A. Anchors and Fasteners:

1. Concrete Structural Elements: Provide precast inserts, expansion anchors, and preset inserts.

2. Steel Structural Elements: Provide beam clamps or welded fasteners. Welded fasteners shall be reviewed by the Structural Engineer prior to installation.

3. Concrete Surfaces: Provide expansion anchors.

4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Provide toggle bolts and hollow wall fasteners.

5. Solid Masonry Walls: Provide expansion anchors.

6. Sheet Metal: Provide sheet metal screws.

7. Wood Elements: Provide wood screws.

B. Inserts:

1. Install inserts for placement in concrete forms.

2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches (100 mm).

4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

C. Install conduit and raceway support and spacing in accordance with NFPA 70, except spacing of supports for EMT shall not exceed 8'-0" on center.

D. Do not fasten supports to pipes, ducts, mechanical equipment, roof deck, or conduit.

E. Install multiple conduit runs on common hangers.

F. Supports:

7. Firestop Pillows: Formed mineral fiber pillows.

2.7 FIRESTOPPING ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

B. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

C. General:

1. Furnish UL listed products or products tested by independent testing laboratory.

2. Select products with rating not less than rating of wall or floor being penetrated.

D. Non-Rated Surfaces:

1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where conduit is exposed.

2. For exterior wall openings below grade, furnish modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill annular space between conduit and cored opening or water-stop type wall sleeve.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify openings are ready to receive sleeves.

B. Verify openings are ready to receive firestopping.

3.2 PREPARATION

A. Obtain permission from Architect/Engineer before drilling or cutting structural members.

3.3 INSTALLATION - HANGERS AND SUPPORTS

2.6 FIRESTOPPING

A. Manufacturers:

1. Dow Corning Corp.
2. Fire Trak Corp.
3. Hilti Corp.
4. International Protective Coating Corp.
5. 3M fire Protection Products.
6. Specified Technology, Inc.
7. Approved equal.
8. Substitutions: Section 01 00 00 – General Conditions.

B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.

1. Silicone Firestopping Elastomeric Firestopping: Multiple component silicone elastomeric compound and compatible silicone sealant.
2. Foam Firestopping Compounds: Multiple component foam compound.
3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
4. Fiber Stuffing and Sealant Firestopping: Composite of mineral fiber stuffing insulation with silicone elastomer for smoke stopping.
5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.

D. Adhesive anchor system shall be equal to Hilti HIT-HY 20 with HIT-S stainless steel tube screens and appropriate threaded rods or threaded inserts.

2.4 SLEEVES

A. Sleeves through Non-fire Rated Floors: 18 gage (1.2 mm) thick galvanized steel.

B. Sleeves through Walls, Footings, and Potentially Wet Floors: Schedule 40 Steel pipe; Schedule 40 stainless steel pipe for wet areas and below grade penetrations.

C. Sleeves for through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Schedule 40 steel pipe, minimum two trade sizes larger than penetrating pipe.

D. Sleeves for through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: For cables not in conduit, provide pre-fabricated fire rated sleeves including seals, UL listed.

E. Fire-stopping Insulation: Mineral wool, non-combustible.

2.5 MECHANICAL SLEEVE SEALS

A. Manufacturers:

1. Thunderline Link-Seal, Inc.

2. NMP Corporation.

3. Approved equal.

4. General Conditions: Alternate or Substitute Equipment.

B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

C. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.

D. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.

E. Conduit clamps - general purpose: One-hole malleable iron for surface mounted conduits.

F. Cable Ties: High strength nylon temperature rated to 185 degrees F (85 degrees C). Self-locking.

2.2 FORMED STEEL CHANNEL

A. Manufacturers:

1. Allied Tube & Conduit Corp.

2. B-Line Systems.

3. Unistrut Corp.

4. Kindorf.

5. General Conditions: Alternate or Substitute Equipment.

B. Product Description: 12 gauge (2.8 mm) thick steel. 1-1/2 inch by 1-1/2" inch or 1-1/2" by 3", as required for safe support of load.

C. Finish: Galvanized or epoxy coated for interior spaces; Stainless steel 304 for outdoor use.

D. Hardware such as bolts, nuts, washers, conduit clamps, beam clamps, etc., shall be manufactured of the same material as the channel.

2.3 ADHESIVE ANCHOR SYSTEM

A. Adhesive anchors shall be used to support all electrical equipment attached to terra cotta block walls or floor structures.

B. Adhesive anchor system shall be the product of one manufacturer, who shall be responsible for the entire anchor system.

C. Contractor shall retain the adhesive anchor manufacturer's representative to perform pull-out proof tests of the anchor system. Proof testing shall be performed prior to the actual installation of any equipment.

1.10 DELIVERY, STORAGE AND HANDLING

A. Section 01 00 00 – General Conditions: Requirements for transporting, handling, storing, and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F (15 degrees C).

B. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.

PART 2 - PRODUCTS

2.1 CONDUIT SUPPORTS

A. Manufacturers:

1. Allied Tube & Conduit Corp.

2. Electroline Manufacturing Company.

3. O-Z/Gedney Co.

4. Approved equal.

B. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.

1. Size: Working load of rod support shall not exceed values below:

Rod Diameter	Maximum Load
3/8"	610 lbs.
1/2"	1130 lbs.
5/8"	1810 lbs.
3/4"	2710 lbs.

2. Floor Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.

   a. Floor Penetrations within Wall Cavities: T-Rating is not required.

B. Through Penetration Firestopping of Non-Fire Rated Floor and Roof Assemblies: Materials to resist free passage of flame and products of combustion.

1. Non-combustible Penetrating Items: Non-combustible materials for penetrating items connecting maximum of three stories.

2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.

C. Fire Resistant Joints in Fire Rated Floor, Roof, and Wall Assemblies: UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.

D. Fire Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10 inch water gage (24.9 Pa) minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.

E. Surface Burning Characteristics: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

B. Installer: Company specializing in performing work of this section with minimum three (3) years' experience.

1.9 PRE-INSTALLATION MEETINGS

A. Section 01 00 00 – General Conditions: Job Meetings.

B. Convene minimum one (1) week prior to commencing work of this section.

1. Submit manufacturer's product data, load test data from on-site proof tests, and schedule of anchors, including the proposed use, for the project

D. Product Data:

1. Hangers and Supports: Submit manufacturers catalog data including load capacity.

2. Firestopping: Submit data on product characteristics, performance and limitation criteria.

E. Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly. Details of each assembly shall be submitted, indicating the manufacturer's UL Listing Number for the system.

F. Design Data: Indicate load carrying capacity of trapeze hangers, hangers and supports.

G. Manufacturer's Installation Instructions:

1. Hangers and Supports: Submit special procedures and assembly of components.

2. Firestopping: Submit preparation and installation instructions.

H. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

I. Engineering Judgments: For conditions not covered by UL listed designs, submit judgments by licensed professional engineer suitable for presentation to Authority Having Jurisdiction for acceptance as meeting code fire protection requirements.

1.7 QUALITY ASSURANCE

A. Through Penetration Firestopping of Fire Rated Assemblies: UL 1479 with 0.10 inch water gage (24.9 Pa) minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.

1. Wall Penetrations: Fire F-Ratings as indicated on Architectural Drawings, but not less than 1-hour.

B. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.

C. Underwriters Laboratories Inc.:

1. UL 263 - Fire Tests of Building Construction and Materials.

2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

3. UL 1479 - Fire Tests of Through-Penetration Firestops.

4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.

5. UL - Fire Resistance Directory.

1.3 DEFINITIONS

A. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 SYSTEM DESCRIPTION

A. Firestopping Materials: UL 1479 to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1 hour fire rating.

1.5 PERFORMANCE REQUIREMENTS

A. Firestopping: Conform to applicable code for fire resistance ratings and surface burning characteristics.

1.6 SUBMITTALS

A. Section 01 00 00 – General Conditions: Shop Drawings and Record Drawings.

B. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.

C. Adhesive Anchor System

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This section includes requirements for hangers and supports for electrical systems in accordance with the Contract Documents. The "GENERAL CONDITIONS" shall apply to all work under the Contract. The work of this Section shall include but not limited to the following:

1. Conduit supports.
2. Formed steel channel.
3. Adhesive Anchor System.
4. Spring steel clips.
5. Sleeves.
6. Mechanical sleeve seals.
7. Firestopping relating to electrical work.
8. Firestopping accessories.

1.2 REFERENCES

A. ASTM International:

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
4. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.

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insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

G. Install escutcheons at finished surfaces.

3.6 FIELD QUALITY CONTROL

A. Section 01 00 00 – General Conditions: Field inspecting, testing, adjusting, and balancing.

B. Inspect installed firestopping for compliance with specifications and submitted schedule. Provide Controlled Inspections as required by the NYCBC.

3.7 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.8 PROTECTION OF FINISHED WORK

A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

E. Non-Rated Surfaces:

1. Seal opening through non-fire rated wall, partition floor, ceiling, and roof opening as follows:

   a. Install sleeve through opening and extending beyond minimum of 1 inch (25 mm) on both sides of building element.

   b. Size sleeve allowing minimum of 1 inch (25 mm) void between sleeve and building element.

   c. Install type of firestopping material recommended by manufacturer.

2. Install escutcheons floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.

3. Exterior wall openings below grade: Assemble rubber links of mechanical seal to size of conduit and tighten in place, in accordance with manufacturer's instructions.

4. Interior partitions: Seal all pipe penetrations. Apply sealant to both sides of penetration to completely fill annular space between sleeve and conduit.

3.5 INSTALLATION - SLEEVES

A. Exterior watertight entries: Seal with adjustable interlocking rubber links.

B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.

C. Set sleeves in position in forms. Provide reinforcing around sleeves.

D. Size sleeves large enough to allow for movement due to expansion and contraction.

E. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with mineral wool

1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.

2. Install surface mounted cabinets and panelboards with minimum of four anchors.

3. In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch (25 mm) off wall.

4. Support vertical conduit at every floor.

3.4 INSTALLATION - FIRESTOPPING

A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating, to uniform density and texture.

D. Fire Rated Surface:

1. Seal opening at floor, wall, partition, ceiling, and/or roof as follows:

a. Install sleeve through opening and extending beyond minimum of 1 inch (25 mm) on both sides of building element.

b. Size sleeve allowing minimum of 1 inch (25 mm) void between sleeve and building element.

c. Pack void with backing material.

d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.

2. Where cable tray, bus, cable bus duct, conduit, wireway, or trough penetrates fire rated surface, install firestopping product in accordance with manufacturer's instructions.

A. Anchors and Fasteners:

1. Concrete Structural Elements: Provide precast inserts, expansion anchors, and preset inserts.

2. Steel Structural Elements: Provide beam clamps or welded fasteners. Welded fasteners shall be reviewed by the Structural Engineer prior to installation.

3. Concrete Surfaces: Provide expansion anchors.

4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Provide toggle bolts and hollow wall fasteners.

5. Solid Masonry Walls: Provide expansion anchors.

6. Sheet Metal: Provide sheet metal screws.

7. Wood Elements: Provide wood screws.

B. Inserts:

1. Install inserts for placement in concrete forms.

2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches (100 mm).

4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

C. Install conduit and raceway support and spacing in accordance with NFPA 70, except spacing of supports for EMT shall not exceed 8'-0" on center.

D. Do not fasten supports to pipes, ducts, mechanical equipment, roof deck, or conduit.

E. Install multiple conduit runs on common hangers.

F. Supports:

7. Firestop Pillows: Formed mineral fiber pillows.

2.7 FIRESTOPPING ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

B. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

C. General:

1. Furnish UL listed products or products tested by independent testing laboratory.

2. Select products with rating not less than rating of wall or floor being penetrated.

D. Non-Rated Surfaces:

1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where conduit is exposed.

2. For exterior wall openings below grade, furnish modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill annular space between conduit and cored opening or water-stop type wall sleeve.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify openings are ready to receive sleeves.

B. Verify openings are ready to receive firestopping.

3.2 PREPARATION

A. Obtain permission from Architect/Engineer before drilling or cutting structural members.

3.3 INSTALLATION - HANGERS AND SUPPORTS

2.6 FIRESTOPPING

A. Manufacturers:

1. Dow Corning Corp.
2. Fire Trak Corp.
3. Hilti Corp.
4. International Protective Coating Corp.
5. 3M fire Protection Products.
6. Specified Technology, Inc.
7. Approved equal.
8. Substitutions: Section 01 00 00 – General Conditions.

B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.

1. Silicone Firestopping Elastomeric Firestopping: Multiple component silicone elastomeric compound and compatible silicone sealant.
2. Foam Firestopping Compounds: Multiple component foam compound.
3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
4. Fiber Stuffing and Sealant Firestopping: Composite of mineral fiber stuffing insulation with silicone elastomer for smoke stopping.
5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.

D. Adhesive anchor system shall be equal to Hilti HIT-HY 20 with HIT-S stainless steel tube screens and appropriate threaded rods or threaded inserts.

2.4 SLEEVES

A. Sleeves through Non-fire Rated Floors: 18 gage (1.2 mm) thick galvanized steel.

B. Sleeves through Walls, Footings, and Potentially Wet Floors: Schedule 40 Steel pipe; Schedule 40 stainless steel pipe for wet areas and below grade penetrations.

C. Sleeves for through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Schedule 40 steel pipe, minimum two trade sizes larger than penetrating pipe.

D. Sleeves for through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: For cables not in conduit, provide pre-fabricated fire rated sleeves including seals, UL listed.

E. Fire-stopping Insulation: Mineral wool, non-combustible.

2.5 MECHANICAL SLEEVE SEALS

A. Manufacturers:

1. Thunderline Link-Seal, Inc.

2. NMP Corporation.

3. Approved equal.

4. General Conditions: Alternate or Substitute Equipment.

B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

C. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.

D. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.

E. Conduit clamps - general purpose: One-hole malleable iron for surface mounted conduits.

F. Cable Ties: High strength nylon temperature rated to 185 degrees F (85 degrees C). Self-locking.

2.2 FORMED STEEL CHANNEL

A. Manufacturers:

1. Allied Tube & Conduit Corp.
2. B-Line Systems.
3. Unistrut Corp.
4. Kindorf.
5. General Conditions: Alternate or Substitute Equipment.

B. Product Description: 12 gauge (2.8 mm) thick steel. 1-1/2 inch by 1-1/2" inch or 1-1/2" by 3", as required for safe support of load.

C. Finish: Galvanized or epoxy coated for interior spaces; Stainless steel 304 for outdoor use.

D. Hardware such as bolts, nuts, washers, conduit clamps, beam clamps, etc., shall be manufactured of the same material as the channel.

2.3 ADHESIVE ANCHOR SYSTEM

A. Adhesive anchors shall be used to support all electrical equipment attached to terra cotta block walls or floor structures.

B. Adhesive anchor system shall be the product of one manufacturer, who shall be responsible for the entire anchor system.

C. Contractor shall retain the adhesive anchor manufacturer's representative to perform pull-out proof tests of the anchor system. Proof testing shall be performed prior to the actual installation of any equipment.

1.10 DELIVERY, STORAGE AND HANDLING

A. Section 01 00 00 – General Conditions: Requirements for transporting, handling, storing, and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F (15 degrees C).

B. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.

PART 2 - PRODUCTS

2.1 CONDUIT SUPPORTS

A. Manufacturers:

1. Allied Tube & Conduit Corp.

2. Electroline Manufacturing Company.

3. O-Z/Gedney Co.

4. Approved equal.

B. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.

1. Size: Working load of rod support shall not exceed values below:

Rod Diameter	Maximum Load
3/8"	610 lbs.
1/2"	1130 lbs.
5/8"	1810 lbs.
3/4"	2710 lbs.

2. Floor Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.

   a. Floor Penetrations within Wall Cavities: T-Rating is not required.

B. Through Penetration Firestopping of Non-Fire Rated Floor and Roof Assemblies: Materials to resist free passage of flame and products of combustion.

1. Non-combustible Penetrating Items: Non-combustible materials for penetrating items connecting maximum of three stories.

2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.

C. Fire Resistant Joints in Fire Rated Floor, Roof, and Wall Assemblies: UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.

D. Fire Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10 inch water gage (24.9 Pa) minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.

E. Surface Burning Characteristics: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

B. Installer: Company specializing in performing work of this section with minimum three (3) years' experience.

1.9 PRE-INSTALLATION MEETINGS

A. Section 01 00 00 – General Conditions: Job Meetings.

B. Convene minimum one (1) week prior to commencing work of this section.

1. Submit manufacturer's product data, load test data from on-site proof tests, and schedule of anchors, including the proposed use, for the project

D. Product Data:

1. Hangers and Supports: Submit manufacturers catalog data including load capacity.

2. Firestopping: Submit data on product characteristics, performance and limitation criteria.

E. Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly. Details of each assembly shall be submitted, indicating the manufacturer's UL Listing Number for the system.

F. Design Data: Indicate load carrying capacity of trapeze hangers, hangers and supports.

G. Manufacturer's Installation Instructions:

1. Hangers and Supports: Submit special procedures and assembly of components.

2. Firestopping: Submit preparation and installation instructions.

H. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

I. Engineering Judgments: For conditions not covered by UL listed designs, submit judgments by licensed professional engineer suitable for presentation to Authority Having Jurisdiction for acceptance as meeting code fire protection requirements.

1.7 QUALITY ASSURANCE

A. Through Penetration Firestopping of Fire Rated Assemblies: UL 1479 with 0.10 inch water gage (24.9 Pa) minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.

1. Wall Penetrations: Fire F-Ratings as indicated on Architectural Drawings, but not less than 1-hour.

B. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.

C. Underwriters Laboratories Inc.:

1. UL 263 - Fire Tests of Building Construction and Materials.

2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

3. UL 1479 - Fire Tests of Through-Penetration Firestops.

4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.

5. UL - Fire Resistance Directory.

1.3 DEFINITIONS

A. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 SYSTEM DESCRIPTION

A. Firestopping Materials: UL 1479 to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1 hour fire rating.

1.5 PERFORMANCE REQUIREMENTS

A. Firestopping: Conform to applicable code for fire resistance ratings and surface burning characteristics.

1.6 SUBMITTALS

A. Section 01 00 00 – General Conditions: Shop Drawings and Record Drawings.

B. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.

C. Adhesive Anchor System

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This section includes requirements for hangers and supports for electrical systems in accordance with the Contract Documents. The "GENERAL CONDITIONS" shall apply to all work under the Contract. The work of this Section shall include but not limited to the following:

1. Conduit supports.
2. Formed steel channel.
3. Adhesive Anchor System.
4. Spring steel clips.
5. Sleeves.
6. Mechanical sleeve seals.
7. Firestopping relating to electrical work.
8. Firestopping accessories.

1.2 REFERENCES

A. ASTM International:

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
4. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.

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PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Verification of existing conditions before starting work.

3.2 EXISTING WORK

A. Modify existing grounding system to maintain continuity to accommodate renovations.

B. Extend existing grounding system using materials and methods compatible with existing electrical installations.

3.3 INSTALLATION

A. Equipment Grounding Conductor: Install separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

B. Permanently ground entire light and power system in accordance with NEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.

3.4 FIELD QUALITY CONTROL

A. Section General Conditions - Execution and Closeout Requirements: Field inspecting, testing, adjusting and balancing.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform continuity testing in accordance with IEEE 142.

D. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION

2. Metal building frame.

1.4 PERFORMANCE REQUIREMENTS

A. Grounding System Resistance: 25 ohms maximum.

1.5 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Requirements for submittals.

1.6 QUALITY ASSURANCE

A. Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.

B. Perform Work in accordance with the requirements of the 2011 New York City Electrical Code.

1.7 DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

D. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

PART 2 - PRODUCTS

2.1 WIRE

A. Material: copper. See Specification Section 26 05 19

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wire.
2. Mechanical connectors.

B. Related Sections:

1. Section 26 05 19 – Low-voltage Electrical Power Conductors and Cables.
2. Section 26 05 33 – Raceways and Boxes for Electrical Systems.

1.2 REFERENCES

A. Institute of Electrical and Electronics Engineers:

1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
2. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.

B. International Electrical Testing Association:

1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

C. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.

1.3 SYSTEM DESCRIPTION

A. Grounding systems use the following elements as grounding electrodes:

1. Existing Metal underground water pipe.

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E. Measure the tightness of all conductor terminations using calibrated torque drivers or torque wrenches.

F. Verify the insulation integrity of all feeders using a 1,000 volt insulation resistance tester. Digital multi-meters shall not be used to verify insulation integrity.

G. Inspect and test in accordance with NETA ATS, except Section 4.

H. Perform inspections and tests listed in NETA ATS, Section 7.3.2.

END OF SECTION

E. Neutral Conductors: When two or more neutrals are located in one conduit, individually identify each with a color tracer to match the phase conductor and proper circuit number.

3.8 ARC/FIREPROOFING

A. Where more than one set of cables, that are protected by more than one over-current protective device, are installed in a common equipment enclosure or box and any wire is larger than No. 4 AWG, then all sets of conductors shall be covered with arcproof and fireproof tape. Where necessary to facilitate taping, boxes shall be oversized.

B. Tape shall be applied in a single layer, one half lapped, or as recommended by the manufacturer to conform to the above requirements. The tape shall be applied with the coated side next to the cable and shall be held in place with a random wrap of one half inch wide, pressure-sensitive fiberglass backed color plastic film tape. This tape shall not support combustion per ASTM.

3.9 MOTOR AND CONTROL WIRING

A. Provide all wiring to and between motors, starters, disconnect switches and other related electrical equipment except where such items are factory wired.

B. Provide control wiring at 120 volts or higher for control devices wired with branch circuits serving utilization equipment, unless otherwise specified in other Division of the Specifications.

C. For control devices operating at voltages lower than 120 volts nominal, refer to the respective Sections.

3.10 FIELD QUALITY CONTROL

A. Section General Conditions - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. In addition to any testing specified elsewhere in these Specifications, the Contractor shall perform basic testing of his work.

C. Contractor shall verify the continuity of all branch circuit wiring.

D. Contractor shall verify that branch circuits are properly terminated.

3. Wire to busbar for wire sizes No. 2/0 AWG and larger; two-hole hydraulic compression lug.

4. Wire to Stud, switch, or circuit breaker; one-hole mechanical lug.

5. Stranded wire, No. 8 AWG or larger splice, tap, or pigtail connection; hydraulic compression connector with heavy-wall heat shrink tubing or pre-molded thermoplastic insulator by connector manufacturer with two half-lapped layers of vinyl tape.

H. Install solid conductor for feeders and branch circuits 10 AWG and smaller.

3.7 WIRE COLOR

A. The covering of wires and cables shall have a distinctive color code for identification of individual conductors.

B. Secondary service, feeder and branch circuit conductors throughout the electrical system shall be color coded as follows:

Phase	120/240 Volts	208/120 Volts	480/277 Volts
A	Black	Black	Brown
B	Red	Red	Orange
C	-	Blue	Yellow
Neutral	White	White	Gray or white with tracer
Ground	Green	Green	Green
Isolated Ground	Green with tracer	Green with tracer	
Neutral of Ground fault circuit	White with tracer	White with tracer	

C. For conductor sizes No. 6 AWG and smaller, conductor insulation shall be color coded as indicated in the table above.

D. For conductor sizes No. 4 and larger, conductors shall be identified colored tape or heat shrink tubing at terminals, splices and boxes. Tape shall be applies half lapped, with a minimum length of 6 inches.

1. Perform all connection work in strict accordance with recommendations of manufacturers of the wire and connecting devices, unless otherwise noted.

2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

3. Clean conductor surfaces before installing lugs and connectors.

4. Apply anti-oxidation inhibitor compound containing copper to all stranded copper wire connections.

5. Install hydraulic compression connectors for copper conductor splices and taps, No. 6 AWG and larger.

6. Utilize hydraulic tools for compression connections in accordance with manufacturers' recommendations. Tools shall be non-removable until completion of the connection and shall leave an embossed mark to verify that proper die has been used.

7. Tools shall provide a hexagonal or circumferential crimp to the connectors. Indentation type tools are not acceptable.

8. Splices, taps and termination lugs shall be insulated with heavy wall heat shrink tubing. Tubing shall overlap the conductor insulation by a minimum of 2-inches. The tubing shall be applied using electric heat guns. Open flames or torches shall not be used.

9. Tighten all busbar and stud connections with Belleville washers, utilizing torque wrench or torque indicating washer designed for the purpose by the connector manufacturer.

10. Install solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.

11. Install insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.

G. Connector Application

1. Connectors applications listed shall be utilized when equipment is not provided with factory installed lugs.

2. Wire to busbar for wire sizes No. 1/0 AWG and smaller; one-hole hydraulic compression lug.

C. Identify wire and cable under provisions of Section 26 05 53. Identify each conductor with its circuit number or other designation indicated. Wire shall be color coded as indicated in Item 3.7 below.

D. Special Techniques - Building Wire in Raceway:

1. Installation equipment shall be provided to prevent cutting and abrasion of conduits or conductors. Ropes used for pulling of feeders shall be made of polyethylene or other non-metallic material.

2. Pulling lines shall be attached to conductor cables by means of either woven basket grips or pulling eyes attached directly to the conductors. Rope hitches shall not be used.

3. Pull conductors into raceway at same time.

4. Install building wire 4 AWG and larger with pulling equipment.

5. Apply conductor pulling lubricant to conductors 4 AWG and larger as the conductors enter the raceway. For conductors 1/0 AWG and larger, the lubricant shall be mechanically applied with an electric pumping system that applies a uniform coating of lubricant to the conductors, as the conductors enter the conduit.

6. Install vertical conductor supports when installing conductors. Conductor supports shall be installed in accordance with the manufacturer's instructions.

7. Upon completion of conductor pulling, clean wire pulling lubricant from exposed portions of cables. If cables will not be immediately terminated, cut exposed copper conductor to insulation and seal conductor ends.

E. Special Techniques - Cable:

1. Protect exposed cable from damage.

2. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure. Do not rest cable on ceiling panels.

3. Use suitable cable fittings and connectors.

F. Special Techniques - Wiring Connections:

E. Clean and repair existing wire and cable remaining or wire and cable to be reinstalled.

3.5 GENERAL WIRING REQUIREMENTS

A. Wiring shall be provided complete from point of service connection to all receptacles, lighting fixtures, power outlets, outlets for future extensions and other devices as shown. Slack wire shall be provided for all future connections. Unless otherwise specified, branch circuit conductors shall be No. 12 AWG or larger. In outlet boxes for future installations, ends of wires shall be taped and blank covers installed. Type of blank covers in finished areas are to be coordinated with Architect.

B. Cables shall not be bent either permanently or temporarily during installation to radii less than that recommended by the manufacturer.

C. Conductors not larger than No. 10 AWG located in branch circuit panelboards, signal cabinets and switchboard shall be bundled. Conductors larger than No. 10 AWG located in switchboard, distribution panels and pullboxes shall be bundled in individual circuits. Bundling and cabling shall be done with cable ties made of self-extinguishing nylon.

D. Where the length of a homerun, from panel to first circuit, exceeds 75 feet for a 120 volt circuit or 175 feet for a 277 volt and higher voltage circuit, the conductor size shall be minimum No. 10 AWG unless otherwise noted.

E. Where homerun circuit numbers are shown, such numbers shall be followed in connecting circuits to panelboards. Each branch circuit homerun containing two or more circuits with a common neutral shall be connected to the circuit breakers or switches in a three or four-wire branch circuit panelboard so that no two of the circuits will be fed from the same phase.

F. Conductors in distribution panels and switchboards which are bundled by circuit, shall be provided with arc-proofing as specified below.

3.6 INSTALLATION

A. Route wire and cable to meet Project conditions.

B. Neatly train and secure wiring inside boxes, equipment, and panelboards.

3.2 PREPARATION

A. Conduits and raceways shall be installed and completed prior to the installation of conductors.

B. Prior to installing cables in conduits, visually inspect conduits for damage. Thoroughly swab conduits and raceways before installing conductors. Verify that bushings are in place and properly secured to prevent damage to conductors.

3.3 APPLICATION

A. Wires and cables connected to equipment operating at 100 to 480 nominal volts shall be rated at 600 volts minimum unless otherwise indicated or specified. Where specified or where the nominal voltage is less than 50 volts, the wires or cables may be insulated for 300 volts, provided they are completely isolated from higher voltage systems by means of grounded metal barriers.

B. Wires and cables for secondary service, feeders and branch circuits shall be single conductor unless otherwise specified.

C. Wire and cable for miscellaneous systems, such as Intercom, CATV, CCTV, Fire Alarms, Security Alarm Systems, and Telecommunications are specified in the Technical Specification Sections for those systems.

3.4 EXISTING WORK

A. Remove exposed abandoned wire and cable [, including abandoned wire and cable above accessible ceiling finishes]. Patch surfaces where removed cables pass through building finishes.

B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.

C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.

D. Extend existing circuits using materials and methods [compatible with existing electrical installations, or] as specified.

C. Arc-proofing tape shall be 3M No. 77 with 3M Scotch No. 69 glass cloth tape or Bishop No. 53 with Plymouth/Bishop No. 77 Plyglas glass cloth tape.

D. All fireproofing tapes shall be products of one manufacturer.

2.7 CABLE SUPPORTS

A. Cable Supports for Vertical Conduit shall be as specified in Section 16111 – CONDUIT AND FITTINGS.

2.8 CABLE TIES

A. Cable ties shall be self-locking type with a minimum width of .180 inches.

B. Ties for general purpose use shall be manufactured using 6/6 nylon. Color for general purpose ties shall be white.

C. Ties for use in air handling plenums or equipment shall be manufactured using Halar or an equal low smoke density material and shall meet UL 94V-O flammability requirement. Color for plenum rated ties shall be maroon.

D. Cable ties shall be as manufactured by the following:

1. FCI Burndy.
2. Panduit.
3. Thomas & Betts.
4. Approved Equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions: Coordination and project conditions.

B. Verify interior of building has been protected from weather.

C. Verify mechanical work likely to damage wire and cable has been completed.

D. Verify raceway installation is complete and supported.

A. Description: Water soluble, polymer-based, non-toxic and non-sensitizing wire lubricant with volatile solids less than 6%. The lubricant shall have no flash point in gel state and shall leave a non-flammable residue when dry.

B. Appearance: Thick gel material, suitable for application with electrically operated pumping equipment.

C. Useful temperature range: 20 - 100 degrees F.

D. Lubricant shall be equal to the following:

1. American Polywater Corporation; Polywater Clear, Polywater J.

2. Ideal Industries; Clear Glide or AquaGel II.

2.5 TAPE

A. Insulation tape shall have a minimum of 350 volts per mil dielectric strength. Vinyl tape shall be equal to 3M Scotch No. 33. Tape for conductor phase identification shall be equal to 3M Scotch No. 35.

B. Rubber tape shall be self-fusing, non-corrosive, with minimum 350 volts per mil dielectric strength, and meeting the requirements of Federal Specification HH-I-553. Self-fusing rubber tape shall be equal to 3M No. 2155. This tape shall be limited to use on wiring of 600V or less.

2.6 ARC/FIREPROOFING TAPE

A. Subject to the requirements of the specifications, manufacturers offering products that may be suitable for use on this project include, but are not limited to, the following unless otherwise noted:

1. 3M.

2. Plymouth Rubber Company/ Bishop.

3. Or Approved Equal

B. The tape shall consist of a flexible, unsupported intumescent elastomer. The tape shall be .030 inches thick and shall be capable of 100% elongation. The tape shall be self-extinguishing and shall not support combustion. The tape shall be non-corrosive to metallic cable sheaths and compatible with synthetic cable jackets. The tape shall be secured by a band consisting of two layers of glass cloth electrical tape.

1. FCI Burndy: YH or YSH series.
2. Thomas & Betts: CHT series.

E. Lugs, Bolt Type:

1. FCI Burndy, Type KA-U.
2. ILSCO Type TA.

F. Heat Shrink Tubing:

1. FCI Burndy, Type HS-H-PF.
2. ILSCO Type Heavy Wall.
3. Tyco Electronics/Raychem Type WCSM.
4. Thomas & Betts Type HSFR.

G. Spring Wire Connectors:

1. Buchanan.
2. Ideal.
3. King Industries.
4. NSI Industries.
5. Thomas & Betts.
6. 3M.

H. Crimp Type Connectors (power and control wiring, No 10 AWG and smaller):

1. FCI Burndy.
2. Buchanan.
3. ILSCO.
4. Thomas & Betts.

2.4 CONDUCTOR PULLING LUBRICANTS

B. Conductor: Copper. Solid for No. 10 AWG and smaller; stranded (class B) for No. 8 AWG and larger.

C. Insulation Ratings: 600 volt; 90 degrees C.

D. Insulation Types:

1. Type THHN/THWN or XHHW insulation for feeders and branch circuits No. 6 AWG and larger.

2. Type THHN/THWN for feeders and branch circuits No. 8 AWG and smaller.

3. Type RHW-2/USE-2 for feeders and branch circuits No. 2 AWG and larger, installed under floor slabs or underground.

2.3 WIRING CONNECTORS

A. General:

1. Temperature rating of all connections and insulation materials shall not be less than that of the conductors and in no case shall be less than 75 degrees C.

2. Connectors with a copper rating shall be copper with tin-plating.

3. Pre-molded insulators shall be by the same manufacturer as the connector.

B. Compression Splices (copper conductors):

1. FCI Burndy: YS-L or YS series.

2. Thomas & Betts: 54800 or 54500 series.

3. Ilsco: CT or CTL series.

C. Compression Terminations (copper conductors):

1. FCI Burndy: YA, YAZ or YA-2N series.

2. Thomas & Betts: 54100, 54900 or 54800 series.

3. Ilsco: CRA, CRL or CRL2 series.

D. Compression Taps (copper conductors):

1.9 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on Drawings.

1.10 COORDINATION

A. Section General Conditions - Administrative Requirements: Requirements for coordination.

B. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.

C. Wire and cable routing indicated is approximate unless dimensioned. Include wire and cable lengths within 10 ft.

PART 2 - PRODUCTS

2.1 BUILDING WIRE AND CABLE

A. Subject to the requirements of the specifications, manufacturers offering products that may be suitable for use on this project include, but are not limited to, the following unless otherwise noted:

1. Colonial Wire and Cable Co.
2. Diamond Wire & Cable Co.
3. Essex Group Inc.
4. General Cable Co.
5. Southwire, Inc.
6. American Insulated Wire, Inc.
7. AFC Cable Systems.
8. Or approved equal.

2.2 BUILDING WIRE

A. Product Description: Single conductor insulated wire.

1.4 DESIGN REQUIREMENTS

A. Conductor sizes are based on copper.

1.5 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Requirements for submittals.

B. Product Data:

1. Submit for building wire.

2. Submit for wiring connectors, including insulating materials.

3. Submit for conductor pulling lubricants.

4. Submit for tapes, including arc-proofing tapes.

5. Submit for cable ties.

C. Test Reports: Indicate procedures and values obtained.

D. Test Reports: Submit Calibration reports for torque drivers and torque wrenches used for electrical connections. Torque drivers and wrenches shall be lab calibrated prior to use on the project and every three months thereafter.

1.6 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of components and circuits.

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with 2011 New York City Electrical Code (NYCEC).

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

6. UL 1063 – Standard for Machine-Tool Wires.

7. UL 1569 – Standard for Metal-Clad Cables.

8. UL 1581 – Reference Standard for Electrical Wires, Cables and Flexible Cords.

1.3 SYSTEM DESCRIPTION

A. Product Requirements: Provide products as follows:

1. Solid conductor for feeders and branch circuits 10 AWG and smaller.

2. Stranded conductors for control circuits.

3. Conductor not smaller than 12 AWG for power and lighting circuits.

4. Conductor not smaller than 14 AWG for control circuits.

5. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet (25 m).

6. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet (160 m).

B. Wiring Methods: Provide the following wiring methods:

1. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

2. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

3. Above Accessible Ceilings: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

4. Wet or Damp Interior Locations: Use only building wire, Type USE-2 or XHHW insulation in raceway.

5. Exterior Locations: Use only building wire, Type USE-2 or XHHW insulation, in raceway.

6. Underground Locations: Use only building wire, Type USE-2 insulation in raceway.

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Building Wire and Cable
2. Wiring Connectors and Connections.

B. Related Sections:

1. Section 26 05 53 - Identification for Electrical Systems: Product requirements for wire identification.

1.2 REFERENCES

A. International Electrical Testing Association:

1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

B. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.
2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

C. Underwriter's Laboratories:

1. UL 83 – Thermoplastic-Insulated Wire and Cables.
2. UL 486A & 486B – Wire Connectors.
3. UL 486C – Splicing Wire Connectors.
4. UL 486D – Insulated Wire Connector Systems for Underground Use or in Damp or Wet Locations.
5. UL 510 – Standard for Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape.

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3.6 FINAL INSPECTION

A. Contractor shall arrange and schedule final inspection of work and shall notify the Architect in writing that the Contractor has thoroughly checked his work and, in the opinion of the Contractor, is ready for final inspection.

B. During the entire period schedule for these inspections, the Contractor and representatives of each manufacturer of equipment involved shall be present. All of these organizations shall have sufficient and competent personnel present so that adjustments can be made to all systems without delay.

3.7 ACCEPTANCE

A. The operation or the temporary use of the equipment and the mechanical and electrical installation, by the Owner does not constitute an acceptance of the work. The final acceptance is to be made after the Contractor has adjusted his equipment, demonstrated that it fulfills the requirements of the Contract Documents, and has furnished all the required Certificates. Warranties and guaranties are effective after the acceptance.

END OF SECTION

E. Where supports are on concrete construction, take care not to weaken concrete or penetrate waterproofing.

3.3 ACCESSIBILITY

A. The installation of electrical equipment, including panelboards, disconnect switches, motor starters, etc., shall be in accordance with the requirements of Article 110 or the New York City Electrical Code relative to work space around equipment. Equipment which is installed and does not have the working space required by the NYCEC, shall be relocated by the Contractor at no additional cost to the Owner.

3.4 USE OF EQUIPMENT

A. The use of any equipment, or any part thereof, for purposes other than testing even with the Owner's consent, shall not be construed to be an acceptance of the work on the part of the Owner, nor shall it be construed to obligate the Owner in any way to accept improper work or defective materials.

B. Use of permanent equipment for temporary services must be approved in writing by Owner.

3.5 CODES, RULES, PERMITS & FEES

A. The Contractor shall give all necessary notices, obtain all permits and filings including, but not limited to, New York City DEP, New York State DEC, New York City and State Building Code requirements, and pay all government sales taxes, fees, and other costs, in connection with his work. However, all utility connections, extensions, and tap fees for water, storm, sewer, gas, telephone, and electricity shall be paid directly to utility companies and/or agencies by the Owner, unless otherwise indicated. The Contractor shall file all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction; obtain all required certificates of inspection for his work and deliver same to the Owner's Representative before request for acceptance and final payment for the work.

B. The complete design and construction shall conform to the requirements of the NYCBC, NYCEC, NYCFC and any other local or state code which may govern.

PART 3 – EXECUTION

3.1 GENERAL

A. Temporary Protection:

1. Provide and maintain protection for the work whether completed or in progress.

2. Provide suitable coverings and enclosures.

B. Scaffolding, Rigging and Hoisting:

1. Provide all scaffolding, rigging and hoisting services necessary for erection, and/or delivery into the premises, of any equipment and apparatus furnished. Remove from the premises when no longer required.

C. Waterproofing:

1. Where any work pierces waterproofing, including waterproof concrete, the method of installation shall be as approved by the Architect before work is done. This Contractor shall provide all necessary sleeves, caulking and flashing required to make openings absolutely watertight.

3.2 EQUIPMENT BASES, PLATFORMS AND SUPPORTS

A. Provide supporting platforms, steel supports, anchor bolts, inserts, etc., for all equipment and apparatus requiring access for service and maintenance.

B. Obtain prior approval for installation method of structural steel required to frame into building structural members for the proper support of equipment, conduit, etc. Welding will be permitted only when approved by the Architect or the Structural Engineer.

C. Submit shop drawings of supports for approval to the Architect before fabricating or constructing.

D. Provide leveling channels, anchor bolts, complete with nuts and washers, for all apparatus and equipment secured to concrete pads and further supply exact information and dimensions for the location of these leveling channels, anchor bolts, inserts, concrete bases and pads.

4. Tests claimed to have been performed without following above procedures shall be deemed as not performed.

B. Cleaning:

1. Clean out all debris and dirt from the interior of all switchboards, panelboards, transformers and switches. Blow out transformers with dry nitrogen; pressure shall not exceed 15 psi. Use Vacuum cleaner with bag and cartridge filters to remove dirt and debris from the interior of switchoards, panelboards and switches. After cleaning, the systems shall be tested by an independent organization, approved by New York Police Department prior to testing.

2. Clean all materials and equipment; leave in condition ready to operate and ready to receive succeeding finishes where required.

3. Clean the operating equipment and systems to be dust free inside and out.

C. Permanent Equipment Operating During Construction:

1. Use only in same service as the permanent applications, provided that written approval is granted by New York Police Department.

2. Expendable media, including lamps used for temporary operation and similar materials are to be replaced just prior to acceptance.

D. Retouch or repaint equipment furnished with factory finish as required to provide same appearance as new.

E. Tools:

1. Provide one set of specialized or non-standard maintenance tools and devices required for servicing the installed equipment.

2. Where space conditions prevent door swinging open, provide removable door on lift-up hinges. This will only be accepted on a case-by-case basis. This condition must be submitted to the Owner and Engineer for approval prior to installation.

3. Furnish a complete list locating all security access doors required in finished walls, ceilings, partitions, shafts and other inaccessible locations.

2.3 PRIME PAINTING

A. All conduit, outlet boxes, pull boxes, splice boxes, supports and miscellaneous electrical within all Mechanical and Electrical equipment rooms shall be prime painted as specified herein.

B. All exposed conduits, boxes and supports, except factory finished equipment, shall be painted. All un-galvanized surfaces shall be painted with zinc chromate, or approved equal, and all galvanized surfaces shall be prime coated with a phosphate pretreatment coating, dry film thickness of 0.35 with a 0.50 mil. one coat Glid-Guard galvanized steel primer Y5229, or approved equal.

C. Upon completion of the prime coat of all electrical equipment specified above, all conduit, boxes and equipment shall be painted with finish coating, as specified under Division 9.

D. All damaged factory painted surfaces shall be repaired to match original surface. If, in opinion of Owner, such repairs are unsatisfactory, item in question shall be completely refinished or replaced with new.

2.4 CLEANING AND ADJUSTING

A. Notification:

1. Inform Owner and Architect's field representatives of all cleaning schedules one week prior to starting.

2. Notify Owner and Architect again, 48-hours prior to each event. If neither attends the procedures, notify in writing, the specific task performed 24-hours after each event.

3. Damage to the building and equipment resulting from tests shall be repaired at no additional cost to the Owner.

1. Steel, flush four-sided frame and door assembly, chemically cleaned after fabrication and painted with rust inhibitive primer.

2. Provide hardware and locking devices.

3. Provide access doors required for access to electrical work through finished wall construction and non-removable ceiling construction.

4. Deliver doors and location information to appropriate trade for installation.

5. Security Areas shall be provided with security access doors.

B. Furnish for installation by the appropriate trade, flush type access door or panel no smaller than 18" x 18" and no larger than 30" x 30" for all junction or pull boxes located in chases, walls, non-accessible hung ceilings or floors. Finish shall be prime coat, except floor panels which shall be polished brass or chrome plate. Doors and trim 14 gauge steel, frame 16 gauge steel, with flush concealed and standard flush locks, screwdriver operated cams, of Milcor manufacturer or approved equal.

1. All panels and their exact location subject to approval of the Architect.

2. Where space conditions prevent door swinging open, provide removable door on lift-up hinges. This will only be accepted on a case-by-case basis. This condition must be submitted to the Owner and Engineer for approval prior to installation.

3. Furnish a complete list locating all access doors required in finished walls, ceilings, partitions, shafts and other inaccessible locations.

C. In Security Areas, furnish for installation by the appropriate trade, flush type security access door or panel no smaller than 18" x 18" and no larger than 30" x 30" for all junction or pull boxes located in chases, walls, non-accessible hung ceilings or floors. Fiinish shall be prime coat, except floor panels which shall be polished brass or chrome plate. Doors and trim 10 gauge steel, frame 7 gauge steel, with flush concealed hinges and Folger Adams No. 10 lock, of Milcor manufacturer or approved equal.

1. All panels and their exact location subject to approval of the Architect.

3. The data is to be carefully checked for accuracy by comparison with the installed equipment nameplates.

4. Provide a recommended list of spare parts for equipment and list of special, non-standard tools to service equipment.

5. Index and assemble the instructions in durable loose-leaf binders.

6. The completed binders are to be available at the time the equipment installation begins.

7. In addition, follow all requirements of the General Conditions and Addendum to General Conditions - Execution and Closeout Requirements: Closeout procedures.

1.17 RECORD DRAWINGS – See General Conditions

1.18 WARRANTY

A. The following supplements the GENERAL CONDITIONS for Electrical Work:

1. Non-durable, expendable items such as lamps are not subject to replacement after the date of acceptance.

2. Warranty time limits for equipment exceeding those indicated in GENERAL CONDITIONS are specified in the applicable Sections of Division 26.

B. In addition, follow all requirements of the General Conditions and Addendum to General Conditions - Execution and Closeout Requirements: Closeout procedures.

PART 2 - PRODUCTS

2.1 IDENTIFICATION

A. Refer to Section 260553 for requirements.

2.2 ACCESS DOORS

A. General:

installation instructions shall be corrected in an approved manner by the Contractor at his expense.

1.16 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Instructions and Demonstration for Owner's Personnel:

1. After all equipment is functioning properly, each system is to be automatically operated for ten (10) working shifts, and not to be adjusted during this period, 80 hours in heating and 80 hours in cooling seasons, scheduled at the convenience of the Owner. Any adjustments will void the test and start the time period all over again.

2. The hours of operation are to include the Owner's designated personnel in each shift, for each season.

3. During this period, instruct the Owner's personnel in the use, operation and maintenance of all equipment of each system. Teaching will include a lecture-type instruction given in a non-machine room environment. During the lesson, normal operation of the system installed and operating will be explained, along with troubleshooting procedures. This will be followed by a field inspection and demonstration of equipment.

4. The above instruction is exclusive of that required of specified equipment manufacturers. If more stringent or longer instruction is indicated for specific equipment or systems, these shall supersede the above requirements.

B. Operating and Maintenance Data:

1. Provide four (4) complete sets of manufacturer's catalogues, instructions, maintenance and repair information and parts lists for operating equipment and devices.

a. Include performance curves for fans and pumps, factory furnished wiring diagrams and control diagrams, and applicable flow diagrams.

b. Submit seven sets of instructions for distribution.

2. Data for the equipment actually installed is to be submitted.

D. All mechanical and electrical equipment delivered to the site shall have appropriate wrapping to protect them from rain, flood, wind, construction debris and all types of water damage normally encountered at construction sites. Protection of equipment such as switchboard, transformers, panelboards, luminaires and similar equipment shall be the responsibility of the Contractor receiving such equipment at the jobsite for installation under Division 26.

1.14 CUTTING AND PATCHING

A. Provide all cutting and rough patching required for systems and equipment included in these specifications. All finish patching will be done under General Construction work.

B. Furnish and locate all sleeves and inserts required before the floors and walls are built; Contractor shall pay the cost of cutting and patching required for pipes where sleeves and inserts were not installed in time, or where incorrectly located. Provide all drilling required for the installation of hangers.

C. All holes cut through concrete slabs or arches shall be punched or drilled from the underside. No structural members shall be cut without the approval of the Architect and all such cutting shall be done in a manner directed by him.

D. Contractor shall not do any cutting that may impair strength of building construction. No holes, except for small screws, may be drilled in beams or other structural members without obtaining prior approval. All work shall be done in a neat manner by mechanics skilled in their trades and as approved.

E. Provide sleeves and fire stopping at piping penetrations in floor, wall and roof.

1.15 ACOUSTICAL PERFORMANCE OF EQUIPMENT AND SYSTEMS

A. All work shall be designed to operate, and shall operate, under all conditions of load, without any objectionable sound or vibration. Sound or vibration noticeable outside of the room in which installed, or annoyingly noticeable inside its own room, will be considered objectionable. Sound or vibration conditions considered objectionable and caused by failure to follow the Contract Documents or manufacturer's

1.11 LABOR AND MATERIALS

A. All materials and apparatus required for the work shall be new, of first-class quality, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be so selected and arranged as to fit properly into the building spaces.

B. Contractor shall remove all materials delivered, or work erected, which does not comply with Contract Drawings and Specifications, and replace with proper materials, or correct such work as directed, at no additional cost to the Owner.

1.12 COVERING OF WORK

A. No electrical equipment, raceways or other work of any kind shall be covered up or hidden from view before it has been examined by the Engineer. Any unsatisfactory or imperfect work or materials that may be discovered shall be removed and corrected immediately after being rejected and other work and materials shall be provided which shall be satisfactory to the Engineer.

1.13 PROTECTION

A. Contractor shall protect the work and material of all trades from damage by his work or workmen, and shall replace all damaged material with new.

B. Contractor shall be responsible for work and equipment until his work is finally inspected, tested, and accepted; he shall protect his work against theft, injury or damage; and carefully store material and equipment received on site which is not immediately installed; close open ends of work with temporary covers or plugs during construction to prevent entry of obstructing material.

C. Contractor shall be responsible for the preservation of all public and private property, along and adjacent to the work, and shall use every precaution necessary to prevent damage or injury thereto. He shall use suitable precautions to prevent damage to pipes, conduits and other underground structures or utilities, and shall carefully protect from disturbance or damage all property marks until an authorized agent has witnessed or otherwise referenced their location, and shall not remove them until directed.

E. Contractor shall be responsible for any deviations in equipment size or configuration and access requirement, from specified products.

1.9 COORDINATION – See General Conditions

1.10 MEASUREMENTS

A. Contractor shall base all his measurements, both horizontal and vertical from established bench marks. All work shall agree with these established lines and levels. He shall verify all measurements at site; and check the correctness of same as related to the work.

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e. Do not install any conduits or equipment, in any area, prior to obtaining approval of its layout by means of submitting shop drawings.

f. Any missing items of equipment, material or labor, during initial submission of shop drawings, are to be completed and re-submitted for final approval. Shop drawing should not be used as a vehicle for obtaining variances, deviation or omission from the scope of Contract Documents. Approval of a submittal shall pertain to the portions that conform to the intent of the Contract Documents.

g. Submission of any missing, incomplete or otherwise deviant layout is subject to re-submission until all contract requirements have been properly included or shown on the same layout.

B. Required Samples:

1. Color samples, for prefinished items.

2. Natural finish metals, for quality of finish.

C. Reports:

1. Compliance with listings and approvals for equipment and for fire ratings.

2. Acceptance certificates from inspecting agencies.

3. Complete printed and illustrated operating instructions where required in report format.

4. Manufacturer's performance tests on operating equipment.

5. Performance reports for vibration isolation equipment.

6. Additional reports as noted in other sections.

D. Specific references to any article, device, product or material, fixture or item of equipment by name, make or catalog number shall be interpreted as establishing a basis of cost and a standard quality. All devices shall be of the make and type listed by Special Agencies, such as the Underwriters' Laboratories, and where required, approved by the Authority Having Jurisdiction.

a. The purpose of shop drawing is to identify the specific products that the Contractor is proposing to furnish and install on the project. Submittal of multiple manufacturers for the same product will result in the entire submittal being returned without review.

2. Manufacturer's Drawings:

a. Submit equipment listed in all applicable Sections - include material specifications, operating characteristics and finishes, specified agency listings or approvals.

b. Cuts, brochures or other literature submitted for expeditious approval but incomplete or missing items of hardware or software (performance data) shall be re-submitted until all system or equipment components have been reviewed and approved. Any item not included in the original or first submission shall be considered outstanding work until such item of equipment or work has been submitted or installed in place exactly conforming to the intent of the contract documents.

c. Contractor shall provide preliminary layout drawings of all major pieces of equipment (i.e., Switchgear, switchboards, transformers), confirming that the submitted product physically fits within the architectural enclosures. This drawing is required along with the manufacturer's product data.

3. Installation Drawings:

a. Furnish coordinated drawings of equipment installation, including interconnecting conduit and supports. Minimum scale for these drawings shall be 1/4 inch equals one foot.

b. Coordinate space requirements for mechanical, plumbing and other trades in the vicinity of work.

c. Include connections, anchorages and fastenings for equipment and conduit.

d. Make allowance for clearances for access to and maintenance of equipment.

wages, and construction methods; and all other matters which can in any way affect the work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself with the available information concerning these conditions will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work.

C. Owner assumes no responsibility for any understanding or representation made during or prior to the negotiation and execution of this Contract unless such understanding or representations are expressly stated in the Contract, and the Contract expressly provides that the responsibility, therefore, is assumed by the Owner.

1.7 STANDARD PRODUCTS AND APPROVED EQUAL CLAUSE

A. Each item of equipment furnished by the Contractor shall be essentially the standard product of the manufacturer. All material and equipment shall be of the best quality normally used in good commercial practice and shall be the product of reputable manufacturers. Each major component shall bear a nameplate giving the name and address of the manufacturer and the catalog number or designation located in an easily visible location.

B. Throughout the Specification types of material and equipment may be specified by manufacturer's name and catalog number as a basis of design and for convenience only, and not for the purpose of limiting competition, except for items for which "no substitutions will be accepted" is specifically indicated.

C. Where the Contractor proposes to use an item of equipment other than that specified or shown on the Contract Drawings which requires any redesign of structure, partitions, foundations, piping, wiring or any other part of the mechanical, electrical or architectural layout, all such redesign, all new drawings and detailing required therefore, shall be prepared by the Contractor without cost to the Owner and submitted to the Engineer for his review.

1.8 SUBMITTALS

A. Shop Drawings:

1. Purpose:

C. "Engineer" or "Architect" means the authorized representative of the Owner.

D. Refer to General Conditions for other definitions.

1.5 CONTRACT DRAWINGS

A. The contract drawings indicate, in schematic and diagrammatic form, the extent and general arrangement of the various electrical systems. If the Contractor deems that any departures from these drawings are necessary, detailed drawings and descriptions of these departures and a statement of the reasons shall be submitted to the Engineer for review and comment as soon as practicable. No departures from the arrangements shown on the contract drawings shall be made without prior written approval of the Engineer. Provide all devices, conduit, wire, misc. steel, etc., for a complete installation.

B. Conduits and other raceway systems shall be installed as shown or as noted on the contract drawings. Elevations and dimensions where indicated are a guide only and are subject to change with actual job conditions and clearances. Relocation resulting from interferences shall be made at no additional cost to the Owner.

1.6 REVIEW OF CONTRACT DOCUMENTS AND SITE

A. With the submission of his Bid, Contractor shall give written notice to the Owner of any materials or apparatus believed in-adequate or unsuitable, in violation of laws, ordinances, rules or regulations of Authorities Having Jurisdiction, and any necessary items of work omitted. In the absence of such written notice it is mutually agreed that the Contractor has included the cost of all required items in his Proposal for a complete project.

B. Contractor shall acknowledge that he has examined the Plans, Specifications and Site, and that from his own investigations he has satisfied himself as to the nature and location of the work; the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials; availability of labor, water, electric power, roads and uncertainties of weather; the conformation and condition of the ground; the character, quality and quantity of surface and subsurface materials to be encountered; the character of equipment and facilities needed preliminary to and during the execution of the work; all federal, state, county, township and municipal laws, ordinances and regulations particularly those relating to employment of labor, rates of

4. BSA Board of Standards and Appeals (BS&A, NYC)
5. CBM Certified Ballast Manufacturers.
6. DEMA Diesel Engine Manufacturer's Association
7. EPA United Stated Environmental Protection Agency
8. ETL Intertek/Electric Testing Laboratories
9. FM Factory Mutual
10. ICEA Insulated Cable Engineers Association
11. IEEE Institute of Electrical and Electronics Engineers
12. IES Illumination Engineering Society of North America.
13. MEA Materials and Equipment Acceptance (NYC)
14. NEC National Electrical Code
15. NEMA National Electrical Manufacturers Association
16. NETA Inter-National Electric Testing Association
17. NFPA National Fire Protection Association
18. NFC National Fire Codes (NFPA).
19. NYCBC New York City Building Code
20. NYCEC New York City Electrical Code
21. NYCFC New York City Fire Code
22. OSHA Occupational Safety and Health Administration
23. UL Underwriters' Laboratories, Inc.

B. Conform to materials and equipment rating standards, listings or classifications of the above organizations as well as ratings, listings or classifications accepted under local codes and laws.

1.4 DEFINITIONS

A. "Provide" means furnish and install, complete, the specified material, equipment or other item and perform all required labor to make a finished installation.

B. "Furnish and install" has the same meaning as given above for "Provide."

SECTION 26 05 00

GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This section includes general requirements for Electrical Work in accordance with the Contract Documents. The "GENERAL CONDITIONS" shall apply to all work under the Contract.

B. Related Documents:

1. All work shall be subject to the General Conditions and shall comply with applicable requirements of the Contract.

2. This Section governs all requirements as applicable to the Electrical work specified in other Sections of Division 26.

1.2 DIVISION OF RESPONSIBILITY

A. The requirements under Section 260500 are intended for the party or parties who have been duly awarded the applicable portion of work to be performed under the indexed sections of Division 26 also known as the Electrical Work.

B. In addition to electrical work required under Division 26, the scope of electrical work specified under Division 26 shall include the provision of all required power wiring to the equipment specified under Divisions 22, and 23. Provide power to all motors, electric heaters, light fixtures, heat tracing equipment, control panels, electrically actuated valves, dampers, and other devices, specified under the various sections of the Divisions indicated.

1.3 REFERENCE STANDARDS

A. Compliance with the following codes and standards shall be required as applicable:

1. AEIC Association of Edison Illuminating Companies
2. ANSI American National Standards Institute
3. ASTM American Society for Testing Materials

SECTION 23 05 00

GENERAL MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. All work shall be subject to the General Conditions and shall comply with applicable requirements of the Contract.

B. This Section, "230500", governs all requirements as applicable to the mechanical work specified in other Sections of Division 23.

1.2 REFERENCE STANDARDS

A. Compliance with the following codes and standards shall be required as applicable:

1.	ADC	Air Diffusion Council
2.	AGA	American Gas Association
3.	AMCA	Air Movement and Control Association
4.	ANSI	American National Standards Institute
5.	ARI	American Refrigeration Institute
6.	ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
7.	ASME	American Society of Mechanical Engineers
8.	ASSE	American Society of Sanitary Engineering
9.	ASTM	American Society for Testing Materials
10.	AWWA	American Water Works Association
11.	DOE	United States Department of Energy
12.	EPA	United States Environmental Protection Agency
13.	FM	Factory Mutual
14.	MSS	Manufacturer's Standardization Society of the Valve and Fitting Industry
15.	NACE	National Association of Corrosion Engineers
16.	NEC	National Electrical Code
17.	NEMA	National Electrical Manufacturers Association
18.	NFPA	National Fire Protection Association
19.	NYCBC	New York City Building Code
20.	NYCFC	New York City Fire Code

21.	NYCMC	New York City Mechanical Code
22.	NYSEC	Energy Conservation Construction Code of New York State (New York State Energy Code)
23.	OSHA	Occupational Safety and Health Act
24.	OTCR	Office of Technical Certification and Research (BSA & MEA)
25.	SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
26.	TEMA	Tubular Exchanger Manufacturers Association
27.	UL	Underwriters' Laboratories, Inc.
28.	USAS	USA Standards Institute (Formerly ASA)
29.	USGBC	United States Green Building Council

B. Conform to materials and equipment rating standards, listings or classifications of the above organizations as well as ratings, listings or classifications accepted under local codes and laws.

1.3 ABBREVIATIONS

A. In addition to those listed below, meanings of common abbreviations used in text of Division 23 of the Project Specifications are tabulated in ASHRAE Handbook, "Fundamentals", latest edition.

B. Project Abbreviations:

AC	Air Conditioning
AHA	Authority Having Jurisdiction
ATC	Automatic Temperature Control
AWG	American Wire Gauge
B & S	Brown & Sharpe
BMS	Building Management System
BTU	British Thermal Units
BWG	Birmingham Wire Gauge
C	Degrees Celsius
CFM	Cubic Feet per Minute
CM	Construction Manager
F	Degrees Fahrenheit
GC	General Contractor
GPM	Gallons per Minute
GPM	Gallons per Minute

H & V	Heating and Ventilating
HVAC	Heating, Ventilating and Air Conditioning
IBBM	Iron Body Brass Mounted
LB	Pound (Also shown as: #)
MBH	Thousand BTU per hour
MER	Mechanical Equipment Room
mm	Millimeter
#	Number
OS & Y	Outside Screw and Yoke
PRV	Pressure Reducing Valve
PSIG	Pounds per Square Inch Gauge
SP	Static Pressure
USS	United States Standard
WG	Water Gage
WSP	Working Steam Pressure

See Drawings for additional abbreviations

1.4 DEFINITIONS

A. "Provide" means furnish and install, complete, the specified material, equipment or other item and perform all required labor to make a finished installation.

B. "Furnish and install" has the same meaning as given above for "Provide."

C. "Furnish" means supply the specified material, equipment or other items.

D. "Install" means provide all labor required to make a finished and complete installation.

E. "Engineer" or "Architect" means the authorized representative of the Owner.

F. Refer to General Conditions for other definitions.

1.5 REVIEW OF CONTRACT DOCUMENTS AND SITE

A. With the submission of his Bid, Contractor shall give written notice to the Owner of any materials or apparatus believed in-adequate or unsuitable, in violation of laws, ordinances, rules or regulations of Authorities Having Jurisdiction, and any necessary items of work omitted. In the absence of

such written notice it is mutually agreed that the Contractor has included the cost of all required items in his Proposal for a complete project.

B. Contractor shall acknowledge that he has examined the Plans, Specifications and Site, and that from his own investigations he has satisfied himself as to the nature and location of the work; the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials; availability of labor, water, electric power, roads and uncertainties of weather; the conformation and condition of the ground; the character, quality and quantity of surface and subsurface materials to be encountered; the character of equipment and facilities needed preliminary to and during the execution of the work; all federal, state, city county, township and municipal laws, ordinances and regulations particularly those relating to employment of labor, rates of wages, and construction methods; and all other matters which can in any way affect the work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself with the available information concerning these conditions will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work.

C. Owner assumes no responsibility for any understanding or representation made during or prior to the negotiation and execution of this Contract unless such understanding or representations are expressly stated in the Contract, and the Contract expressly provides that the responsibility, therefore, is assumed by the Owner.

1.6 MEASUREMENTS

A. Contractor shall base all his measurements, both horizontal and vertical from established bench marks. All work shall agree with these established lines and levels. He shall verify all measurements at site; and check the correctness of same as related to the work.

1.7 LABOR AND MATERIALS

A. All materials and apparatus required for the work shall be new, of first-class quality, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be so selected and arranged as to fit properly into the building spaces.

B. Contractor shall remove all materials delivered, or work erected, which does not comply with Contract Drawings and Specifications, and replace

with proper materials, or correct such work as directed, at no additional cost to the Owner.

1.8 COVERING OF WORK

A. No pipe, fitting, or other work of any kind shall be covered up or hidden from view before it has been examined or approved by the Engineer, Architect, and/or other Authority Having Jurisdiction over same. Any unacceptable work, or unauthorized or disapproved materials discovered shall be removed and corrected immediately.

B. Any type of equipment shown or specified to be installed outdoors, on grade, on roof or similar areas shall have appropriate protection against outdoor weather. Equipment such as motors, panels, etc. shall have rain hood or appropriate protection as provided under Division 23. Insulated pipes shall have aluminum covers or as specified. Insulated ducts shall be provided with aluminum jacket with overlapping, sealed joints. Un-insulated ducts shall be soldered joints and seams or as specified. Where no protection is feasible, such as in exposed vibration springs, hangers, pipe or steel members, such items shall be rated by the manufacturer for outdoor use or as approved by the Architect.

1.9 PROTECTION

A. Contractor shall protect the work and material of all trades from damage by his work or workmen, and shall replace all damaged material with new.

B. Contractor shall be responsible for work and equipment until his work is finally inspected, tested, and accepted; he shall protect his work against theft, injury or damage; and carefully store material and equipment received on site which is not immediately installed; close open ends of work with temporary covers or plugs during construction to prevent entry of obstructing material.

C. Contractor shall be responsible for the preservation of all public and private property, along and adjacent to the work, and shall use every precaution necessary to prevent damage or injury thereto. He shall use suitable precautions to prevent damage to pipes, conduits and other underground structures or utilities, and shall carefully protect from disturbance or damage all property marks until an authorized agent has witnessed or otherwise referenced their location, and shall not remove them until directed.

D. All mechanical and electrical equipment delivered to the site shall have appropriate wrapping to protect them from rain, flood, wind, construction debris and all types of water damage normally encountered at the construction sites. Protection of equipment such as fans, coils, valves and similar equipment shall be the responsibility of the Contractor.

1.10 CUTTING AND PATCHING

A. Provide all cutting and rough patching required for systems and equipment included in these specifications. All finish patching will be done under General Construction work.

B. Provide all sleeves and inserts required before the floors and walls are built; Contractor shall pay the cost of cutting and patching required for pipes where sleeves and inserts were not installed in time, or where incorrectly located. Provide all drilling required for the installation of hangers.

C. All holes cut through concrete slabs or arches shall be punched or drilled from the underside. No structural members shall be cut without the written approval of the Architect and/or the Structural Engineer and all such cutting shall be done in a manner directed by him.

D. Contractor shall not do any cutting that may impair strength of building construction. No holes, except for small screws, may be drilled in beams or other structural members without obtaining prior approval. All work shall be done in a neat manner by mechanics skilled in their trades and as approved.

E. Provide sleeves and fire stopping at piping and ductwork floor, wall and roof penetrations in accordance with recognized standards.

1.11 CONCRETE AND GROUTING

A. Requirements for concrete and grouting are specified in other Sections.

1. Concrete shall be 3,000 psi stone concrete with water reducing admixture, except where otherwise specified.

2. Concrete shall have air entraining admixture where exposed to weather.

B. Contractor shall make coordinated layouts showing concrete work required for housekeeping pads, roof curbs, thrust blocks, etc. which are cast in place.

C. Concrete housekeeping pads: 4" minimum thickness, sized to cover the full area of each piece of equipment and access area provided under Concrete Work.

D. Concrete bases: Dimension and height to suit the equipment.

E. Concrete inertia blocks for vibration isolation. Dimensions designed by the vibration isolation equipment manufacturer and inertia block provided by Division 23, under Mechanical work.

F. Outside the building all concrete work related to mechanical equipment shall be provided by the Trade Contractor of Division 23, unless otherwise noted in the Contract Documents.

1.12 ACOUSTICAL PERFORMANCE OF EQUIPMENT AND SYSTEMS

A. Noise levels from operation of motor driven equipment, whether airborne or structure-borne, and noise levels created by or within air handling equipment and air distribution and control media, are not to exceed sound pressure levels determined by the noise criteria curves in the ASHRAE Guide and as noted under Section 230548.

B. Acoustical Tests:

1. Owner may require contractor to conduct sound tests for those areas or equipment he deems too noisy.

2. If NC level in any space exceeds that in the schedule or the specification due to improper installation or operation of mechanical systems, the respective Trade Contractor is required to make remedial changes or repairs.

3. Respective Trade Contractor is required to retest until specified criteria has been met.

1.13 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Instructions and Demonstration for Owner's Personnel:

1. After all equipment is functioning properly, each system is to be automatically operated for ten (10) working shifts, and not to be adjusted during this period, 80 hours in heating and 80 hours in cooling seasons, and 80 hours during "shoulder" or "swing" seasons scheduled at the convenience of the Owner. Any adjustments will void the test and start the time period all over again.

2. The hours of operation are to include the Owner's designated personnel in each shift, for each season.

3. During this period, instruct the Owner's personnel in the use, operation and maintenance of all equipment of each system. Training will include a lecture-type instruction given in a non-machine room environment. During the lesson, normal operation of the system installed and operating will be explained, along with troubleshooting procedures. This will be followed by a field inspection and demonstration of equipment.

4. The above instruction is exclusive of that required of specified equipment manufacturers. If more stringent or longer instruction is indicated for specific equipment or systems, these shall supersede the above requirements.

B. Operating and Maintenance Data:

1. Provide four (4) complete sets of manufacturer's catalogues, instructions, maintenance and repair information and parts lists for operating equipment and devices. Include one (1) CD with a PDF file with all required documentation.

   a. Include performance curves for fans and pumps, factory furnished wiring diagrams and control diagrams, and applicable flow diagrams.

   b. Submit seven sets of instructions for distribution.

2. Data for the equipment actually installed is to be submitted.

3. The data is to be carefully checked for accuracy by comparison with the installed equipment nameplates.

4. Provide a recommended list of spare parts for equipment and list of special, non-standard tools to service equipment.

5. Index and assemble the instructions in durable loose-leaf binders.

6. The completed binders are to be available at the time the equipment installation begins.

7. In addition, follow all requirements of Section 017000 "Execution and Closeout Requirement".

1.14 WARRANTY

A. The following supplements the GENERAL CONDITIONS for Mechanical Work:

1. Non-durable, expendable items such as replaceable (not cleanable) air filter media are not subject to replacement after the date of acceptance.

2. Warranty time limits for equipment exceeding those indicated in GENERAL CONDITIONS are specified in the applicable Sections of Division 23.

3. In addition, follow all requirements of Section General Conditions "Execution and Closeout Requirement".

PART 2 - PRODUCTS

2.1 IDENTIFICATION MARKINGS

A. Every equipment valve, damper, control, and apparatus installed under this Contract shall be tagged, labeled or stenciled as follows: Tags and labels securely fastened by brass chains, screws or mastic as applicable. Equipment controls numbered according to equipment schedules on Plans. Tags numbered to conform to a directory listing number, location and use. Directories to be mounted under glass in aluminum self-closing frames, 8-1/2" x 11" in size.

1. Apply identification after testing, insulation and field painting are completed.

B. Valve Identification:

1. Provide an identification tag for each valve, including control valves.

2. Differentiate between the different classes of service in the numbering systems; as an example: "CHW-II", "HW-II" or "CW-II".

3. Use 2" brass tags stamped with designation numbers 1" high, filled in with black enamel.

4. Attach tags securely to handles or spindles of valves with heavy brass "S" hooks or brass chains.

5. Provide six copies of valve charts with one of each framed under glass and mounted where directed.

C. Piping Identification:

1. Provide on bare and covered pipes for all services.

2. Use a system of marking and colors conforming to ANSI A-13.1.

3. Install to provide permanent adhesion.

4. Install in readily visible location.

5. Apply legend and flow markers as required for maintenance purposes, with at least one marker in every 50'-0" of each line and at every change of direction.

6. Color Coding of Piping: After piping has been finish painted, the installer of the piping shall identify the type of service lines with applied color bands and stenciled letters. The direction of flow shall be indicated with stenciled arrows. Color bands shall be 1-inch wide, finished in gloss enamel; lettering and arrows shall be same color as the bands. Specify that indicators be applied at connections to pumps, chillers, and other equipment; at entrances to spaces; adjacent to valves; near access doors to pipe spaces; and at maximum intervals of 50 feet on long pipe runs and at each change of direction. Specify that letters be positioned to be easily read from a normal standing position. If there is no owner's standard for color code and designation, the following colors and letter designations shall be used:

HVAC PIPING

Service	Color	Designation

HVAC PIPING

Service	Color	Designation
Condenser Water Supply	Green	CWS
Condenser Water Return	Green	CWR
Steam	Orange	LPS/LPR
Other	As directed	As directed

D. Equipment Identification:

1. Provide stencil lettering on operating equipment and units:

   a. Use black oil base paint, except where equipment finish is dark, use white paint.

   b. Make all characters distinguishable from the floor, but not less than 2" high.

2. For each motor starter, controller and similar accessory provide a lamicore nameplate attached with screws or rivets to a fixed part of the equipment in a visible location.

   a. Make plates not less than 2" x 1" x 1/8" thick with 1/4" high characters.

   b. Designations for equipment tags shall match contract schedules.

3. Equipment such as fans, tanks, ducts, access doors to equipment such as filters, coils, fans, neatly stenciled with letters not less than 1 inch high. Any equipment too small to receive such stenciling shall be provided with brass name tags 2" x 1" in size.

   a. Label ducts by function (supply air, return air, exhaust air and transfer).

4. In areas where removable ceilings occur, install appropriate color coded tile markers to indicate location of valves and other equipment or fittings that may require maintenance service.

E. Refer to Section 230553 for additional requirements.

2.2 PROTECTION OF ELECTRICAL EQUIPMENT

A. Keep piping 2'-0" outside the vertical line of unprotected electrical equipment or provide non-corrosive metal (soldered 20 gauge copper or welded stainless steel), watertight support, pans piped to an open drain.

1. Construct and support pans to hold minimum depth of 3 inches of water.

2.

2.3 ACCESS DOORS

A. General:

1. Steel, flush four-sided frame and door assembly, chemically cleaned after fabrication and painted with rust inhibitive primer.

2. Provide hardware and locking devices.

3. Provide access doors required for access to mechanical work through finished wall construction and non-removable ceiling construction.

4. Deliver doors and location information to appropriate trade for installation.

B. Furnish for installation by the appropriate trade, flush type access door or panel no smaller than 18" x 18" and no larger than 30" x 30" for all dampers, valves, cleanouts, or apparatus located in chases, walls, non-accessible hung ceilings or floors; finish shall be prime coat, except floor panels which shall be polished brass or chrome plate. Doors and trim 14 gauge steel, frame 16 gauge steel, with flush concealed and standard flush locks, screwdriver operated cams, of Milcor manufacturer or approved equal.

1. All panels and their exact location subject to approval of the Architect.

2. Where space conditions prevent door swinging open, provide removable door on lift-up hinges. This will only be accepted on a case-by-case basis. This condition must be submitted to the Owner and Engineer for approval prior to installation.

3. Furnish a complete list locating all access doors required in finished walls, ceilings, partitions, shafts and other inaccessible locations.

2.4 PRIME PAINTING

A. All piping, supports, auxiliary steel and miscellaneous iron within all MER's shall be prime painted as specified herein.

B. All exposed uninsulated piping, fittings, equipment stands, supports, platforms, cradles, and hangers; except chrome finished materials, shall be painted. All ungalvanized surfaces shall be painted with zinc chromate, or approved equal, and all galvanized surfaces shall be prime coated with a phosphate pretreatment coating, dry film thickness of 0.35 with a 0.50 mil. one coat Glid-Guard galvanized steel primer Y5229, or approved equal.

C. Upon completion of the prime coat of all mechanical equipment specified above, all insulated and exposed piping shall be painted with finish coating, as specified under Division 09900 and/or other Sections. This Section shall complete stenciling and color identification, specified under Division 23, following the finish painting.

D. Except where otherwise specified, steel piping in concrete and buried steel piping and steel tanks:

1. Provide factory-applied anti-corrosive polyurethane coating, minimum 15 mils thickness which complies with UL 1746, Parts I and IV.

2. In accordance with NFPA and other applicable codes.

E. Provide factory finishes, except as noted, to match Architect's color samples, for items appearing in exposed finished work, and including:

1. Equipment

2. Registers and grilles

3. Diffusers

4. Enclosures on equipment

5. Thermostat Covers

F. All damaged factory painted surfaces shall be repaired to match original surface. If, in opinion of Owner, such repairs are unsatisfactory, item in question shall be completely refinished or replaced with new.

2.5 WELDING

A. General:

1. All welding procedures, welders, and welding operators shall be qualified in accordance with the requirements of ASME/ANSI B31.9 and Section IX of the ASME Code, latest editions.

2. Welding procedures shall be reported on ASME Section IX Forms "QW," or its equivalent. Joint preparation sketches (to be included with the welding procedures) shall show all dimensions including tolerances, for bevel angle, land size, offset and root gap.

3. Contractor shall be responsible for the welding performed by personnel of his organization and shall conduct the required qualification tests and submit results to the Owner for his review and approval.

4. All welding procedures shall meet requirements of New York City Fire Department Certified Requirements. The filing of MSDS form shall be held in the field office.

5. A copy of the welders and fire watch certificate shall be held in the field office of the sight.

B. Processes:

1. Employ the Manual Shielded Metal-Arc (SMAW) welding process.

2. Double butt welding shall be permitted on all joints accessible from both sides. Where double butt-welding is employed, the first root pass shall be back-chipped.

3. Welding of pressure parts shall be performed with low hydrogen type electrodes. Electrodes of Classifications E6012, E6013, E7014 and E7024 shall not be used.

4. Brazing and Soldering:

a. The Contractor shall prepare applicable "Brazing and Soldering Procedures" forms for approval of the Owner.

b. Brazing shall conform to ASME Section IX.

c. Soldering shall conform to the relevant procedures in the manuals of the Copper Development Association.

d. For all refrigeration piping, the mechanics shall be skilled and specially trained in this type of pipe joining.

e. The Owner may reject any brazed or soldered joint for lack of penetration or for other applicable grounds. These defective joints shall be redone until satisfactory.

C. Quality of Workmanship - In addition to conformance with the procedural and quality requirements set forth in the applicable Code or material specification, all welding shall meet the following requirements.

1. Butt welds shall have full penetrations and shall be slightly convex with uniform height.

2. Each weld shall be uniform in width and size throughout its full length.

3. Each layer of welding shall be smooth, free of slag, cracks, pinholes, undercut in excess of 1/32" and completely fused to adjacent weld beads and base metal.

4. Cover passes shall be free of coarse ripples, irregular surface, non-uniform bead patterns, high crown, and deep ridges or valleys between heads. The surface smoothness of the finished weld shall be suitable for the proper interpretation of non-destructive examination of the weld.

5. Surfaces of parts to be joined by welding shall be cleaned of all oil, grease, paint, scale and rust with solvent and/or wire brushing.

6. Fillet weld size shall be in accordance with the applicable code or as specified on the drawings with full throat and legs of equal length.

7. Welding filler metal and welding flux shall be properly stored in such a manner as to insure that no damage to the coating or corrosion of weld rod will occur. Low hydrogen type electrodes shall be stored in enclosures which provide a regulated temperature as prescribed by the electrode manufacturer. All electrodes shall be properly identified.

8. Socket welds shall have a gap of approximately 1/16" between the bottom of the socket and the end of the pipe prior to welding. Socket welds shall have a minimum of two weld layers.

9. Welds for steam piping shall be X-rayed in accordance with NYCBC requirements. Submit results of X-ray analysis for approval.

D. Repair and Weld Defects:

1. A weld is defective and shall be repaired if it does not meet the acceptance standard of each applicable non-destructive examination as defined ASME/ANSI B31.9, latest edition.

2. Repairs shall be made in accordance with ASME/ANSI B31.9, latest edition.

E. Welding Identification and Weld Marking:

1. All welds must be identified with the welder's identifying symbol. Welds, where more than one welder performs the work, shall be stamped by each welder.

2. Marking shall be done by a permanent method that will not result in sharp discontinuities.

3. Where stamping or marking on the base materials is not practical or feasible, permanently affixed metal bands of the same material may be applied. Stamping or any method of permanent marking on the bands is acceptable.

2.6 EQUIPMENT AND SYSTEMS CRITERIA

A. The criteria of design and performance to produce the required operation is based on equipment shown or scheduled, and as specified.

B. Equipment of other manufacturers will be considered, subject to its acceptability and the following:

1. The equipment must conform to the structural design provisions for loads applied to the structure; to the dimensions established by drawings for spaces and other (service, etc.) clearances; and for inlet and outlet locations and relationships to associated equipment, piping and ducts.

2. Changes to the building arrangement or structure, which are required to suit equipment offered must be by the Contractor at no extra expense to the Owner.

3. Changes to the electrical requirements such as circuit breaker or starter size, conduit or wire size shall be coordinated by the Contractor and the expense borne by him with no additional cost to the Owner.

4. Changes to other Contractor's scope of work shall be the responsibility of this Contractor, at no extra expense to the Owner.

C. Operating equipment, operating systems and other products are specified by names and models and also by performance criteria standards:

1. Where both specifying media are employed, the names and models establish a standard for manufacturing quality, while the performance criteria governs the capacity, rating or output.

2. In any question regarding intent, the capacity, rating or output which is compatible with the other systems, is intended to be of prime concern and is to be provided.

3. Contractor shall follow Owner's Standards for Turn-Over Acceptance, Commissioning and Testing. Where there is a conflict between these requirements and Building Department's requirements, the more stringent requirements shall apply.

D. The descriptions of equipment and systems cover basic equipment and operation, but not all the details of design and construction.

1. The use of singular in descriptions does not limit the quantities to be furnished to produce the complete system, together with the results specified.

2. Furnish equipment required to provide specified performance under installed conditions.

3. Factory wiring and piping is to conform to specifications for field work, unless otherwise specified.

4. Provide trim, enclosures, transition pieces and accessories required to make complete installation in each instance.

5. Provide all seismic provisions as required to meet NYCBC requirements.

E. All Mechanical Drawings of Division 23 are schematic and diagrammatic.

1. Symbols and diagrams are used to indicate the various items of work and the complete systems, but they do not necessarily have dimensional significance, neither do they necessarily include all related and subsidiary parts and equipment. Contractor shall provide all parts, elements, transition pieces, etc. as required for a complete and operational system.

2. The work is to be installed complete and ready for operation in conformity with the intent expressed on the Drawings and in the Specifications.

3. Coordinate work with the requirements of the Architectural and Structural drawings for dimensions, locations and clearances.

4. Locations of mechanical and electrical items which are exposed to view shall be taken from the Architectural Drawings where available, or are to be located as directed by the Architect.

5. Contractor shall provide all transition pieces and rises/drops for piping and ductwork.

6. Minimum height of piping, ductwork, valves, etc. in mechanical rooms excluding drops to equipment, shall be 7'-0" unless otherwise noted.

2.7 EQUIPMENT INSTALLATION

A. Locate and set equipment anchor bolts, dowels and aligning devices for equipment requiring them.

1. Level and shim the equipment; coordinate and oversee the grouting work.

2. After one week of continuous operation, the technician will return to check and realign all shafts, bearings, seals, couplings and belt drives as needed. Provide report indicating completion of this work.

B. Field assembly, installation and alignment of equipment is to be done under field supervision provided by the manufacturer or with inspection, adjustments and approval by the manufacturer, as a part of the Contract.

C. Alignment and Lubrication Certification for Motor Driven Apparatus:

1. After permanent installation has been made and connections have been completed, but before the equipment is continuously operated, a qualified representative of the manufacturer is to inspect the installation and shall report in writing on the manufacturer's letterhead as follows:

a. That shafts, bearings, seals, couplings, and belt drives are perfectly aligned and doweled so the equipment will remain perfectly aligned in the normal service intended by the Documents and that no strain or distortion will occur in normal service. All dowels shall be aligned after equipment is running.

b. That all parts of the apparatus are properly lubricated for operation.

c. That the installation is in accordance with manufacturer's instructions.

d. That suitable maintenance and operating instructions have been provided for the Owner's use.

D. Belt Drives:

1. V-belt drives shall include a driving and driven sheave grooved for belts of trapezoidal cross-section. Belts shall be constructed of fabric and rubber so designed as not to touch the bottom of the grooves, the power being transmitted by the contact between the belts and V-shape groove sides. Drives shall be designed for a minimum of 150 percent of motor horsepower. Drive sheaves shall be of the companion type.

2. All motors shall be provided with fixed sheaves, once the correct speed is determined during testing/balancing period.

3. All fans shall be installed with fixed pitch sheaves on their drive motors. Sheaves shall be selected to provide air quantities under specified conditions. Air systems shall be put into operation, and

Contractor shall determine actual size of sheaves required to produce specified air quantities on installed systems via the use of adjustable sheaves. Adjustable pitch sheaves shall then be replaced with the proper size fixed sheave. Adjustable pitch sheaves shall be property of Contractor and removed from premises.

E. Machinery Guards:

1. Motor drives shall be protected by belt guards furnished by the equipment manufacturer or in accordance with the Sheet Metal and Air Conditioning Contractors National Association's Duct Manual. In all cases, guards of all types must be as approved as acceptable under OSHA Standards.

F. Equipment Startup:

1. Each equipment manufacturer is to provide qualified personnel to inspect and approve equipment and installation and to supervise the startup of the equipment and to supervise the operating tests of the equipment.

2. If a minimum number of hours for startup and instruction are not stated with the equipment specifications, these shall be 2 full 8-hour working days as a minimum.

3. Advise Owner of startup at least 72 hours in advance.

G. Equipment Turn-Over:

1. Contractor shall follow Owner's Standards for Turn-Over Acceptance, Commissioning and Testing. Where there is a conflict between these requirements and the regulations by commissioning agent, the more stringent requirements shall apply.

2.8 CLEANING AND ADJUSTING

A. Notification:

1. Inform owner and architect's field representatives of all cleaning, blowing out and fill-up schedules one week prior to starting.

2. Notify owner and architect again, 48-hours prior to each event. If neither attends the procedures, notify in writing, the specific task performed 24-hours after each event.

3. Leaks appearing during the various pressure tests shall be corrected by replacing all defective materials or welds and subsequent tests shall not be made until the piping is found in perfect condition. Caulking of screwed joints or peaning of welds is prohibited. Wherever it is necessary to cut out a weld and the ends of the pipe cannot be conveniently brought together, then a short piece shall be fitted in and welded.

4. Damage to the building and equipment resulting from tests shall be repaired at no additional cost to the Owner.

5. Tests claimed to have been performed without following above procedures shall be deemed as not performed.

B. Cleaning:

1. Blow out, clean and flush each piping system and equipment, to clean thoroughly. MSDS forms for clean agent and procedure shall be presented to the field office. After cleaning, the systems shall be tested by an independent organization, approved by Owner's representative prior to testing.

2. Clean all materials and equipment; leave in condition ready to operate and ready to receive succeeding finishes where required.

3. Clean the operating equipment and systems to be dust free inside and out.

4. Clean concealed and unoccupied areas such as plenums, pipe and duct spaces and equipment rooms to be free of rubbish and dust.

5. After completion of all pressure tests, properly clean every piece of apparatus furnished and remove caps and other provisions made for testing purposes only.

6. Cutting oil, excess pipe joint compound, finely divided solids and other similar foreign material shall be removed from all circulating water systems before they go into operation. Before chemical cleaning of water systems flush with clean water. Each system shall be cleaned chemically with circulating solution. Fill, vent and

circulate the system with this solution at maximum operating temperature for required duration. During cleaning procedure, circulation shall be stopped periodically followed by blow off at all low points. Immediately following chemical cleaning, system to be drained and then refilled with clean water to which treatment shall then be added. After systems have been drained, flushed and refilled, a chemical test shall be made to determine that the cleaning solution remaining in the system does not impart alkalinity to the water in excess of 300 ppm.

7. After the water piping system has been properly cleaned as indicated above, each water system shall be operated for a minimum of 3 days with 1/2" surgical felt, bonded to baskets on each pump strainer. Felt filters shall be run for as long a time as necessary to thoroughly clean all piping until approved by Owner's representative. During the cleaning period, heat exchangers and coil valves shall be kept closed for the entire cleaning period. Provide one (1) inch manual bypass at equipment to permit flushing of branch piping. For flushing and blow-off for main risers, provide drain valves at the bottom in the horizontal runout to the riser. Also provide an additional valve in the cyclo-clean separator piping for pumps with mechanical seals so that separator discharge water may be wasted during the cleaning procedure.

8. All pipe strainers shall be removed and cleaned upon completion of blowdown period.

9. After this period of operation, all systems shall be drained and refilled with fresh water and new chemicals as specified.

10. All equipment installed shall be thoroughly cleaned in preparation of the finished painting.

11. All dowels shall be aligned after system is running.

C. Adjusting:

1. Adjust and align equipment interconnected with couplings or belts. After one week of continuous operation, the technician will return to check and realign all shafts, bearings, seals, couplings and belt drives as needed. Provide report indicating completion of this work.

2. Adjust valves of all types and calibrate equipment of all types to provide proper operation.

3. Clean all strainers after system cleaning and flushing and again before final system startup.

4. Motors, fans, pumps, compressors, etc. shall be properly oiled and left ready for operation.

5. Verify that each and every supply and return and exhaust fan, each fan coil unit fan, motor and automatic control valve is in running condition. All equipment shall be cleaned, including coils, motors, housing, pans, etc. and inspected by the Owner's representative.

6. Submission of certified tests shall, in no way, relieve the Contractor of fulfillment of guarantee.

7. Gauges, instruments, thermometers and meters shall be checked and tested to specified accuracy.

8. Alarms shall be tested to fulfill satisfactory operating conditions.

9. Allow sufficient time to perform all tests, adjustments, etc., necessary to place the various systems in final operating condition, verify performance requirements and check all safety devices. Labor, instruments, etc., required for various tests shall be furnished by Contractor. The Contractor shall see that all his Sub-Contractors, manufacturer's representatives or Field Engineers necessary to check and adjust various systems are present, with sufficient forms, and that all test results are recorded properly and turned over to Owner for approval.

10. The Owner's representative will make final check for all systems only after Contractor has completed and returned to the Owner all recorded test data together with letter that his work is 100% complete. Additional tests may be required to meet the requirements of Owner's documents for demonstration of various systems, whether or not specified, to verify performance, workmanship or for adjustments.

11. Unless otherwise specified, equipment shall be installed and adjusted in accordance with manufacturer's recommendations to function properly with capacities required or specified.

12. Provide adjustments during summer, winter and shoulder/swing seasons.

D. Running Test of Piping Systems:

1. Any section of the work, after it has been completed and otherwise satisfactorily tested, shall be put in actual operation by Contractor and operated by him for a period of 2 days of 24 hours each, during which time any defects which may appear shall be remedied and any necessary adjustments shall be made. Test shall be performed in the presence of the Owner or his representative, and serve as part of the Instructions Program.

2. During the time of the tests, repack all valves, make all adjustments and otherwise put the apparatus in perfect condition for operation, and shall instruct the Owner's authorized personnel in the use of management of the apparatus. All joints shall be made absolutely tight under tests. Caulking of pipe joints or makeshift methods of repairing leaks shall not be allowed. Piping which is not tight under tests shall be taken down and reassembled.

3. All gauges, thermometers, alarms, instruments, etc. shall be tested to demonstrate that they are functioning properly and within the range of these devices, and to show their degree of accuracy.

4. If during the first test run, the system cannot be completely vented within 24 hours, install additional air vents at high points of system to facilitate quick venting of all water systems.

E. Permanent Equipment Operating During Construction:

1. Use only in same service as the permanent applications, provided that written approval is granted by Owner's representative.

2. Use disposable filters during temporary operation.

3. Expendable media, including belts used for temporary operation and similar materials are to be replaced just prior to acceptance.

4. Packings in equipment operated during construction must be repacked just prior to system acceptance, using materials and methods specified by the supplying manufacturer.

F. Retouch or repaint equipment furnished with factory finish as required to provide same appearance as new.

G. Tools:

1. Provide one set of specialized or non-standard maintenance tools and devices required for servicing the installed equipment.

H. Fan and Pump Characteristic Charts:

1. Fan Characteristic Charts: Furnish 4 characteristics curve charts for each fan, including those embodied in factory assembled units. Characteristic curve charts shall not be less than 8-1/2" x 11" and shall show the static pressure, capacity, horsepower and overall efficiency for operating conditions from no load to 130% specified load.

2. Pump Characteristic Charts: Furnish 4 characteristic charts for each pump. Charts shall be not less than 8-1/2" x 11" showing head developed, efficiency and power required for varying capacities at the operating speed of the equipment.

PART 3 – EXECUTION

3.1 GENERAL

A. Temporary Protection:

1. Provide and maintain protection for the work whether completed or in progress.

2. Provide suitable coverings and enclosures.

B. Scaffolding, Rigging and Hoisting:

1. Provide all scaffolding, rigging and hoisting services necessary for erection, and/or delivery into the premises, of any equipment and apparatus furnished. Remove from the premises when no longer required.

C. Waterproofing:

1. Where any work pierces waterproofing, including waterproof concrete, the method of installation shall be as approved by the Architect before work is done. This Contractor shall provide all

necessary sleeves, caulking and flashing required to make openings absolutely watertight.

3.2 EQUIPMENT BASES, PLATFORMS AND SUPPORTS

A. Provide supporting platforms, steel supports, anchor bolts, inserts, etc., for all equipment and apparatus requiring access for service and maintenance.

B. Obtain prior approval for installation method of structural steel required to frame into building structural members for the proper support of equipment, conduit, etc. Welding will be permitted only when approved by the Architect or the Structural Engineer.

C. Submit shop drawings of supports for approval to the Architect before fabricating or constructing.

D. Provide leveling channels, anchor bolts, complete with nuts and washers, for all apparatus and equipment secured to concrete pads and further supply exact information and dimensions for the location of these leveling channels, anchor bolts, inserts, concrete bases and pads.

E. Where supports are on concrete construction, care shall be taken not to weaken concrete or penetrate waterproofing.

3.3 ACCESSIBILITY

A. The installation of valves, dampers and other items shall be conveniently and accessibly located with reference to the finished building floors, walls, roof and penthouses as applicable.

B. In-line pumps shall not be installed higher than 7 ft. above floor and shall be fully accessible for servicing its motor, valves, controls and instruments.

C. Equipment removal, tube-pull access door swing spaces shall be identified on shop drawings and maintained during installation.

3.4 MODIFICATIONS TO EXISTING WORK

A. Contractor shall perform all work as shown or as specified, within the existing site and structures as part of this Contract without detriment to the existing systems or equipment to be kept in operation or maintained in their places.

B. For full extent of modifications to be done to existing systems, Contractor shall inspect existing systems and site conditions to familiarize himself with the complexity of his work related to removals and relocations required, and the existing finishes to be preserved without any damage resulting from possible careless installation procedures. Upon written request by the bidders, Owner shall make the existing schematic plans available for inspection (at his own address) without any responsibility for their completeness or accuracy.

C. As-Built drawings are not available on the existing installations. Any drawings that may be available to the Contractor are for information only. All field criteria must be field verified by Contractor.

D. All cutting shall be done only by mechanics skilled in the particular trade which is affected. No cutting shall be done without proper protections against damage, dirt and dust resulting therefrom or without proper safeguards to workmen, the public, and occupants of buildings.

E. Before cutting is started in any location, Contractor shall carefully investigate conditions influencing human and structural safety. Existing piping, wiring and items concealed in walls and slabs, wherever these walls and slabs are removed, shall be properly relocated, rerouted or removed as the case may require.

F. General Construction trades shall perform all finish masonry, repairing, restoring and finishing of all cut openings, closing up of existing openings, and removing and restoring the affected sections of the suspended ceilings.

G. If, during partial occupancy of the building, circumstances necessitate temporary shutdown of any facilities or otherwise interfere with access to building, owner shall be given a minimum of 48 hours' notice before doing such work.

H. In all areas where interface, relocation or alternation work is to be done, Contractor shall disconnect and remove from the premises all existing ductwork, piping, etc., that will not be required to remain in service after the alterations are completed. All such equipment (except as requested as salvage by the Owner) shall become the property of this Contractor, and he shall remove same from the premises immediately upon disconnection. Existing ductwork, piping, etc., being removed shall not be reused.

I. Contractor shall move or relocate any existing mechanical equipment, piping, ductwork, etc., which may temporarily interfere with the construction, (to a temporary location) if the existing equipment is to be kept in operation during construction. He shall also install temporary piping, ductwork or equipment that might be required (during demolition or excavation and during the construction of tunnels, retaining walls, footings or columns) for offsetting all piping around the construction area in order to maintain services to the existing systems. Provide temporary piers, supports and hangers as required for excavation.

J. The trade in charge of concrete and superstructure shall provide all cuts and openings through structural slabs and walls, except for core drillings for passage of piping. Contractor shall coordinate his work with concrete contractor and provide necessary dimensions for all openings.

K. Upon completion, remove all temporary piping and equipment, shoring, scaffolds, etc., and leave all areas clean and free from material and debris resulting from work performed under this Section. Provide rough patching in areas shown.

L. Test all piping to be retained or shown to be re-used together with the new extensions connected to them. Install isolation valves as required.

M. Where a fan or any of its connected ductwork is to be modified, relocated or ductwork extended to a new discharge location, test fan prior to starting work and submit test data to Architect for record purposes. Test same fan following completion of work to verify its final capacity in terms of CFM, Static Pressure and Amperes drawn while in operation, showing compliance to data previously established.

3.5 USE OF EQUIPMENT

A. The use of any equipment, or any part thereof, for purposes other than testing even with the Owner's consent, shall not be construed to be an acceptance of the work on the part of the Owner, nor shall it be construed to obligate the Owner in any way to accept improper work or defective materials.

B. Use of permanent equipment for temporary services must be approved in writing by Owner.

3.6 CODES, RULES, PERMITS & FEES

A. The Contractor shall give all necessary notices, obtain all permits and filings including, but not limited to, New York City DEP, New York State DEC, New York City and State Building Code requirements, and pay all government sales taxes, fees, and other costs, in connection with his work. However, all utility connections, extensions, and tap fees for water, storm, sewer, gas, telephone, and electricity shall be paid directly to utility companies and/or agencies by the Owner, unless otherwise indicated. The Contractor shall file all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction; obtain all required certificates of inspection for his work and deliver same to the Owner's Representative before request for acceptance and final payment for the work.

B. The complete design and construction shall conform to the requirements of the NYCBC, NYCMC, NYCFC, NYSEC, NFPA, NEC, FM, UL and any other local or state code which may govern.

C. Provide all New York City and New York State permits for equipment, systems, etc. as required.

3.7 CODE COMPLIANCE

A. As part of this Mechanical work, each Contractor is required to provide assistance to an independent agency for purposes of enforcing code compliance, including special inspections, as follows:

1. For the entire duration of this construction, provide material and labor required by an independent organization headed by a New York State licensed professional engineer for purposes of monitoring compliance with all applicable codes in general and providing special inspection on all items as required by the New York City Building Code, including but not limited to:

a. Construction of ducts and its accessories including hanger installation.

b. Air intakes and outlets.

c. Electrical wiring and equipment pertaining to mechanical equipment.

d. Air cooling and heating equipment.

e. Fire and smoke dampers.

f. Controls.

g. Heating and combustion equipment.

h. Monitoring of New York City (OTCR) approvals required for HVAC and Fire Protection equipment.

i. Structural Concrete poured under this Contract.

j. Fire stopping at penetrations.

k. Seismic supports and bracing.

l. Energy Code Progress Inspections.

B. The independent organization shall be responsible for compiling, issuing and submitting to the Construction Manager and/or Architect all code required reports and forms.

C. Within his bid, the contractor shall submit cost associated with special inspection. The submission shall also include the breakdown proposed.

D. Special inspection procedures shall, in general, insure the following:

1. The adherence of the standards of material and workmanship required by the New York City Building Code.

2. The checking of building processes and the evaluation of materials to insure conformity with the New York City Building Code.

3. The elimination of unspecified, non-conforming substitutions.

4. The discovery of discrepancies between the New York City Building Code requirements and the final Drawings or Specifications and their early correction.

5. The prevention of error which may result in unnecessary and costly maintenance or upkeep costs.

6. The determination of necessary tests and laboratory work.

E. Regular Inspection Services: Contractor shall provide a part-time field inspection supervisor qualified to monitor the project for code compliance

and having three years previous field experience in supervising similar Mechanical system installations.

3.8 ACCEPTANCE

A. The operation or the temporary use of the equipment and the mechanical and electrical installation, by the Owner does not constitute an acceptance of the work. The final acceptance is to be made after the Contractor has adjusted his equipment, demonstrated that it fulfills the requirements of the Contract Documents, and has furnished all the required Certificates. Warranties and guaranties are effective after the final acceptance.

END OF SECTION

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SECTION 23 05 01

SCOPE OF HVAC WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. All work shall be subject to the General Conditions and shall comply with applicable requirements of the Contract.

B. Requirements of Section 230500 shall also govern work specified herein, together with all applicable paragraphs of Mechanical sections.

PART 2 - SCOPE OF WORK

2.1 WORK INCLUDED

A. This Specification and the accompanying Contract Drawings are intended to include the furnishing and installation, in a workman-like and approved manner, of all labor, materials, equipment and appliances necessary and required to completely install the HVAC Systems as specified and shown on the Drawings.

B. General scope of work shall be as listed below, however, omission of specific items shall not be construed as being omitted from the Contract if the item is mentioned elsewhere or implied.

C. The list is not intended to be complete, but it is to serve as a guide to the character and extent of the work, and in general, shall consist of the following:

1. Cleaning of all piping and duct systems prior to operation.
2. All electrical interlock wiring, except as noted otherwise.
3. Complete DDC control system.
4. All miscellaneous appurtenances, accessories and specialties required for a complete installation placed into satisfactory operating condition.
5. Signs, charts, labels, etc., conforming to the requirements of the specifications, codes and Authorities Having Jurisdiction.

6. Supply, return, exhaust ventilation systems and air conditioning systems, including fans, economizer fan, air-handling units, ductwork, motors, dampers, filters, air distribution devices, dampers and all accessories.

7. Receiving, transporting, rigging and installing pre-purchased water-cooled and air-cooled self-contained systems.

8. Condenser water system, piping, fittings, valves and controls.

9. All drains and drainage systems from HVAC coils, protective drain pans and plenum duct drains.

10. Motor starters, motor control centers and variable frequency drives (VFD) for all mechanical equipment as specified and/or scheduled

11. Insulation of piping, ductwork, equipment, etc.

12. Prime painting of equipment and piping, shop finishes, piping identification, stenciling and color coding.

13. Training, instructions and guarantees.

14. "Water-Side and Air- Side Economizer" including controls.

15. Fire dampers, combustion fire smoke dampers and fire stopping.

16. Auxiliary steel required for supporting HVAC equipment, ductwork and piping other than those available in the building structure.

17. Directing the location of access doors and panels required in acoustical tile hung ceilings and furnishing of all access doors and panels required in plaster or dry wall ceilings and partitions.

18. Providing template to the General Construction Contractor for housekeeping pads required under for all floor mounted equipment.

19. Vibration isolators for all equipment and piping.

20. Counter flashing around roof penetrations or waterproofed floor penetrations of HVAC ducts and piping. Caulking around sleeves and fire-stopping at all floor and wall penetration of piping and ductwork.

21. Sound control and acoustical treatment.

22. Furnishing and setting of sleeves, required for piping or ductwork in walls and/or slabs.

23. Seismic restraints.

24. Duct cleaning.

25. Testing, Adjusting, Balancing and Commissioning.

26. Install duct smoke detectors furnished by Electrical Contractor.

27. Protection during construction.

2.2 WORK OF OTHER SECTIONS AND/OR TRADES

A. Following work shall be performed under other Sections:

1. Undercutting of doors or louvers in doors.

2. Weatherproof louvers in outside walls for air intakes and exhaust.

3. Setting of access doors in walls and ceilings.

B. The Contractor shall supply all necessary supervision and coordination information to any other subcontractors supplying work to accommodate the work.

END OF SECTION

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SECTION 23 05 03

PIPES AND TUBES FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Pipe and pipe fittings for the following systems:

1. Chilled water piping.
2. Condenser/Economizer water piping.
3. Equipment drains and over flows.
4. Engine exhaust.
5. Low pressure steam piping.
6. Low pressure steam condensate piping.
7. Unions and flanges.

B. Related Sections:

1. Section 09 90 00 - Painting and Coating: Product and execution requirements for painting specified by this section.
2. Section 23 05 16 - Expansion Fittings and Loops for HVAC Piping Piping Expansion Compensation: Product requirements for piping expansion compensation devices for placement by this section.
3. Section 23 05 23 - General-Duty Valves for HVAC Piping: Product requirements for valves for placement by this section.
4. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for pipe hangers and supports and firestopping for placement by this section.
5. Section 23 05 48 - Noise and Vibration Controls for HVAC Piping and Equipment: Product requirements for Noise and Vibration Isolation for placement by this section.
6. Section 23 05 49: Seismic Provisions and Seismic Restraints: Product requirements for Seismic Restraints for placement by this section.

7. Section 23 07 00 - HVAC Insulation: Product requirements for piping insulation for placement by this section.

8. Section 23 21 16 - Hydronic Piping Specialties: Product requirements for hydronic piping specialties for placement by this section.

9. Section 23 22 16 - Steam and Condensate Piping Specialties: Product requirements for steam and condensate piping specialties for placement by this section.

1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B16.3 - Malleable Iron Threaded Fittings.

2. ASME B16.4 - Gray Iron Threaded Fittings.

3. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.

4. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

5. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.

6. ASME B31.1 - Power Piping.

7. ASME B31.9 - Building Services Piping.

8. ASME B36.10M - Welded and Seamless Wrought Steel Pipe.

9. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.

10. Con Edison Steam Service Rules.

B. ASTM International:

1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

2. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.

3. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures.

4. ASTM A536 - Standard Specification for Ductile Iron Castings.

5. ASTM B32 - Standard Specification for Solder Metal.

6. ASTM B68 - Standard Specification for Seamless Copper Tube, Bright Annealed.

7. ASTM B75 - Standard Specification for Seamless Copper Tube.

8. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

9. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.

10. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.

11. ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing.

C. American Welding Society:

1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

2. AWS D1.1 - Structural Welding Code - Steel.

D. American Water Works Association:

1. AWWA C105 - American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.

2. AWWA C110 - American National Standard for Ductile-Iron and Grey-Iron Fittings, 3 in. through 48 in., for Water and Other Liquids.

3. AWWA C111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

4. AWWA C151 - American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate layout of piping systems, including equipment, critical dimensions, and sizes for approval, prior to fabrication or installation.

C. Product Data: Submit data on pipe materials and fittings. Submit manufacturers catalog information.

D. Welder certifications and welding procedures.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.

B. Perform Work in accordance with NYCBC requirements.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three (3) years documented experience.

B. Installer: Company specializing in performing work of this section with minimum three (3) years documented experience.

1.6 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.7 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Furnish temporary end caps and closures on piping and fittings. Maintain in place until installation.

C. Protect piping from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements: Environmental conditions affecting products on site.

B. Do not install underground piping when bedding is wet or frozen.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.10 COORDINATION

A. Section General Conditions - Administrative Requirements: Requirements for coordination.

B. Coordinate installation of buried piping with trenching.

C. Reference Section 230500 for additional requirements.

PART 2 - PRODUCTS

2.1 CONDENSER WATER PIPING, ABOVE GROUND

A. Steel Pipe: ASTM A53/A53M, Schedule 40, seamless.

1. Fittings: ASME B16.3, malleable iron or ASTM A234/A234M, forged steel welding type.

2. Joints: Threaded for pipe 2 inch and smaller; welded for pipe 2-1/2 inches and larger.

2.2 CHILLED WATER PIPING, ABOVE GROUND

Same as Condenser Water Piping.

2.3 IN-FLOOR RADIANT HEATING PIPING – NOT USED

2.4 EQUIPMENT DRAINS AND OVERFLOWS

A. Steel Pipe: ASTM A53/A53M Schedule 40, galvanized.

1. Fittings: ASME B16.3, malleable iron or ASME B16.4, cast iron.

2. Joints: Threaded for pipe 2 inch and smaller; flanged for pipe 2-1/2 inches and larger.

B. Copper Tubing: ASTM B88, Type L, hard drawn.

1. Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.

2. Joints: Solder, lead free, [ASTM B32,] 95-5 tin-antimony, or tin and silver.

2.5 ENGINE EXHAUST – NOT USED

2.6 LOW PRESSURE STEAM PIPING, ABOVE GROUND (15 PSIG MAXIMUM)

A. Steel Pipe: ASTM A53/A53M, Schedule 40 seamless, black.

1. Fittings: ASME B16.3 malleable iron Class 125, or ASTM A234/A234M forged steel Class 125.

2. Joints: Threaded for pipe 2 inches and smaller; welded for pipe 2-1/2 inches and larger.

2.7 LOW PRESSURE STEAM CONDENSATE PIPING, ABOVE GROUND

A. Steel Pipe: ASTM A53/A53M, Schedule 80 seamless, black.

1. Fittings: ASME B16.3 malleable iron Class 125, or ASTM A234/A234M forged steel Class 125.

2. Joints: Threaded for pipe 2 inches and smaller; welded for pipe 2-1/2 inches and larger.

2.8 UNIONS AND FLANGES

A. Unions for Pipe 2 inches and Smaller:

1. Ferrous Piping: Class 250, malleable iron, threaded.

2. Copper Piping: Class 150, bronze unions with brazed joints.

3. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

B. Flanges for Pipe 2-1/2 inches and Larger:

1. Ferrous Piping: Class 150, forged steel, slip-on flanges.

2. Copper Piping: Class 150, slip-on bronze flanges.

3. Gaskets: 1/16 inch thick preformed neoprene gaskets.

C. Flanges shall be of same weight as the fittings and valves in each service category. Welding neck flanges shall be used with flanged valves, equipment, etc., on welded lines. Galvanized screwed flanges shall be used on galvanized screwed lines. Flanges shall be drilled in conformance with 150 lbs. or 300 lbs. standard and shall be faced and spot-faced. Screwed and loose flanges on brass piping shall be brass. Laps shall be machined on front, back and edge. Screwed flanges shall have faces perpendicular to adjoining pipe.

2.9 PIPE FITTINGS

A. Each pipe fitting shall have cast, stamped, or indelibly marked on it the marker's name or mark, weight, and quality of the product when such marking is required by the approved standard.

B. Welding fittings shall be of same material and schedule as pipe to which they are welded. Welding fittings including laterals shall be approved factory reinforced to develop full working pressure of connecting piping main. Welding elbows shall be long radius pattern. Welding fittings shall be used exclusively, except as otherwise specified. Weldolets may be used for branches only where branch is two (2) or more nominal pipe sizes smaller than main or riser. All welding "lateral" fittings shall have pressure ratings equal to the pipe with which they are to be used. Welding fittings shall be of Tube-Turn or Walworth manufacture or approved equal, to conform to ASTM-A-234 specifications.

C. Nipples shall be extra heavy shoulder type of same material as pipe, close nipples are not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify excavations are to required grade, dry, and not over-excavated.

C. Verify trenches are ready to receive piping.

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges or unions.

D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.3 CONNECTIONS

A. Copper with solder or brazing joints shall be cleaned bright and properly fluxed. Flux shall be non-corrosive as approved.

B. Threaded Joints:

1. Make up screw pipe with clean sharp threads and pipe joint cement used on male thread only.

2. Ream ends of pipe and clean out the pipe after cutting.

3. Use graphite paste on threads of cleanout plugs.

4. Provide sufficient number of flanges or unions to disassemble piping without breaking screwed fittings.

C. Teflon paste shall be used on screwed joints and shall be applied to the male thread only.

D. In connection to equipment, the manufacturer's recommendation as to pipe size and arrangement shall be followed. Connection to equipment shall be made to permit ready disconnection of equipment with minimum disturbance to adjoining pipe. Screwed or flanged unions shall be used at all equipment at inlet and outlet ends. Piping shall be flanged, or fitted with unions for all sections immediately adjacent to connection of equipment which may require pipe removal to aid in all large tube pulling, coil removal, cleaning etc.

E. Assembly of the mechanical joint pipe and fittings shall be complete with a torque wrench. Torque to be applied to each bolt shall be between 60 pounds and 90 pounds. If effective sealing is not attained at the maximum torque indicated above, the joint shall be disassembled and reassembled after thorough cleaning. Overstressing of bolts to compensate for poor installation will not be permitted.

F. Flange joints shall be faced true, packed and made up perfectly square and tight. Each flange joint shall be provided with suitable grade steel bolts for the specific service and with hexagon nuts. Bolts and nuts shall be dipped in a mixture of graphite and oil, just before installation.

G. Gaskets shall have proper thickness and suitable for specific service. All gaskets shall be asbestos free. Gaskets in steam service shall meet the requirement of the utility company.

H. Where piping is to be installed under related work by other Sections, in connection with work and equipment installed by this Trade, the piping will be installed by other Sections, this Trade shall make the final connections.

I. Provide di-electric fittings for all connections between ferrous and non-ferrous metals.

3.4 INSTALLATION - ABOVE GROUND PIPING

A. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

B. Install piping to maintain headroom without interfering with use of space or taking more space than necessary.

C. Group piping whenever practical at common elevations.

D. Sleeve pipe passing through partitions, walls and floors. Refer to Section 23 05 29.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 23 05 16.

F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 23 07 00.

G. Provide access door where valves and fittings are concealed in inaccessible spaces. Coordinate size and location of access doors with drawings.

H. Install non-conducting dielectric connections wherever jointing dissimilar metals. Insulate pipe joints or valves between dissimilar metals, to

prevent dielectric action; use isolating flanges. Dielectric couplings are unacceptable.

I. Cap pipe and equipment outlets during construction; keep lines and inside of equipment free of foreign materials.

1. Provide for expansion without warping lines, or dislocating or straining connected equipment beyond allowable stress limits.

2. Install piping to clear building construction and to avoid interference with other work.

3. Conceal piping.

J. Pipe base drains from pumps to open drains; use plugged tees at 90 degree turns.

K. Provide drain with gate valve for equipment containing water. Pipe to an open drain where such drain is within 50 feet of equipment.

L. Water Lines:

1. At each low point, provide drain nipple and a 3/4" hose bibb drain or a 3/4" drain valve piped to an open drain.

2. Provide air vents at high points in condenser water, process condenser water, pumped condensate and hot water heating lines.

3. Pitch condenser water and hot water piping upward in direction of flow or install piping with top of pipes at same level, using eccentric reducers.

M. Place valves and specialties so as to permit easy operation and access; pack all valves at the completion of the work before final inspection.

N. Water coils: Provide air venting at top of coil and drainage at bottom of coil with 1/2" gate valves.

O. Provide cold-water make-up piping between the outlets provided under the Plumbing Work and point of equipment under HVAC Work requiring same. Each connection to be provided with a globe valve, check valve and vacuum breaker. An anti-siphon check valve, similar to that made by Bidoro Company, may be substituted for the check valve and vacuum breaker.

P. Provide a cold water makeup tank, pump and piping for each expansion tank, fill stations and other equipment requiring same. Each connection shall be provided with a gate valve, check valve and a backflow preventer.

Q. Vents for water systems shall be appropriately valved, 3/4" minimum, and piped over to indirect drains or to locations accessible for draining.

R. Provide a capped hose bibb and valve at the base of all water risers to accept a hose for drainage.

S. Miscellaneous drains and overflow from tanks, equipment, piping, relief valves, pumps, etc., shall be run to the nearest indirect drain and terminate in an elbow over the drain. Provide drain valves wherever required for complete drainage of piping, including the system side of all pump check valves. Drain lines shall pitch not less than 1" in 40' in direction of flow.

1. Screwed couplings and shoulder nipples not exceeding 6" in length shall be of same material as pipe but of dimensions conforming to Schedule 80. Close nipples are prohibited.

T. Vertical sections of main risers in shafts shall be constructed of pipe lengths welded together; do not use mechanical couplings or screwed fittings.

U. Drawings indicate generally the sizes and locations of pipe lines, but the Construction Manager reserves the right to direct changes in run and details of pipe work as necessitated by site conditions. Piping to be of sizes indicated on the Drawings; size any pipe diameter not shown on the Drawings to be in proportion to the load carried at the same resistance as similar piping, or of sizes as directed by Construction Manager.

V. Cut piping accurately to measurements established at the Construction Site and work into place without springing or forcing, properly clearing all openings, structural members and other equipment. Overhead piping to run as high as possible under structural members.

W. Establish invert elevations, slopes for drainage to 1/4 inch minimum. Maintain gradients.

X. Slope piping and arrange systems to drain at low points.

Y. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

Z. Install piping penetrating roofed areas to maintain integrity of roof assembly.

AA. Install valves in accordance with Section 23 05 23.

BB. Install hydronic piping specialties in accordance with Section 23 21 16.

CC. Install steam and condensate piping specialties in accordance with Section 23 22 16.

DD. Insulate piping. Refer to Section 23 07 00.

EE. Install pipe identification in accordance with Section 23 05 53.

3.5 ROUTES AND GRADES

A. Piping shown on the drawings shall be considered as diagrammatic for clearness and may or may not, in all parts, be shown in its true position. This fact does not, in any way, relieve the Contractor from full responsibility for the proper erection of a system of piping in every aspect suitable for the work intended.

B. Drawings indicate generally sizes and locations of pipelines, but the right is reserved to direct changes in details of pipe work as necessitated by actual conditions. Piping shall be of sizes indicated on drawings. Any pipe size not shown shall be in proportion to the load carried at the same resistance as similar piping, or of size as directed.

C. Piping shall be accurately cut to measurement established at the construction site and shall be worked into place without springing or forcing, properly clearing openings, structural members and other equipment. Overhead piping shall be run as high as possible under structural members.

D. Exposed piping shall be run perpendicular and/or parallel to floors, walls, etc. Piping and valves shall be grouped neatly and shall be run so as to avoid reducing headroom or passage clearance.

E. Piping shall be concealed. Piping shall be installed so that same can be drained of all water.

F. Water mains shall pitch upward in direction of flow.

G. Fittings of the eccentric reducing type shall be used where change of size occurs in horizontal piping for proper drainage or venting.

H. Steel pipe bends shall be made of open hearth, low carbon steel, leaving a smooth uniform exterior and interior finish. Pipe bends shall be made with seamless steel pipe, having a minimum radius of not less than 5 pipe diameters.

I. Long-turn fittings shall be used wherever conditions permit.

J. Piping above grade shall be installed so as to be readily accessible for operation, maintenance, repair or replacement.

K. Extra heavy nipples for short shoulder type only. Close nipples are prohibited.

L. Under all conditions, and unless otherwise shown or directed, branches from any steam main shall be taken from the top of the pipe, and all valve stems shall stand upright or at an angle above the center line of the pipe and not handle down.

M. No piping or work of any kind shall be concealed or covered until all required tests have been satisfactorily completed and the work has been approved by the Architect and all authorities having jurisdiction.

3.6 INSTALLATION - HEATING AND COOLING PIPING SYSTEMS

A. Install steam heating and condenser/economizer water piping in accordance with ASME B31.9.

B. Install steam supply and steam condensate return piping in accordance with ASME B31.9.

3.7 FIELD QUALITY CONTROL

A. Section General Conditions - Execution and Closeout Requirements]: Field inspecting, testing, adjusting, and balancing.

B. Test heating water piping system, glycol piping system, condenser water piping system and condenser water piping system in accordance with ASME B31.9.

C. Test low pressure steam supply piping, low pressure steam condensate piping, medium and high pressure steam supply piping and medium and high pressure steam condensate piping in accordance with ASME B31.9.

3.8 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.

B. After completion, fill, clean, and treat heating water piping system, glycol piping system, condenser water piping system, condenser water piping system. Refer to Section 23 25 00.

C. After completion, clean, and treat low pressure steam supply piping, low pressure steam condensate piping, medium and high pressure steam supply piping, medium and high pressure steam condensate piping. Refer to Section 23 25 00.

3.9 PRESSURE TESTING OF PIPING SYSTEMS

A. Pay fees for tests and inspections; furnish labor, materials, equipment and any instruments required for the tests.

B. Perform tests and comply with requirements of the inspecting agency to obtain approval for Owner's use of systems and equipment, as a part of the Contract Work.

C. Replace or repair equipment damaged during testing.

D. Give advance notice of tests to Authorities Having Jurisdiction.

E. Replace any materials which fail under testing and replace or satisfactorily repair any other materials or work damaged by the testing or failures.

F. Do not conceal or insulate any section of piping until testing on that section has been satisfactorily completed and approved.

G. The Contractor shall provide all temporary valves, blanks and accessories for all piping tests, as part of the Work.

H. Test Criteria: Make all piping systems tight under the following test conditions:

1. Perform hydrostatic test as specified in "Examination, Inspection and Testing" of ANSI B31.9 code, except that duration of test shall

be two hours without pressure drop and that no system shall be tested at less than indicated in Item 3 below.

2. If outside temperature is expected to be at or below freezing temperature, the Owner has the option to require that the Contractor test piping by the use of non-corrosive glycol/water mixture.

3. Unless otherwise noted or specified, screwed piping shall be tested under a hydrostatic pressure of 200 psig for a period of 2 hours without fall in pressure gauge reading. Welded and brazed piping shall be subjected to 150 psig air pressure test and welds inspected by applying soap suds. During the air pressure tests, pinholes shall be rewelded at the direction of the Architect/Engineer. Following the air pressure test, piping shall be subjected to hydrostatic test for a period of 2 hours without fall in the pressure gauge reading.

I. Hydrostatic test at 1-1/2 times operating pressure. Operating pressure of water systems, unless noted otherwise, shall be determined by adding pump shutoff head to building static height, with consistent units.

J. Miscellaneous Drain Piping:

1. Perform same tests as specified for water piping above, except that minimum test pressure shall be 50 psig and test duration shall be a minimum of 10 minutes (unless directed by Owner to be of longer duration).

K. Heat exchangers, valves, strainers and piping accessories shall be treated as part of the piping system for testing purposes, except for the following items:

1. Pressure gauges or other sensitive instruments which might be damaged during testing - remove during test and replace after test.

3.10 SYSTEM REQUIREMENTS

A. All piping systems and components shall be rated for a minimum design working pressure of 300 psig, unless otherwise noted.

END OF SECTION

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SECTION 23 05 13

COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes single- and three-phase motors for application on equipment provided under other sections and for motors furnished loose to Project.

B. Related Sections:

1. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

2. Section 26 05 53 - Identification for Electrical Systems.

1.2 REFERENCES

A. American Bearing Manufacturers Association:

1. ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.

B. National Electrical Manufacturers Association:

1. NEMA MG 1 - Motors and Generators.

C. International Electrical Testing Association:

1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

D. New York City Electrical Code

E. Underwriter's Laboratory

F. New York State Energy Research and Development Authority (NYSERDA)

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit catalog data for each motor furnished. Indicate nameplate data, standard compliance, electrical ratings and

characteristics, and physical dimensions, weights, mechanical performance data, and support points.

C. Test Reports: Indicate procedures and results for specified factory and field testing and inspection.

D. The motor nameplate and connection diagram shall be stainless steel and contain the following information:

1. Manufacturers' name
2. Rated volts and full load current
3. Rated frequency and number of phases
4. Rated full load speed
5. Rated temperature rise and rated ambient temperature
6. Time rating
7. Rated horsepower
8. Locked rotor code letter
9. Motors starting on wye connection and running on delta, shall be marked with the code letter corresponding to the wye connection.
10. Dual voltage motors which have a different locked rotor KVA on the two voltages, shall be marked with the code letter for the voltage giving the highest locked rotor KVA.
11. NEMA design letter
12. Service factor

E. In general, motors shall be furnished integrally mounted on all items of mechanical equipment.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. All motors shall be UL approved and listed.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Lift only with lugs provided. Handle carefully to avoid damage to components, enclosure, and finish.

C. Protect products from weather and moisture by covering with plastic or canvas and by maintaining heating within enclosure.

D. For extended outdoor storage, remove motors from equipment and store separately.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR MOTORS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Cooper Industries Inc.

2. Baldor Electric Co.

3. General Electric Co.

4. Emerson Electrical

5. Or approved equal.

B. Motors 1/2 hp and Larger: Three-phase motor as specified below.

C. Motors Smaller Than 1/2 hp: Single-phase motor as specified below, except motors less than 250 watts or 1/4 hp may be equipment manufacturer's standard.

D. Three-Phase Motors: NEMA MG 1, Design B, premium-efficient squirrel-cage induction motor, with windings to accomplish starting methods and number of speeds as indicated on Drawings.

1. Voltage: 230/460 volts, three phase, 60 Hz or as indicated on Drawings.

2. Service Factor: 1.15 unless indicated otherwise on Drawings.

3. Enclosure: Meet conditions of installation unless specific enclosure is indicated on Drawings or specified. Enclosure for pump motors or motors exposed to weather shall be totally enclosed fan-cooled type.

4. Design for continuous operation in 40 degrees C environment, with temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.

5. Insulation System: NEMA Class F.

6. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.

7. Thermistor System (Motor Frame Sizes 254T and Larger): Three PTC thermistors embedded in motor windings and epoxy encapsulated solid state control relay with wiring to terminal box.

8. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA 9, L-10 life of 200,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.

9. Sound Power Levels: Conform to NEMA MG 1.

10. Efficiency: Premium efficiency motors conforming to NEMA. Motor efficiencies shall meet the requirements for financial rebates from NYSERDA.

11. Inverter Duty Rated for motors controlled by VFD. Fan motors controlled by VFD shall be equipped with shaft grounding rings.

12. Motor weight exceeding 25 pounds shall have lifting eyes.

13. Motor efficiencies shall meet minimum requirement for local utility company rebates.

E. Single Phase Motors:

1. Permanent split-capacitor type where available, otherwise use split-phase start/capacitor run or capacitor start/capacitor run motor.

2. Voltage: 115 volts, single phase, 60 Hz.

F. Wiring Terminations: Furnish terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated.

2.2 SOURCE QUALITY CONTROL

A. Test motors in accordance with NEMA MG 1, including winding resistance, no-load speed and current, locked rotor current, insulation high-potential test, and mechanical alignment tests.

PART 3 - EXECUTION

3.1 EXISTING WORK

A. Disconnect and remove abandoned motors

B. Maintain access to existing motors and other installations remaining active and requiring access. Modify installation or provide access panel.

C. Clean and repair existing motors to remain or are to be reinstalled.

3.2 INSTALLATION

A. Install motor in alignment with shaft of the drive. Alignment test must be done prior to operating the equipment.

B. Install engraved plastic nameplates in accordance with Section 26 05 53.

C. Ground and bond motors in accordance with Section 26 05 26.

D. Coordinate two-speed motor installation with Division 26.

E. Provide motor shaft grounding ring (SGR) for motors controlled by Variable Frequency Drive.

3.3 FIELD QUALITY CONTROL

A. Section General Conditions - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.15.

END OF SECTION

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SECTION 23 05 14

MOTOR CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Variable Frequency Drives (VFDs).
2. Motor Starters.

B. Related Sections:

1. All work shall be subject to the General Conditions and shall comply with applicable requirements of the contract.
2. Requirements of Section 23 05 00 shall also govern work specified herein, together with all applicable paragraphs of other Mechanical sections.
3. Requirements of Division 26 shall govern the material and installation methods for wiring motors and motor controllers.

1.2 REFERENCES

A. Institute of Electrical and Electronic Engineers (IEEE)

1. Standard 519-1992, IEEE Guide for Harmonic Content and Control.

B. National Electrical Manufacturer's Association (NEMA)

1. ICS 7.0, AC Adjustable Speed Drives
2. FU 1 - Low Voltage Cartridge Fuses.
3. KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).

C. National Fire Protection Association (NFPA)

1. NFPA 70 – The National Electrical Code

D. New York City

1. New York City Building Code (NYCBC).

2. New York City Electrical Code (NYCEC) (NFPA 70 with New York City Amendments).

E. Underwriters Laboratories

1. UL 508C – Industrial Controls and Systems: Adjustable Speed Drives.

F. Examine the Contract Documents of Division 26 for coordinating work specified under this section.

1.3 SUBMITTALS

A. Submit shop drawings and product data in accordance with General Conditions.

1.4 QUALIFICATIONS

A. VFDs and options shall be UL listed as a complete assembly. VFD's that require the customer to supply external fuses for the VFD to be UL listed are not acceptable. VFDs with red label UL stickers, requiring additional branch circuit protection are not acceptable. The base VFD shall be UL listed for 100 KAIC without the need for input fuses.

B. CE Mark – The VFD shall conform to the European Union ElectroMagnetic Compatibility directive, a requirement for CE marking. The VFD shall meet product standard EN 61800-3 for the First Environment restricted level.

C. The entire VFD enclosure, including the bypass shall be seismically certified and labeled as such in accordance with the 2006 International Building Code (IBC):

1. VFD manufacturer shall provide Seismic Certification and Installation requirements at time of submittal.

2. Seismic importance factor of 1.5 rating is required, and shall be based upon actual shake test data as defined by ICC AC-156.

D. Seismic ratings based upon calculations alone are not acceptable. Certification of Seismic rating must be based on testing done in all three axis of motion.

E. The VFD manufacturer shall have available a comprehensive, HVAC Drive Computer Based Training (CBT) product. The CBT product shall include detailed, interactive sections covering VFD unpacking, proper mechanical and electrical installation, and programming. The CBT product shall allow the user to provide just-in-time training to new personnel or refresher training for maintenance and repair personnel on the user's site. The CBT product shall be repeatable, precise and shall include record keeping capability. The CBT product shall record answers to simulations and tests by student ID number. The CBT product must be professionally produced and have interactive sections, student tests, and include video clips of proper wiring and installation.

PART 2 - PRODUCTS

2.1 GENERAL

A. Furnish and install all motors, and furnish all variable speed drives, combination motor starters/disconnect switches, disconnect switches and starters that are required for controlling the HVAC equipment and motors.

B. Coordinate with Division 26 work for installation of and for proper integration of electrical power wiring with the motors, and equipment that are provided under Division 23.

2.2 VARIABLE FREQUENCY DRIVES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. ABB ACH Series.

2. Yashawa E7-B.

B. Description

1. This specification is to cover a complete Variable Frequency motor Drive (VFD) consisting of a pulse width modulated (PWM) inverter, designed for use with a standard NEMA Design B induction motor.

2. The drive manufacturer shall supply the drive and all necessary options as herein specified. The manufacturer shall have been engaged in the production of this type of equipment for a minimum of twenty years. VFD's that are manufactured by a third party and

"brand labeled" shall not be acceptable. All VFDs installed on this project shall be from the same manufacture.

C. Submittals:

1. Submittals shall include the following information:

a. Outline dimensions, conduit entry locations and weight.

b. Customer connection and power wiring diagrams.

c. Complete technical product description include a complete list of options provided. Any portions of this specification not met must be clearly indicated or the supplier and contractor shall be liable to provide all additional components required to meet this specification.

d. Compliance to IEEE 519 – harmonic analysis for particular jobsite including total harmonic voltage distortion and total harmonic current distortion (TDD).

1) The VFD manufacturer shall provide calculations; specific to this installation, showing total harmonic voltage distortion is less than 5%. Input filters shall be sized and provided as required by the VFD manufacturer to ensure compliance with IEEE standard 519. All VFD's shall include a minimum of 5% impedance reactors, no exceptions.

D. The VFD package as specified herein shall be enclosed in a UL Listed Type enclosure, exceeding NEMA enclosure design criteria (enclosures with only NEMA ratings are not acceptable), completely assembled and tested by the manufacturer in an ISO9001 facility. The VFD tolerated voltage window shall allow the VFD to operate from a line of +30% nominal, and -35% nominal voltage as a minimum.

1. Environmental operating conditions: VFDs shall be capable of continuous operation at 0 to 50^0 C (32 to 122^0 F) ambient temperature as per VFD manufacturers documented/submittal data or VFD must be oversized to meet these temperature requirements. Not acceptable are VFD's that can only operate at 40° C intermittently (average during a 24 hour period) and therefore must be oversized. Altitude 0 to 3300 feet above sea level, less

than 95% humidity, non-condensing. All circuit boards shall have conformal coating.

2. Enclosure shall be rated UL Type 1 and shall be UL listed as a plenum rated VFD. VFD's without these ratings are not acceptable. NEMA only type 1 enclosures are not acceptable (must be UL Type 1).

E. All VFDs shall have the following standard features:

1. All VFDs shall have the same customer interface, including digital display, and keypad, regardless of horsepower rating. The keypad shall be removable, capable of remote mounting and allow for uploading and downloading of parameter settings as an aid for start-up of multiple VFDs.

2. The keypad shall include Hand-Off-Auto selections and manual speed control. The drive shall incorporate "bumpless transfer" of speed reference when switching between "Hand" and "Auto" modes. There shall be fault reset and "Help" buttons on the keypad. The Help button shall include "on-line" assistance for programming and troubleshooting.

3. There shall be a built-in time clock in the VFD keypad. The clock shall have a battery backup with 10 years minimum life span. The clock shall be used to date and time stamp faults and record operating parameters at the time of fault. If the battery fails, the VFD shall automatically revert to hours of operation since initial power up. Capacitor back-up is not acceptable. The clock shall also be programmable to control start/stop functions, constant speeds, PID parameter sets and output Form-C relays. The VFD shall have a digital input that allows an override to the time clock (when in the off mode) for a programmable time frame. There shall be four (4) separate, independent timer functions that have both weekday and weekend settings.

4. The VFD's shall utilize pre-programmed application macro's specifically designed to facilitate start-up. The Application Macros shall provide one command to reprogram all parameters and customer interfaces for a particular application to reduce programming time. The VFD shall have two user macros to allow the end-user to create and save custom settings.

5. The VFD shall have cooling fans that are designed for easy replacement. The fans shall be designed for replacement without requiring removing the VFD from the wall or removal of circuit boards. The VFD cooling fans shall operate only when required. To extend the fan and bearing operating life, the VFD shall cycle the cooling fans on and off as required.

6. The VFD shall be capable of starting into a coasting load (forward or reverse) up to full speed and accelerate or decelerate to set point without tripping or component damage (flying start).

7. The VFD shall have the ability to automatically restart after an over-current, over-voltage, under-voltage, or loss of input signal protective trip. The number of restart attempts, trial time, and time between attempts shall be programmable.

8. The overload rating of the drive shall be 110% of its normal duty current rating for 1 minute every 10 minutes, 130% overload for 2 seconds. The minimum FLA rating shall meet or exceed the values in the NEC/UL table 430.250 for 4-pole motors.

9. The VFD shall have internal 5% impedance reactors to reduce the harmonics to the power line and to add protection from AC line transients. The 5% impedance may be from dual (positive and negative DC bus) reactors, or 5% AC line reactors. VFD's with only one DC reactor shall add an AC line reactor.

10. The input current rating of the VFD shall be no more than 3% greater than the output current rating. VFD's with higher input current ratings require the upstream wiring, protection devices, and source transformers to be oversized per NEC 430.120. Input and output current ratings must be shown on the VFD nameplate.

11. The VFD shall include a coordinated AC transient surge protection system consisting of 4-120 joule rated MOV's (phase to phase and phase to ground), a capacitor clamp, and 5% impedance reactors.

12. The VFD shall provide a programmable loss-of-load (broken belt/broken coupling) Form-C relay output. The drive shall be programmable to signal the loss-of-load condition via a keypad warning, Form-C relay output, and/or over the serial communications bus. The loss-of-load condition sensing algorithm shall include a programmable time delay that will allow for motor

acceleration from zero speed without signaling a false loss-of-load condition.

13. The VFD shall have user programmable underload and overload curve functions to allow user defined indications of broken belt or mechanical failure/jam condition causing motor overload

14. The VFD shall include multiple "two zone" PID algorithms that allow the VFD to maintain PID control from two separate feedback signals (4-20mA, 0-10V, and / or serial communications). The two zone control PID algorithm will control motor speed based on a minimum, maximum, or average of the two feedback signals. All of the VFD PID controllers shall include the ability for "two zone" control.

15. If the input reference (4-20mA or 2-10V) is lost, the VFD shall give the user the option of either (1) stopping and displaying a fault, (2) running at a programmable preset speed, (3) hold the VFD speed based on the last good reference received, or (4) cause a warning to be issued, as selected by the user. The drive shall be programmable to signal this condition via a keypad warning, Form-C relay output and / or over the serial communication bus.

16. The VFD shall have programmable "Sleep" and "Wake up" functions to allow the drive to be started and stopped from the level of a process feedback signal.

F. All VFDs to have the following adjustments:

1. Three (3) programmable critical frequency lockout ranges to prevent the VFD from operating the load continuously at an unstable speed. The lockout range must be fully adjustable, from 0 to full speed.

2. Two (2) PID Set point controllers shall be standard in the drive, allowing pressure or flow signals to be connected to the VFD, using the microprocessor in the VFD for the closed-loop control. The VFD shall have 250 ma of 24 VDC auxiliary power and be capable of loop powering a transmitter supplied by others. The PID set point shall be adjustable from the VFD keypad, analog inputs, or over the communications bus. There shall be two independent parameter sets for the PID controller and the capability to switch between the parameter sets via a digital input, serial communications or from

the keypad. The independent parameter sets are typically used for night setback, switching between summer and winter set points, etc.

3. There shall be an independent, second PID loop that can utilize the second analog input and modulate one of the analog outputs to maintain the set point of an independent process (ie. valves, dampers, etc.). All set points, process variables, etc. to be accessible from the serial communication network.

4. Two (2) programmable analog inputs shall accept current or voltage signals.

5. Two (2) programmable analog outputs (0-20ma or 4-20 ma). The outputs may be programmed to output proportional to Frequency, Motor Speed, Output Voltage, Output Current, Motor Torque, Motor Power (kW), DC Bus voltage, Active Reference, Active Feedback, and other data.

6. Six (6) programmable digital inputs for maximum flexibility in interfacing with external devices. All digital inputs shall be programmable to initiate upon an application or removal of 24VDC or 24VAC.

7. Three (3) programmable, digital Form-C relay outputs. The relay outputs shall include programmable on and off delay times and adjustable hysteresis. The relays shall be rated for maximum switching current 8 amps at 24 VDC and 0.4 A at 250 VAC; Maximum voltage 300 VDC and 250 VAC; continuous current rating of 2 amps RMS. Outputs shall be true Form-C type contacts; open collector outputs are not acceptable.

8. Run permissive circuit - There shall be a run permissive circuit for damper or valve control. Regardless of the source of a run command (keypad, input contact closure, time-clock control, or serial communications), the VFD shall provide a dry contact closure that will signal the damper to open (VFD motor does not operate). When the damper is fully open, a normally open dry contact (end-switch) shall close. The closed end-switch is wired to a VFD digital input and allows VFD motor operation. Two separate safety interlock inputs shall be provided. When either safety is opened, the motor shall be commanded to coast to stop and the damper shall be commanded to close. The keypad shall display "start

enable 1 (or 2) missing". The safety input status shall also be transmitted over the serial communications bus.

9. The VFD control shall include a programmable time delay for VFD start and a keypad indication that this time delay is active. A Form C relay output provides a contact closure to signal the VAV boxes open. This will allow VAV boxes to be driven open before the motor operates. The time delay shall be field programmable from 0 – 120 seconds. Start delay shall be active regardless of the start command source (keypad command, input contact closure, time-clock control, or serial communications), and when switching from drive to bypass.

10. Seven (7) programmable preset speeds.

11. Two independently adjustable accel and decel ramps with 1 – 1800 seconds adjustable time ramps.

12. The VFD shall include a motor flux optimization circuit that will automatically reduce applied motor voltage to the motor to optimize energy consumption and reduce audible motor noise. The VFD shall have selectable software for optimization of motor noise, energy consumption, and motor speed control.

13. The VFD shall include a carrier frequency control circuit that reduces the carrier frequency based on actual VFD temperature that allows higher carrier frequency settings without derating the VFD.

14. The VFD shall include password protection against parameter changes.

G. The Keypad shall include a backlit LCD display. The display shall be in complete English words for programming and fault diagnostics (alpha-numeric codes are not acceptable). All VFD faults shall be displayed in English words. The keypad shall include a minimum of 14 assistants including:

1. Start-up assistant

2. Parameter assistants

   a. PID assistant

b. Reference assistant

c. I/O assistant

d. Serial communications assistant

e. Option module assistant

f. Panel display assistant

g. Low noise set-up assistant

3. Maintenance assistant

4. Troubleshooting assistant

5. Drive optimizer assistants

H. All applicable operating values shall be capable of being displayed in engineering (user) units. A minimum of three operating values from the list below shall be capable of being displayed at all times. The display shall be in complete English words (alpha-numeric codes are not acceptable):

1. Output Frequency

2. Motor Speed (RPM, %, or Engineering units)

3. Motor Current

4. Motor Torque

5. Motor Power (kW)

6. DC Bus Voltage

7. Output Voltage

I. The VFD shall include a fireman's override input. Upon receipt of a contact closure from the fire / smoke control station, the VFD shall operate in one of two modes: 1) Operate at a programmed predetermined fixed speed ranging from -500Hz (reverse) to 500Hz (forward). 2) Operate in a specific fireman's override PID algorithm that automatically adjusts motor speed based on override set point and feedback. The mode shall override all other inputs (analog/digital, serial communication, and all keypad commands), except customer defined safety run interlocks, and force the motor to run in one of the two modes above. "Override Mode"

shall be displayed on the keypad. Upon removal of the override signal, the VFD shall resume normal operation, without the need to cycle the normal digital input run command.

J. Serial Communications

1. The VFD shall have an EIA-485 port as standard. The protocols shall be Modbus, Johnson Controls N2, Siemens Building Technologies FLN, BACnet, LonWorks, Profibus, EtherNet, BACnet IP, and DeviceNet. Each individual drive shall have the protocol in the base VFD. The use of third party gateways and multiplexers is not acceptable. All protocols shall be "certified" by the governing authority (i.e. BTL Listing for BACnet). Use of non-certified protocols is not allowed.

2. The BACnet connection shall be an EIA-485, MS/TP interface operating at 9.6, 19.2, 38.4, or 76.8 Kbps. The connection shall be tested by the BACnet Testing Labs (BTL) and be BTL Listed. The BACnet interface shall conform to the BACnet standard device type of an Applications Specific Controller (B-ASC). The interface shall support all BIBBs defined by the BACnet standard profile for a B-ASC including, but not limited to:

   a. Data Sharing – Read Property – B.

   b. Data Sharing – Write Property – B.

   c. Device Management – Dynamic Device Binding (Who-Is; I-Am).

   d. Device Management – Dynamic Object Binding (Who-Has; I-Have).

   e. Device Management – Communication Control – B.

3. If additional hardware is required to obtain the BACnet interface, the VFD manufacturer shall supply one BACnet gateway per drive. Multiple VFDs sharing one gateway shall not be acceptable.

4. Serial communication capabilities shall include, but not be limited to; run-stop control, speed set adjustment, proportional/integral/ derivative PID control adjustments, current limit, accel/decel time adjustments, and lock and unlock the keypad. The drive shall have the capability of allowing the DDC to monitor feedback such as

process variable feedback, output speed / frequency, current (in amps), % torque, power (kW), kilowatt hours (resettable), operating hours (resettable), and drive temperature. The DDC shall also be capable of monitoring the VFD relay output status, digital input status, and all analog input and analog output values. All diagnostic warning and fault information shall be transmitted over the serial communications bus. Remote VFD fault reset shall be possible.

5. Serial communication in bypass shall include, but not be limited to; bypass run-stop control, the ability to force the unit to bypass, and the ability to lock and unlock the keypad. The bypass shall have the capability of allowing the DDC to monitor feedback such as, current (in amps), kilowatt hours (resettable), operating hours (resettable), and bypass logic board temperature. The DDC shall also be capable of monitoring the bypass relay output status, and all digital input status. All bypass diagnostic warning and fault information shall be transmitted over the serial communications bus. Remote bypass fault reset shall be possible.

6. The VFD / bypass shall allow the DDC to control the drive and bypass digital and analog outputs via the serial interface. This control shall be independent of any VFD function. The analog outputs may be used for modulating chilled water valves or cooling tower bypass valves. The drive and bypass' digital (Form-C relay) outputs may be used to actuate a damper, open a valve or control any other device that requires a maintained contact for operation. In addition, all of the drive and bypass' digital inputs shall be capable of being monitored by the DDC system. This allows for remote monitoring of which (of up to 4) safeties are open.

7. The VFD shall include an independent PID loop for customer use. The independent PID loop may be used for cooling tower bypass value control, chilled water value / hot water valve control, etc. Both the VFD PID control loop and the independent PID control loop shall continue functioning even if the serial communications connection is lost. As default, the VFD shall keep the last good set point command and last good DO & AO commands in memory in the event the serial communications connection is lost and continue controlling the process.

K. EMI / RFI filters. All VFD's shall include EMI/RFI filters. The onboard filters shall allow the VFD assembly to be CE Marked and the VFD shall meet product standard EN 61800-3 for the First Environment restricted level with up to 100 feet of motor cable. No Exceptions. Certified test reports shall be provided with the submittals confirming compliance to EN 61800-3, First Environment.

L. All VFD's shall be protected from input and output power mis-wiring. The VFD shall sense this condition and display an alarm on the keypad. The VFD shall not sustain damage from this power mis-wiring condition.

M. Features – Features to be furnished and mounted by the drive manufacturer. All optional features shall be UL Listed by the drive manufacturer as a complete assembly and carry a UL508 label. Choose one of the options listed below.

1. A complete factory wired and tested bypass system consisting of an output contactor and bypass contactor per section 2.01N below.

2. Door interlocked, padlockable circuit breaker that will disconnect all input power from the drive and all internally mounted options. Circuit breaker option shall be available with or without systems requiring bypass.

3. Fieldbus adapters - Protocols such as LonWorks, DeviceNet, Ethernet IP (ControlNet over Ethernet & ModBus TCP), BACnet IP, and Profibus shall be available with the addition of a card.

N. Bypass Controller

1. A complete factory wired and tested bypass system consisting of a door interlocked, padlockable circuit breaker, output contactor, bypass contactor, and fast acting VFD input fuses are required. UL Listed motor overload protection shall be provided in both drive and bypass modes.

2. The bypass enclosure door and VFD enclosure must be mechanically interlocked such that the disconnecting device must be in the "Off" position before either enclosure may be accessed. Provide bypass interlock for use by qualified personnel. Bypass contactor shall be NEMA rated and shall be equipped with solid-state electronic overloads.

3. The VFD and bypass package shall have a UL listed short circuit current rating (SCCR) of 100,000 amps and this rating shall be indicated on the UL data label.

4. The drive and bypass package shall be seismic certified and labeled to the IBC:

   a. Seismic importance factor of 1.5 rating is required, and shall be based upon actual shake table test data as defined by ICC AC-156.

5. Drive Isolation Fuses - To ensure maximum possible bypass operation, fast acting fuses, exclusive to the VFD, shall be provided to allow the VFD to disconnect from the line prior to clearing upstream branch circuit protection. This maintains bypass operation capability in the event of a VFD failure. Bypass designs which have no such fuses, or that incorporate fuses common to both the VFD and the bypass, will not be accepted.

6. The system (VFD and Bypass) tolerated voltage window shall allow the system to operate from a line of +30%, -35% nominal voltage range. The system shall incorporate circuitry that will allow the drive or bypass contactor to remain "sealed in" over this voltage tolerance at a minimum.

7. The bypass shall maintain positive contactor control through the voltage tolerance window of nominal voltage +30%, -35%. This feature is designed to avoid contactor coil failure during brown out / low line conditions and allow for input single phase operation when in the VFD mode. Designs that will not allow input single phase operation in the VFD mode are not acceptable.

8. Motor protection from single phase power conditions - the bypass system must be able to detect a single phase input power condition while running in bypass, disengage the motor in a controlled fashion, and give a single phase input power indication. Bypass systems not incorporating single phase protection in bypass mode are not acceptable.

9. The bypass system shall NOT depend on the VFD for bypass operation. The bypass system shall be designed for standalone operation and shall be completely functional in both Hand and Automatic modes even if the VFD has been removed from the

system for repair / replacement. Serial communications shall remain functional even with the VFD removed.

10. Serial communications – the bypass shall be capable of being monitored and / or controlled via serial communications. On-board communications protocols shall include ModBus; Johnson Controls N2; Siemens Building Technologies FLN (P1); and BACnet.

11. Serial communication capabilities shall include, but not be limited to; bypass run-stop control; the ability to force the unit to bypass; and the ability to lock and unlock the keypad. The bypass shall have the capability of allowing the DDC to monitor feedback such as, current (in amps), kilowatt hours (resettable), operating hours (resettable), and bypass logic board temperature. The DDC shall also be capable of monitoring the bypass relay output status, and all digital input status. All bypass diagnostic warning and fault information shall be transmitted over the serial communications bus. Remote bypass fault reset shall be possible. The following additional status indications and settings shall be transmitted over the serial communications bus and / or via a Form-C relay output – keypad "Hand" or "Auto" selected, bypass selected, and broken belt indication. The DDC system shall also be able to monitor if the motor is running in the VFD mode or bypass mode over serial communications. A minimum of 50 field serial communications points shall be capable of being monitored in the bypass mode.

12. The bypass serial communications shall allow control of the bypass' digital outputs via the serial interface. This control shall be independent of any bypass function or operating state. The bypass' digital (relay) outputs may be used to actuate a damper, open a valve or control any other device that requires a maintained contact for operation. In addition, all of the bypass' digital inputs shall be capable of being monitored by the DDC system.

13. There shall be an adjustable motor current sensing circuit for the bypass and VFD modes to provide proof of flow (broken belt) indication. The condition shall be indicated on the keypad display, transmitted over the building automation protocol and/or via a Form-C relay output contact closure. The broken belt indication shall be programmable to be a system (drive and bypass) indication. The broken belt condition sensing algorithm shall be

programmable to cause only a warning or a fault and / or system shutdown.

14. The digital inputs for the system shall accept 24VAC or 24VDC. The bypass shall incorporate an internally sourced power supply and not require an external control power source. The bypass power board shall supply 250 ma of 24 VDC for use by others to power external devices.

15. There shall be a run permissive circuit for damper or valve control. Regardless of the source of a run command (keypad command, time-clock control, digital input, or serial communications) the bypass shall provide a dry contact closure that will signal the damper to open (motor does not operate). When the damper is fully open, a normally open dry contact (end-switch) shall close. The closed end-switch is wired to a bypass system input and allows motor operation. Up to four separate safety interlock inputs shall be provided. When any safety is opened, the motor shall be commanded to coast to stop, and the damper shall be commanded to close. This feature will also operate in Fireman's override / smoke control mode.

16. The bypass control shall monitor the status of the VFD and bypass contactors and indicate when there is a welded contactor contact or open contactor coil. This failed contactor condition shall be indicated on the bypass LCD display, programmed to fire a Form-C relay output, and / or over the serial communications protocol.

17. The bypass control shall include a programmable time delay for bypass start and keypad indication that this time delay is in process. A Form C relay output provides a contact closure to signal the VAV boxes open. This will allow VAV boxes to be driven open before the motor operates at full speed in the bypass mode. The time delay shall be field programmable from 0 – 120 seconds.

18. There shall be a keypad adjustment to select manual or automatic transfer bypass. The user shall be able to select via keypad programming which drive faults will result in an automatic transfer to the bypass mode and which faults require a manual transfer to bypass. The user may select whether the system shall automatically transfer from drive to bypass mode on the following drive fault conditions:

a. Over current

b. Over voltage

c. Under voltage

d. Loss of analog input

19. The following operators shall be provided:

a. Bypass Hand-Off-Auto

b. Drive mode selector

c. Bypass mode selector

d. Bypass fault reset

20. The bypass shall include a two line, 20 character LCD display. The display shall allow the user to access and view:

a. Energy savings – in US dollars

b. Bypass motor amps

c. Bypass input voltage– average and individual phase voltage

d. Bypass power (kW)

e. Bypass faults and fault logs

f. Bypass warnings

g. Bypass operating time (resettable)

h. Bypass energy (kilowatt hours – resettable)

i. I/O status

j. Parameter settings / programming

k. Printed circuit board temperature

21. The following indicating lights (LED type) or keypad display indications shall be provided. A test mode or push to test feature shall be provided.

a. Power-on (Ready)

b. Run enable

c. Drive mode selected

d. Bypass mode selected

e. Drive running

f. Bypass running

g. Drive fault

h. Bypass fault

i. Bypass H-O-A mode

j. Automatic transfer to bypass selected

k. Safety open

l. Damper opening

m. Damper end-switch made

22. The Bypass controller shall have six programmable digital inputs, and five programmable Form-C relay outputs. This I/O allows for a total System (VFD and Bypass) I/O count of 24 points as standard. The bypass I/O shall be available to the DDC system even with the VFD removed.

23. The on-board Form-C relay outputs in the bypass shall programmable for any of the following indications.

a. System started

b. System running

c. Bypass override enabled

d. Drive fault

e. Bypass fault

f. Bypass H-O-A position

g. Motor proof-of-flow (broken belt)

h. Overload

i. Bypass selected

j. Bypass run

k. System started (damper opening)

l. Bypass alarm

m. Over temperature

24. The bypass shall provide a separate terminal strip for connection of freeze, fire, smoke contacts, and external start command. All external safety interlocks shall remain fully functional whether the system is in VFD or Bypass mode. The remote start/stop contact shall operate in VFD and bypass modes. The terminal strip shall allow for independent connection of up to four (4) unique safety inputs.

25. The bypass shall include a supervisory control mode. In this bypass mode, the bypass shall monitor the value of the VFD's analog input (feedback). This feedback value is used to control the bypass contactor on and off state. The supervisory mode shall allow the user to maintain hysteresis control over applications such as cooling towers and booster pumps even with the VFD out of service.

26. The user shall be able to select the text to be displayed on the keypad when an external safety opens. Example text display indications include "FireStat", "FreezStat", "Over pressure" and "Low suction". The user shall also be able to determine which of the four (4) safety contacts is open over the serial communications connection.

27. Class 10, 20, or 30 (programmable) electronic motor overload protection shall be included.

28. The VFD Product Warranty shall be 24 months from the date of certified start-up, not to exceed 30 months from the date of shipment. The warranty shall include all parts, labor, travel time

and expenses. A toll free 24/365 technical support line shall be available.

29. Provide start-up service by manufacturer's certified technicians.

2.3 MOTOR STARTERS AND CONTROLS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Allen-Bradley
2. Eaton/Cutler-Hammer
3. General Electric
4. Schneider Electric/Square D
5. Siemens

B. All motor controllers and starters shall be in accordance with the following:

1. All individually mounted motor controllers and starters shall be of the following type:

a. Combination fused switch and magnetic controller with solid-state overload protection and low voltage protection.

b. Manual toggle switch operation 2 pole or single pole starter with overload protection in approved NEMA enclosure. Where motors are installed remote from starters, provide pilot light.

C. Combination Fused Switch – Magnetic Controllers

1. Fused switch shall be heavy-duty type, designed to accept only UL Class RK-1 fuses of the correct voltage class for the motor.

2. Starters shall be NEMA rated contactors with solid-state electronic motor overload protection. Starters for 3-phase motors shall be protected on all phases. Starters equipped with melting alloy overload relays are not acceptable.

3. Provide 120V control power transformers in all controllers. Control power transformer shall be provided with two primary and one secondary fuse. Unfused secondary leg of the control transformer shall be grounded. Fuses shall be UL Class CC time-delay type.

4. Provide three-position, maintained-contact rotary selector switch (H-O-A) in starter covers for all automatically controlled motors.

5. Provide momentary contact pushbuttons for motors that are not provided with automatic control. Pushbuttons shall be NEMA type 13 rated and shall be provided with an extended guard.

6. Provide two normally open (N.O.) and two normally close (N.C.) contacts as a minimum in each starter. Provide additional contacts as required by the Control System and sequence of operation.

7. Where required by the control sequence, provide solid-state timing relays for ON or OFF delay as required.

8. All pilot lights shall be LED type with red or green jewel as indicated. Pilot lights shall indicate "Motor Running" unless otherwise indicated.

9. Each controller shall be mounted in NEMA rated enclosure. Enclosures shall be as follows:

   a. Exterior: NEMA 4X stainless steel.

   b. Interior, dry locations: NEMA 1.

   c. Steam rooms: NEMA 12.

10. Provide all starters with an external overload reset button, mounted in the starter cover.

11. Enclosure sizes and wiring terminals shall be suitable for the use of copper power and control conductors.

12. Provide UL Class RK-1 time-delay, current limiting fuses for all combination starters. Fuses shall be selected based on the fuse manufacturer's motor sizing tables and shall be coordinated with the upstream fuse or circuit breaker.

D. Manual Controllers

1. Manual controllers shall be one or two pole manual switches with thermal overloads in each pole. Overloads shall be melting alloy type. All starters shall be provided with thermal overload protection in all phase legs. Starters for 3-phase motors shall be equipped solid-state electronic overload units, which shall also provide single phase protection. Single phase manual starters shall be equipped with melting alloy overload relays.

2. Controllers shall be provided with an integral pilot light, which shall be illuminated when the switch is ON.

3. Each controller shall be mounted in NEMA rated enclosure. Enclosures shall be as follows:

   a. Exterior and steam rooms: NEMA 4X stainless steel.

   b. Interior, dry locations: NEMA 1.

4. Each controller shall be equipped with a switch guard/lock-off handle.

2.4 REMOTE DEVICES

A. Remote control stations shall be oil-tight, NEMA type 13, and shall be the same manufacturer as those provided integral to starters. The controls shall be housed in a heavy-duty control station enclosure. Remote control stations shall include rotary selector switches or momentary pushbuttons as required

B. Remote pilot light shall be LED type. Color shall match the color required for the starter mounted pilot light.

C. Wiring shall be connected so as to prevent unintentional starting by the grounding of any wire or wires outside of the starter enclosure.

PART 3 - EXECUTION

3.1 GENERAL

A. Motors and controls installed, not in strict compliance with the above, shall be replaced at no cost to the Owner.

3.2 ELECTRICAL WIRING

A. Provide all necessary wiring diagrams indicating wire size and connections as required for the proper operation of the equipment.

B. Contractor shall be responsible for replacing all fuses in the electrical systems during construction which blow due to tests or malfunction of his motorized or non-motorized electrical equipment.

3.3 INSTALLATION

A. Assembly:

1. Assemble shipping sections and set motor control centers in place level, plumb and in alignment; with channel sills level over their full length on surface of housekeeping pads.

2. Make required mechanical and electrical connections including those indicated on approved shop drawings.

3. Anchor motor control centers in accordance with Seismic requirements.

4. Touch-up paint all marred factory finishes.

B. Motor Overloads:

1. Provide in accordance with motor nameplate current, service factor and ambient temperature.

2. Verify actual running load of motors with a clamp-on ammeter after motors are started and all systems are balanced. Adjust solid-state overload units to in accordance with the manufacturer's instructions. Where overloading occurs, consult Architect and Engineer for direction on remedial work to eliminate the overload.

C. Tighten and torque electrical connections in accordance with manufacturer's instruction and UL 486.

3.4 TESTING

A. Coordinate testing of starter with testing of the motor and the system associated with the motor.

3.5 VFD INSTALLATION

A. Installation shall be the responsibility of the mechanical contractor. The contractor shall install the drive in accordance with the recommendations of the VFD manufacturer as outlined in the VFD installation manual.

B. Power wiring shall be completed by the Electrical Contractor. The contractor shall provide and complete all wiring requirements in accordance with the recommendations of the VFD manufacturer as outlined in the installation manual to the Electrical Contractor.

END OF SECTION

SECTION 23 05 16

EXPANSION FITTINGS AND LOOPS FOR HVAC PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Expansion joints.
2. Expansion compensators.
3. Pipe alignment guides.
4. Pipe anchors.

B. Related Sections:

1. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product and installation requirements for piping hangers and supports.
2. Section 23 05 48 - Vibration and Seismic Controls for HVAC Piping and Equipment: Product and installation requirements for vibration isolators used in piping systems.
3. Section 23 05 49: Seismic Provisions and Seismic Restraints: Product requirements for Seismic Restraints for placement by this section.
4. Section 23 21 13 - Hydronic Piping: Product and installation requirements for piping used in hydronic heating and cooling systems.

1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B31.1 - Power Piping
2. ASME B31.9 - Building Services Piping
3. NYCMC

B. American Welding Society:

1. AWS D1.1 - Structural Welding Code - Steel.

1.3 DESIGN REQUIREMENTS

A. Provide structural work and supplemental steel required for expansion and contraction of piping. Provide anchors, guides, and expansion joints and adequately support system. Supplemental steel shall be designed with a safety factor of 5.0.

B. Provide anchor loadings to Structural Engineer for approval prior to installation.

C. Expansion Compensation Design Criteria:

1. Installation Temperature: 40 degrees F.

2. Low Temperature Hot Water Heating System Temperature: 230 degrees F.

3. Low Temperature Steam Heating System Temperature: 250 degrees F.

4. Low Temperature Steam Heating System Operating Pressure: 15 psig.

5. Safety Factor: per ASME code.

1.4 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Requirements for submittals.

B. Shop Drawings: Indicate piping fitting on the layout of piping systems, including flexible connectors, expansion joints, expansion compensators, loops, offsets and swing joints. Submit shop drawings sealed by a registered engineer. Include shop drawing information for piping expansion compensation in shop drawings for piping systems specified in Section 230503 and elsewhere through this division.

C. Product Data:

1. Expansion Joints: Indicate maximum temperature and pressure rating, and maximum expansion compensation.

D. Design Data: Indicate criteria and stress analysis. Submit calculations sealed by a registered engineer.

E. Manufacturer's Installation Instructions: Submit special procedures.

F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

G. Welders' Certificate: Include welders' certification of compliance with ASME Section IX.

H. Manufacturer's Field Reports: Indicate results of inspection by manufacturer's representative.

1.5 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of flexible pipe connectors, expansion joints, anchors, and guides.

C. Operation and Maintenance Data: Submit adjustment instructions.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.

B. Perform Work in accordance with NYCBC.

C. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

C. Design expansion compensating system under direct supervision of Engineer experienced in design of this Work and licensed in State of NY.

1.8 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.9 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Accept expansion joints on site in factory packing with shipping bars and positioning devices intact. Inspect for damage.

C. Protect equipment from exposure by leaving factory coverings, pipe end protection, and packaging in place until installation.

1.10 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five-year manufacturer warranty for leak free performance of packed expansion joints.

1.11 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Supply two (2) 12 ounce containers of packing lubricant and cartridge style grease gun.

PART 2 - PRODUCTS

2.1 GENERAL

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Badger
2. Adsco
3. Or approved equal.

B. Furnish materials in accordance with NYCBC and Con Edison Steam Service rules.

2.2 BELLOW TYPE EXPANSION JOINTS

A. Stainless Steel Bellows Type:

1. Maximum Operating Pressure: 125 psig: Pressure rating of device: 200 psig WOG and 250 degrees F.
2. Maximum Compression: 3 inches.
3. Maximum Extension: 1/4 inch.
4. Joint: As specified for pipe joints.
5. Application: Steel piping 3 inches and smaller.

B. External Ring Controlled Stainless Steel Bellows Type:

1. Maximum Operating Pressure: 125 psig: Pressure rating of device: 200 psig WOG and 250 degrees F.
2. Maximum Compression: 1-1/4 inch.
3. Maximum Extension: 5/16 inch.
4. Maximum Offset: 1/8 inch.
5. Joint: Flanged.
6. Accessories: Internal flow liner.
7. Application: Steel piping 3 inches and larger.

C. Two-ply Bronze Bellows Type:

1. Construction: Bronze with anti-torque device, limit stops, internal guides.

2. Maximum Operating Pressure: 125 psi: Pressure rating of device: 200 psig WOG and 250 degrees F.

3. Maximum Compression: 3 inches.

4. Maximum Extension: 1/4 inch.

5. Joint: Flanged.

6. Application: Copper piping.

D. Stainless Steel Bellows Expansion joints for Generator exhaust only:

1. Pressure Rating: 300 psi suitable for 1200°F exhaust temperature.

2. Maximum compression: 4 inches.

3. Joint: Flanged.

2.3 ACCESSORIES

A. Pipe Alignment Guides: Two piece welded steel with enamel paint, bolted, with spider to fit standard pipe, frame with four mounting holes, clearance for minimum 1 inch thick insulation, minimum 3 inch travel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install Work in accordance with ASME B31.9.

B. Install flexible pipe connectors on pipes connected to equipment supported by vibration isolation. Refer to Section 21 05 48. Provide line size flexible connectors.

C. Rigidly anchor pipe to building structure. Provide pipe guides to direct movement only along axis of pipe. Erect piping so strain and weight is not on cast connections or apparatus.

D. Provide support and anchors for controlling expansion and contraction of piping. Provide loops, pipe offsets, and swing joints, or expansion joints where required. Refer to Section 22 05 29 for pipe hanger installation requirements.

E. Provision for expansion shall be made in all piping by means of loops, bends, or offsets. Where pipe lines join or where branches occur, provisions shall be made for the expansion of both lines.

F. Guides shall be located and constructed wherever required, or shown on drawings, to permit free axial movement only. A minimum of two (2) guides shall be installed on each end of joint plus at least one (1) guide between two (2) joints. Vertical pipe guides shall be in accordance with Section 23 05 48 - NOISE AND VIBRATION CONTROLS.

G. Piping shall be anchored to control expansion and prevent undue strain on the fittings and apparatus. Anchors shall be attached to pipe and fastened to structure. The detail and loading force of steel connections to the structure must be approved by the Structural Engineer prior to fabrication.

3.2 MANUFACTURER'S FIELD SERVICES

A. Section General Conditions - Quality Requirements: Manufacturers' field services.

B. Furnish inspection services by expansion joint manufacturer's representative for final installation and certify installation is in accordance with manufacturer's recommendations and connectors are performing satisfactorily.

END OF SECTION

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SECTION 23 05 23

GENERAL-DUTY VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gate valves.
2. Globe valves.
3. Ball valves.
4. Plug valves.
5. Butterfly valves.
6. Check valves.

B. Related Sections:

1. Section 23 05 03 - Pipes and Tubes for HVAC Piping and Equipment: Product and installation requirements for piping materials applying to various system types.
2. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product and installation requirements for pipe hangers and supports.
3. Section 23 07 00 - HVAC Insulation: Product and installation requirements for insulation for valves.
4. Section 23 21 16 - Hydronic Piping Specialties: Product and installation requirements for piping specialties used in hydronic piping systems.
5. Section 23 22 16 - Steam and Condensate Piping Specialties: Product and installation requirements for piping specialties used in steam and steam condensate, piping systems.

1.2 REFERENCES

A. ASTM International:

1. ASTM A216/A216M - Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service.

B. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP 68 - High Performance Butterfly Valves.
2. MSS SP 70 - Cast Iron Gate Valves, Flanged and Threaded Ends.
3. MSS SP 71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.
4. MSS SP 78 - Cast Iron Plug Valves, Flanged and Threaded Ends.
5. MSS SP 80 - Bronze Gate, Globe, Angle and Check Valves.
6. MSS SP 85 - Cast Iron Globe & Angle Valves, Flanged and Threaded.
7. MSS SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

C. Underwriters Laboratories Inc.:

1. UL 842 - Valves for Flammable Fluids.

D. Code Compliance:

1. Furnish materials in accordance with NYCBC and NYCMC.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturers catalog information with valve data and ratings for each service.

C. Manufacturer's Installation Instructions: Submit hanging and support methods, joining procedures.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of valves.

C. Operation and Maintenance Data: Submit installation instructions, spare parts lists, exploded assembly views.

D. Valve charts and tags.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with NYCBC.

B. All valves shall have a rating exceeding system operating pressure at system temperature and not less than a minimum working pressure of 125 psig or 150 psig.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum three years' experience.

1.7 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.8 DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing and protecting products.

B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

C. Provide temporary protective coating on cast iron and steel valves.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements: Environmental conditions affecting products on site.

B. Do not install valves underground when bedding is wet or frozen.

1.10 EXTRA MATERIALS

A. General Conditions - Execution and Closeout Requirements: Requirements for extra materials.

B. Furnish two packing kits for each size valve.

PART 2 - PRODUCTS

2.1 GATE VALVES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Crane Valve, North America.
2. Milwaukee Valve Company.
3. NIBCO, Inc.
4. Stockham Valves & Fittings.
5. Or approved equal.

B. 2 inches and Smaller: MSS SP 80, Class 125, bronze body, bronze trim, threaded bonnet, non-rising stem, hand-wheel, inside screw with back-seating stem, solid wedge disc, alloy seat rings, threaded ends.

C. 2-1/2 inches and Larger: MSS SP 70, Class 125, cast iron body, bronze trim, bolted bonnet, rising stem, hand-wheel, outside screw and yoke, solid wedge disc with bronze seat rings, flanged ends. Furnish chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

2.2 GLOBE VALVES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Crane Valve, North America.

2. Milwaukee Valve Company.

3. NIBCO, Inc.

4. Stockham Valves & Fittings.

5. Or approved equal.

B. 2 inches and Smaller: MSS SP 80, Class 125, bronze body, bronze trim, threaded bonnet, hand wheel, teflon composition disc, threaded ends.

C. 2-1/2 inches and Larger: MSS SP 85, Class 125, cast iron body, bronze trim, hand wheel, outside screw and yoke, flanged ends. Furnish chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

2.3 BALL VALVES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Crane Valve, North America.

2. Milwaukee Valve Company.

3. NIBCO, Inc.

4. Stockham Valves & Fittings.

5. Or approved equal.

B. 2 inches and Smaller: MSS SP 110, 400 psi WOG, one piece bronze body, chrome plated brass ball, full port, teflon seats, blow-out proof stem, solder or threaded ends, lever handle with balancing stops.

C. 1/4 inch to 1 inch: MSS SP 110, Class 125, two-piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, full port.

D. 1-1/4 inch to 3 inch: MSS SP 110, Class 125, two piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, conventional port.

2.4 PLUG VALVES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. DeZURIK, Unit of SPX Corp.

2. Flow Control Equipment, Inc.

3. Homestead Valve.

4. Substitutions: Section 01 60 00 - Product Requirements.

B. 2 inches and Smaller: MSS SP 78, Class 150, semi-steel construction, rectangular port, full pipe area, pressure lubricated, teflon packing, threaded ends. Furnish one plug valve wrench for every ten plug-valves with minimum of one wrench.

C. 2-1/2 inches and Larger: MSS SP 78, Class 150, semi-steel construction, rectangular port, full pipe area, pressure lubricated, teflon packing, flanged ends. Furnish worm gear-operated.

2.5 BUTTERFLY VALVES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Crane Valve, North America.

2. Fisher.

3. Jamesbury.

4. Substitutions: Section 01 60 00 - Product Requirements.

B. 2-1/2 inches and Larger: MSS SP 68, Class 150.

1. Body: Carbon steel ASTM A105, lug ends, stainless steel stem, extended neck.

2. Disc: 316L stainless steel.

3. Seat: Resilient replaceable PTFE.

4. Handle and Operator: Infinite position lever handle with memory stop for 2-1/2" to 6". Furnish gear operators for valves 8 inches and larger, and chain-wheel operators for valves mounted over 8 feet above floor.

C. Valves shall be high performance bubble-tight, dead-end service and bi-directional type.

2.6 CHECK VALVES

A. General Requirements:

1. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

a. Crane Valve, North America.

b. Milwaukee

c. Jamesbury.

d. Stockham Valves & Fittings.

2. Substitutions: Section 01 60 00 - Product Requirements.

B. Horizontal Swing Check Valve:

1. 2 inches and Smaller: MSS SP 80, Class 150, bronze body and cap, bronze seat, Buna-N disc, solder or threaded ends.

2. 2-1/2 inches and Larger: MSS SP 71, Class 125, cast iron body, bolted cap, bronze or cast iron disc, renewable disc seal and seat, flanged ends.

3. 2 inches and Smaller: MSS SP 80, Class 200, bronze body and cap, Y-pattern, bronze regrinding disc, solder or threaded ends.

4. 2-1/2 inches and Larger: MSS SP 71, Class 250, cast iron body, bolted cap, bronze or cast iron disc, flanged ends.

5. Provide valves capable of being refitted while the valve remains in the line.

C. Wafer Check Valves:

1. Class 250, cast-iron body; with replaceable bronze seat, and non-slam design lapped and balanced twin bronze flappers and stainless steel trim and torsion spring.

2. Provide valves designed to open and close at approximately one foot differential pressure.

D. Lift Check Valves, 2 inches and Smaller:

1. Class 125; cast-bronze body and cap conforming to ASTM B 62; horizontal or angle pattern, lift-type valve, with stainless steel spring, bronze disc holder with renewable "Teflon" disc, and threaded ends.

2. Provide valves capable of being refitted and ground while the valve remains in the line.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify piping system is ready for valve installation.

C. Examine valve interior through the end ports for cleanliness, freedom from foreign matter and corrosion. Remove special packing materials, such as blocks used to prevent disc movement during shipping and handling.

D. Actuate valve through an open-close and close-open cycle. Examine functionally significant features such as guides and seats made accessible by such actuation. Following examination, return the valve closure member to the shipping position.

E. Examine threads on both valve and the mating pipe for form (i.e., out-of-round or local indentation) and cleanliness.

F. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length and material. Check gasket material

for proper size, material composition suitable for service and freedom from defects and damage.

G. Prior to valve installation, examine the piping for cleanliness, freedom from foreign materials and proper alignment.

H. Replace defective valves with new valves.

I. All steam pipe joints and fittings shall be inspected for welding defects by an approved Testing and Inspection Agency retained by the Contractor, per NYC Building Code.

J. Report and inspection data shall be submitted after completion of work and/or remediation of defective welding that have been discovered during inspection and X-Ray testing procedures.

K. Any weld deemed defective, in the opinion of the certified welding inspection and testing agency, shall be ground out for the full depth and re-welded to the testing agency's satisfaction, at no cost to the Owner.

3.2 INSTALLATION

A. Install valves with stems upright or horizontal, not inverted.

B. Install brass male adapters at both ends of the valves in copper piping system.

C. Install 3/4 inch ball valves with cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.

D. Install valves with clearance for installation of insulation and allowing access.

E. Provide access where valves and fittings are not accessible. Coordinate size and location of access doors with Section 08 31 13.

F. Valves shall be installed so they shall be readily accessible. For operation of valves not accessible for direct operation, furnish and install chain wheel, guide and sufficient length of chain to operate from floor level. Provide hooks for fastening chains out of the way. No valve shall be installed with the handle pointing downward. If, in the opinion of the Engineer, valves have been installed so as to create a hazardous and unsafe condition, Contractor shall make corrections as directed, without additional charge.

G. Valves in Mechanical or Fan Rooms more than 8'-0" above the floor shall be chain operated, with either double end chain wrenches or chain wheels.

H. Valves 8" and larger shall be provided with a 1 inch bypass valve of same pressure rating.

I. Systems shall be supplied with valves in all branch mains, risers, drains, at all pumps, equipment, cooling coils, at all automatic valves and at all apparatus using steam or chilled water so located and arranged to give complete isolation and regulating control of the water.

J. The entire system shall be supplied with valves so located, arranged and operated as to give a complete regulating control to all fixtures and apparatus. Shut-off valves shall be provided on all risers, branch lines, branch lines from mains, mains and at each piece of equipment or fixture. Every section of branch supply and return piping and all risers of all services shall be controlled by a valve at the main. Every item of equipment shall be independently isolated by means of valves.

K. Valves, except as noted, shall be properly supported, independent of the piping.

L. Valves in copper tubing shall have soldered or brazed ends.

M. Valves, where exposed and used in connection with finished piping, shall be same finish as the pipe.

N. Valve manufacturer's representative shall instruct building operating personnel in proper maintenance of plug valves. Furnish equipment and lubricant for one (1) year service.

O. Furnish and connect to all valves, brass tags, polished or lacquered with stamp lettering or numbers filled in with black paint. Also furnish a schedule of all valve tags, framed in a polished hardwood frame and covered with plate glass.

3.3 VALVE APPLICATIONS

A. Valves 2-1/2" size and smaller used for water shutoff shall be ball valve type.

B. Valves 3" size and larger used for hot or cold water shutoff shall be high performance butterfly valve.

C. Valves 2-1/2" size and smaller used for hydronic bypass or for flow control shall be ball valve type. All by pass or flow control valves in steam piping shall be of the globe type.

D. Valves 3" size and larger used for controlling water flow at pumps and at equipment, and for bypass control shall be lubricated plug type.

E. Check valves used for water piping, 2" and smaller, shall be all bronze swing check valves with finished bronze trimmings and brazed or threaded ends.

F. Check valves used for water piping, 2-1/2" and larger, shall be cast iron body, bronze trimmings, swing check valves with flanged ends.

G. Check valves at discharge of water pumps shall be horizontal or vertical "silent" swing type, 200 psig design.

H. Gate valves shall be of the solid wedge type and shall be provided with gland and packing boxes, and have top seat for packing under pressure when wide open.

I. Valves for steam shut-off shall be gate type. Valves for steam throttling, control shall be globe type.

END OF SECTION

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SECTION 23 05 29

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe hangers and supports.
2. Hanger rods.
3. Inserts.
4. Flashing.
5. Equipment curbs.
6. Sleeves.
7. Mechanical sleeve seals.
8. Formed steel channel.
9. Firestopping relating to HVAC work.
10. Firestopping accessories.
11. Equipment bases and supports.

B. Related Sections:

1. Section 03 31 00 - Concrete Forming and Accessories: Execution requirements for placement of inserts and sleeves in concrete forms specified by this section.
2. Section 03 33 00 - Cast-In-Place Concrete: Execution requirements for placement of concrete housekeeping pads specified by this section.
3. Section 23 05 03 - Pipes and Tubes for HVAC Piping and Equipment: Execution requirements for placement of hangers and supports specified by this section.
4. Section 23 05 48 - Vibration and Seismic Controls for HVAC Piping and Equipment: Product and execution requirements for vibration isolators.

5. Section 23 21 16 - Hydronic Piping: Execution requirements for placement of hangers and supports specified by this section.

6. Section 23 22 16 - Steam and Condensate Heating Piping: Execution requirements for placement of hangers and supports specified by this section.

1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B31.1 - Power Piping.

2. ASME B31.9 - Building Services Piping.

B. ASTM International:

1. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

2. ASTM E119 - Method for Fire Tests of Building Construction and Materials.

3. ASTM E814 - Test Method of Fire Tests of Through Penetration Firestops.

4. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.

5. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.

C. American Welding Society:

1. AWS D1.1 - Structural Welding Code - Steel.

D. FM Global:

1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research For Property Conservation.

E. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.

2. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.

3. MSS SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

4. MSS SP 77 - Guidelines for Supports – Contractual Relationship

5. MSS SP-127 - Bracing for Piping Systems

F. Underwriters Laboratories Inc.:

1. UL 263 - Fire Tests of Building Construction and Materials.

2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

3. UL 1479 - Fire Tests of Through-Penetration Firestops.

4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.

5. UL - Fire Resistance Directory.

G. Intertek Testing Services (Warnock Hersey Listed):

1. WH - Certification Listings.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate system layout with location including critical dimensions, sizes, and pipe hanger and support locations and detail of trapeze hangers. Include the following:

1. Manufacturer's technical literature showing hanger type (per MSS SP-69 Standard) material of construction, loading capacity and installation data.

2. Hanger assembly details, including multiple supports and riser supports.

3. Pipe attachment details for insulated lines including seismic restraints.

4. Details of anchors, guides and restraints.

5. Contractor shall submit pull-out strength for all inserts to the structural engineer for review.

C. Product Data:

1. Hangers and Supports: Submit manufacturers catalog data including load capacity.

2. Firestopping: Submit data on product characteristics, performance and limitation criteria.

D. Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.

E. Design Data: Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers. Indicate calculations used to determine load carrying capacity of trapeze, multiple pipe, and riser support hangers. Submit calculations sealed by a registered Engineer.

F. Manufacturer's Installation Instructions:

1. Hangers and Supports: Submit special procedures and assembly of components.

2. Firestopping: Submit preparation and installation instructions.

G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

H. Engineering Judgments: For conditions not covered by UL or WH listed designs, submit judgments by licensed Engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

I. Piping Layout Drawings:

1. Provide piping layouts for all HVAC piping systems at same scale as ductwork shop drawings; where such piping is shown on the coordination drawings, separate piping shop drawings for the same area shall also be submitted. Piping shop drawings shall show all hangers and supports, fittings, valves, strainers and accessories. They shall show all sections necessary to establish pipe elevations,

shall identify hanger types and loads, and show all tie-ins to structure.

J. Engineering Data:

1. Before any anchor or support system is installed, submit engineering data drawings to the Architect for review indicating how performance standards specified here shall be met. The Contractor is responsible for the structural design and supports for these systems and must show his proposed systems on these drawings.

2. These drawings must show all load conditions and design calculations relative to connections, fastening devices and anchorage, as well as size and gauge of members. Calculations and drawings must be prepared by a Structural Engineer licensed in the State of New York and shall be signed and sealed by this Engineer.

K. Sleeve Layout Drawings: Indicating sleeves in foundation walls, slabs and roofs, grade beams, footings, sound isolation partitions and ceilings.

L. Concrete Pull-out Tests:

1. Contractor shall provide on-site testing by an accredited testing laboratory, demonstrating compliance with specifications. Testing shall be performed to the loading requirements of the New York City Building Code or by requirements of the Project Manual or5x the load being placed on the most heavily loaded anchor/support; whichever is most restrictive. Test a minimum of 3 anchors/supports in each zone, of each floor, evenly distributed over the area where anchors/supports will be installed. Tested anchors/supports can be used in the final assemblies. Submit reports to Architect.

1.4 QUALITY ASSURANCE

A. Through Penetration Firestopping of Fire Rated Assemblies: UL 1479 or ASTM E814 with 0.10 inch water gage minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.

1. Wall Penetrations: Fire F-Ratings as indicated on Drawings, but not less than 1-hour.

2. Floor and Roof Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.

   a. Floor Penetrations Within Wall Cavities: T-Rating is not required.

B. Through Penetration Firestopping of Non-Fire Rated Floor and Roof Assemblies: Materials to resist free passage of flame and products of combustion.

1. Noncombustible Penetrating Items: Noncombustible materials for penetrating items connecting maximum of three stories.

2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.

C. Fire Resistant Joints in Fire Rated Floor, Roof, and Wall Assemblies: ASTM E1966 or UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.

D. Fire Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10 inch water gage minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.

E. Surface Burning Characteristics: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

F. Perform Work in accordance with applicable authority for welding hanger and support attachments to building structure.

G. Perform Work in accordance with NYCBC.

1.5 PERFORMANCE CRITERIA

A. Anchoring/support systems shall be required to comply with the following:

1. Each anchor/support shall be able to hold 5x the load being placed or as required by the New York City Building Code or as required by the Project Manual; whichever is most restrictive.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years' experience.

1.7 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.8 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Requirements for transporting, handling, storing and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

C. Protect from weather and construction traffic, dirt, water, chemical and damage, by storing in original packaging.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements: Environmental conditions affecting products on site.

B. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F.

C. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.

D. Provide ventilation in areas to receive solvent cured materials.

1.10 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.11 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five year manufacturer warranty for pipe hangers and supports.

PART 2 - PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Carpenter & Paterson Inc.

2. Anvil (formerly Grinnell).

3. Witch.

4. Or approved equal.

B. Pipe hangers and supports shall comply with the recommendation of Standards SP-58 and SP-69 of the Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry, except where otherwise noted in the Specifications or on the Drawings.

C. The Contractor shall comply with the contractural relationships recommended for the Pipe Hanger Engineer and the Mechanical Contractor, as stated in Standard MSS SP-77 unless otherwise noted in the Contract Documents.

D. Pipe hangers shall be of the clevis, pipe-roll and pipe-clamp types.

1. Piping subject to lateral or vertical movements shall be provided with supports of the spring hanger type. Refer to Section 230548 "NOISE AND VIBRATION CONTROL FOR HVAC PIPING AND EQUIPMENT" for Spring Hanger Requirements. No exceptions to this will be granted.

E. Pipe hangers shall be connected to the building structure as follows:

1. All water piping 8" and over shall be supported directly from beams or by means of auxiliary steel furnished and installed by this Contractor attached to beams by means of isolation hangers.

2. All other piping may be supported by inserts with sufficient holding capacity to support twice the calculated dead load. No expansion bolts shall be permitted without written permission from the Architect.

F. Hangers supported from miscellaneous floor steel shall have approved I-beam clamps. I-beam clamps for hangers supporting piping two (2) inches and smaller shall be adjustable side beam clamp. Piping shall be 2-1/2 inches and larger. I-beam clamps shall be Universal forged steel beam clamps with nut right-hand thread.

G. Water piping of six (6) inches and over in banks shall be supported on trapeze hangers constructed of two (2) 4" channels with 1" threaded rods at each end. Top of each rod shall tie in auxiliary steel as specified hereinafter.

H. Provide all auxiliary steel necessary to transmit loads for piping and equipment installed to building beams.

I. Hydronic Piping:

1. Conform to ASME B31.9, ASTM F708, MSS SP58, MSS SP69 and MSS SP89.

2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.

3. Hangers for Cold Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis. Provide cast iron roller for pipes with straight run large than 150 feet.

4. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis cast iron roller.

5. Hangers for Hot Pipe Sizes 6 inches and Larger: Adjustable steel yoke, cast iron roll, double hanger.

6. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 inches and Larger: Steel channels with welded spacers and hanger rods, cast iron roll.
8. Wall Support for Cold Pipe Sizes 3 inches and Smaller: Cast iron hooks.
9. Wall Support for Cold Pipe Sizes 4 inches and Larger: Welded steel bracket and wrought steel clamp.
10. Wall Support for Hot Pipe, any size: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron roll.
11. Vertical Support: Steel riser clamp.
12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
13. Floor Support for Hot Pipe Sizes 2 inches and Smaller: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
14. Floor Support for Hot Pipe Sizes 2-1/2 inches and Larger: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.
15. Copper Pipe Support: Copper-plated, carbon steel ring.

J. Steam and Steam Condensate Piping:

1. Conform to ASME B31.1, ASTM F708, MSS SP58, MSS SP69 and MSS SP89.
2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
3. Hangers for Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis cast iron roller.
4. Hangers for Pipe Sizes 6 inches and Larger: Adjustable steel yoke, cast iron roll, double hanger.
5. Multiple or Trapeze Hangers for Pipe Sizes 4 inches and Smaller: Steel channels with welded spacers, roller chairs and hanger rods.

6. Multiple or Trapeze Hangers for Pipe Sizes 6 inches and Larger: Steel channels with welded spacers and hanger rods; cast-iron roll and stand.

7. Wall Support for Pipe Sizes tp to 5 inches: Welded steel bracket and roller chair.

8. Wall Support for Pipe Sizes 6 inches and Larger: Welded steel bracket and wrought steel clamp; adjustable steel yoke and cast iron roll.

9. Vertical Support: Steel riser clamp.

10. Floor Support for Pipe Sizes 4 inches and Smaller: Roller chair and concrete pier or steel support.

11. Floor Support for Pipe Sizes 6 inches and Larger: Adjustable cast iron roll and stand steel screws, and concrete pier or steel support.

12. Copper Pipe Support: Copper-plated carbon-steel ring.

K. Trapeze and Clevis Hangers:

1. Where two or more lines run parallel and adjacent to each other, trapeze hangers may be used.

2. Secure pipes supported by trapeze hangers and not mounted on pipe rolls to trapeze with hold down pipe clamps or "J" bolts.

3. Support vertical piping passing through slabs with pipe clamps installed above slab, unless they are subject to expansion or contraction.

L. Roller Hangers:

1. Support hot lines (steam, hot water, steam condensate) 2 inches and larger on roller hangers. Support chilled water lines with straight runs (longer than 150 feet) on roller hangers.

M. Saddles and Shields:

1. Provide protective galvanized shield for supporting insulated lines 1-1/2 inches and smaller.

2. Provide galvanized saddles and roller hangers for supporting hot insulated lines 2" and larger and hard insulation for supporting cold insulated lines 2" and larger.

3. Insert insulation identical to pipe insulation in void between saddle and pipe.

2.2 ACCESSORIES

A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.

2.3 INSERTS

A. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms for formed concrete. Provide steel metal deck ceiling bolts with threaded rod attachment for concrete with metal decking. Size inserts to suit threaded hanger rods. Inserts and loading shall be reviewed and approved by the Structural Engineer.

B. Set inserts in position in advance of concrete work. Provide reinforcement rod in concrete for inserts carrying pipe over 4 inches in diameter.

C. In areas where the concrete slab is exposed, inserts shall be installed flush with slab surface.

D. Where inserts are missed, drill through concrete slab and provide rod with recessed square steel plate and nut above slab. Under certain conditions, and only with written approval of the Architect, double expansion anchors meet Federal Specification FF-S-325C, as manufactured by HILTI or approved equal, having BS&A number, may be installed in existing slabs.

2.4 FLASHING

A. Metal Flashing: 26 gage thick galvanized steel.

B. Metal Counterflashing: 22 gage thick galvanized steel.

C. Lead Flashing:

1. Waterproofing: 5 lb./sq. ft sheet lead.

2. Soundproofing: 1 lb./sq. ft sheet lead.

D. Flexible Flashing: 47 mil thick sheet butyl; compatible with roofing.

E. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.5 EQUIPMENT CURBS

A. Fabrication: Welded 18 gage galvanized steel shell and base, mitered 3 inch cant, variable step to match roof insulation, 1-1/2 inch thick insulation, factory installed wood nailer.

2.6 SLEEVES

A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.

B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Schedule 40 Steel pipe or 18 gage thick galvanized steel.

C. Sleeves for Round Ductwork: Galvanized steel.

D. Sleeves for Rectangular Ductwork: Galvanized steel.

E. Sealant: Acrylic; refer to Section 07 90 00.

2.7 MECHANICAL SLEEVE SEALS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Thunderline Link-Seal, Inc.

2. NMP Corporation.

3. Or approved equal.

B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.8 FORMED STEEL CHANNEL

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Allied Tube & Conduit Corp.

2. B-Line Systems.

B. Product Description: Galvanized 12 gage) thick steel. With holes 1-1/2 inches on center.

2.9 FIRESTOPPING

A. Definitions:

1. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

B. System Description:

1. Firestopping Materials: UL 1479 to achieve fire ratings as noted on Architectural Drawings for adjacent construction, but not less than 1 hour fire rating.

a. Ratings may be 3-hours for firestopping in through-penetrations of 4-hour fire rated assemblies unless otherwise required by applicable codes.

2. Surface Burning: ASTM E84 with maximum flame spread / smoke developed rating of 25/450.

3. Firestop interruptions to fire rated assemblies, materials, and components.

C. Performance Requirements:

1. Firestopping: Conform to applicable code for fire resistance ratings and surface burning characteristics.

2. Firestopping: Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

D. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Dow Corning Corp.
2. Fire Trak Corp.
3. Hilti Corp.
4. International Protective Coating Corp.
5. 3M fire Protection Products
6. Specified Technology, Inc.

E. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.

1. Silicone Firestopping Elastomeric Firestopping: Multiple component silicone elastomeric compound and compatible silicone sealant.
2. Foam Firestopping Compounds: Multiple component foam compound.
3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
4. Fiber Stuffing and Sealant Firestopping: Composite of ceramic fiber stuffing insulation with silicone elastomer for smoke stopping.
5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
7. Firestop Pillows: Formed mineral fiber pillows.

F. Color: Full range of colors shall be available to be selected by Architect.

2.10 FIRESTOPPING ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

B. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

C. General:

1. Furnish UL listed products or products tested by independent testing laboratory.

2. Select products with rating not less than rating of wall or floor being penetrated.

D. Non-Rated Surfaces:

1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where piping is exposed.

2. For exterior wall openings below grade, furnish mechanical sealing device to continuously fill annular space between piping and cored opening or water-stop type wall sleeve.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify openings are ready to receive sleeves.

C. Verify openings are ready to receive firestopping.

3.2 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.

B. Remove incompatible materials affecting bond.

C. Obtain permission from Architect/Engineer before using powder-actuated anchors.

D. Do not drill or cut structural members.

3.3 INSTALLATION - INSERTS

A. Install inserts for placement in concrete forms.

B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.

D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.4 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Install in accordance with ASME B31.1, ASTM F708, MSS SP 58, MSS SP 69, MSS SP 89 and NYCMC.

B. Support horizontal piping as scheduled.

C. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.

D. Place hangers within 12 inches of each horizontal elbow.

E. Use hangers with 1-1/2 inch minimum vertical adjustment.

F. Support vertical piping at every floor.

G. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.

H. Support riser piping independently of connected horizontal piping.

I. Provide copper plated hangers and supports for copper piping.

J. Design hangers for pipe movement without disengagement of supported pipe.

K. Prime coat steel hangers and supports. Refer to Section 09 90 00. Underground hangers shall be painted with two (2) coats of black asphlatum.

L. Provide clearance in hangers and from structure and other equipment for installation of insulation. Refer to Section 22 07 00.

M. Provide all necessary hangers and supports of approved design to keep piping in proper alignment and prevent transmission of injurious thrusts and vibrations. In all cases where hangers, brackets, etc., are supported from concrete construction, care shall be taken not to weaken concrete or penetrate waterproofing. All hangers and supports shall be capable of screw adjustment after piping is erected with a locking nut provided to prevent loss of adjustment due to pipe vibration. Hangers supporting piping expansion loops, bends and offsets shall be secured to the building structure in such a manner that horizontal adjustment perpendicular to the run of piping supported may be made to accommodate displacement due to expansion. All such hangers shall be finally adjusted, both in the vertical and horizontal direction, when the supported piping is hot. All supports and components shall be rated for a minimum of two times the calculated dead load.

3.5 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of concrete, minimum 4 inches thick and extending 6 inches beyond supported equipment. Refer to Section 03 33 00.

B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.

C. Construct supports of formed steel channel. Brace and fasten with flanges bolted to structure.

D. Provide rigid anchors for pipes after vibration isolation components are installed.

3.6 INSTALLATION - FLASHING

A. Provide flexible flashing and metal Counterflashing where piping and ductwork penetrate weather or waterproofed walls, floors, and roofs.

B. Provide acoustical lead flashing around ducts and pipes penetrating equipment rooms for sound control.

C. Provide curbs for roof installations 24 inches minimum high above roofing surface. Flash and counter-flash with sheet metal; seal watertight. Attach Counterflashing to equipment and lap base flashing on roof curbs. Flatten and solder joints.

D. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.

3.7 INSTALLATION - SLEEVES

A. Exterior watertight entries: Seal with mechanical sleeve seals.

B. Set sleeves in position in forms. Provide reinforcing around sleeves.

C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

E. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

F. Install chrome plated steel escutcheons at finished surfaces.

3.8 INSTALLATION - FIRESTOPPING

A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, and other items, requiring firestopping.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating to uniform density and texture.

D. Place intumescent coating in sufficient coats to achieve rating required.

E. Fire Rated Surface:

1. Seal opening at floor, wall, partition, ceiling, and roof as follows:

   a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.

   b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.

   c. Pack void with backing material.

   d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.

2. Where conduit and wireway penetrate fire rated surface, install firestopping product in accordance with manufacturer's instructions.

F. Non-Rated Surfaces:

1. Seal opening through non-fire rated wall, partition floor, ceiling, and roof opening as follows:

   a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.

   b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.

   c. Install type of firestopping material recommended by manufacturer.

2. Install escutcheons floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.

3. Exterior wall openings below grade: Assemble rubber links of mechanical sealing device to size of piping and tighten in place, in accordance with manufacturer's instructions.

4. Interior partitions: Seal all pipe penetrations. Apply sealant to both sides of penetration to completely fill annular space between sleeve and conduit.

3.9 FIELD QUALITY CONTROL

A. Section General Conditions - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect installed firestopping for compliance with specifications and submitted schedule.

3.10 CLEANING

A. Section General Conditions - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean adjacent surfaces of firestopping materials.

3.11 PROTECTION OF FINISHED WORK

A. Section General Conditions - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect adjacent surfaces from damage by material installation.

3.12 SCHEDULES

A. Copper and Steel Pipe Hanger Spacing:

PIPE SIZE Inches	COPPER TUBING MAXIMUM HANGER SPACING Feet	STEEL PIPE MAXIMUM HANGER SPACING Feet	COPPER TUBING HANGER ROD DIAMETER Inches	STEEL PIPE HANGER ROD DIAMETER Inches
Up to 1-1/2	6	6	1/2	3/8
2	8	8	1/2	1/2
2-1/2	10	10	5/8	5/8
3	10	10	5/8	5/8
4	-	10	-	3/4
5	-	10	-	3/4
6	-	10	-	3/4
8	-	10	-	7/8

PIPE SIZE Inches	COPPER TUBING MAXIMUM HANGER SPACING Feet	STEEL PIPE MAXIMUM HANGER SPACING Feet	COPPER TUBING HANGER ROD DIAMETER Inches	STEEL PIPE HANGER ROD DIAMETER Inches
10	-	10	-	1
12	-	10	-	1

When several pipes rest on a common hanger, increase rod diameter accordingly, and spacing noted above must remain.

END OF SECTION

SECTION 23 05 48

NOISE AND VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vibration isolators.
2. Acoustic housings.
3. Ductwork lagging.

B. Related Sections:

1. Section 03 33 00 - Cast-In-Place Concrete: Execution requirements for placement of isolators in floating floor slabs specified by this section and product requirements for concrete for placement by this section.
2. Section 07 90 00 - Joint Protection: Product requirements for joint sealers specified for placement by this section.
3. Section 23 05 16 - Expansion Fittings and Loops for HVAC Piping: Product requirements for anchors and piping expansion compensation.
4. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for pipe hangers and supports.
5. Section 23 05 93 - Testing, Adjusting, and Balancing for HVAC: Requirements for sound and vibration measurements performed independent of this section.
6. Section 23 33 00 - Air Duct Accessories: Product requirements for both solid and flexible duct connectors for duct silencers specified for placement by this section.
7. Section 23 05 49 – Seismic Provisions and Seismic Bracing.

1.2 REFERENCES

A. Air Movement and Control Association International, Inc.:

1. AMCA 300 - Reverberant Room Method for Sound Testing of Fans.

B. American National Standards Institute:

1. ANSI S1.4 - Sound Level Meters.

2. ANSI S1.8 - Reference Quantities for Acoustical Levels.

3. ANSI S1.13 - Methods for the Measurement of Sound Pressure Levels in Air.

4. ANSI S12.36 - Survey Methods for the Determination of Sound Power Levels of Noise Sources.

C. Air-Conditioning and Refrigeration Institute:

1. ARI 575 - Method of Measuring Machinery Sound within Equipment Space.

D. American Society of Heating, Refrigerating and:

1. ASHRAE 68 - Laboratory Method of Testing In-Duct Sound Power Measurement Procedure for Fans.

2. ASHRAE Handbook - HVAC Applications.

E. ASTM International:

1. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

2. ASTM E477 - Standard Test Method for Measuring Acoustical and Airflow Performance of Duct Liner Materials and Prefabricated Silencers.

3. ASTM E596 - Standard Test Method for Laboratory Measurement of the Noise Reduction of Sound-Isolating Enclosures.

F. Sheet Metal and Air Conditioning Contractors':

1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

1.3 PERFORMANCE REQUIREMENTS

A. Provide vibration isolation on motor driven equipment over 0.5 hp, which is connected piping and ductwork.

B. Provide minimum static deflection of isolators for equipment as follows:

1. Basement, Under 20 hp – Not Used

2. Basement, Over 20 hp – Not Used

3. Upper Floors, Critical

a. Under 400 rpm: _____

b. 400 - 600 rpm: _____

c. 600 - 800 rpm: 3.5 inch

d. 800 - 900 rpm: 2 inch

e. 1100 - 1500 rpm: 1 inch

f. Over 1500 rpm: 0.5 inch

C. Consider upper floor locations critical unless otherwise indicated.

D. Use concrete inertia bases for fans having static pressure in excess of 3.5 inches water column or motors in excess of 40 hp, and on base mounted pumps over 10 hp.

E. Maintain sound level of spaces at levels not to exceed those listed below by utilizing acoustical devices.

F. Maintain rooms at following maximum sound levels, in Noise Criteria (NC) as defined by ASHRAE Handbook., HVAC Applications:

1. Offices

a. Executive: 30

b. Conference rooms: 30

c. Private: 35

d. Open-plan areas: 40

e. Computer/business machine areas: 40

f. Public circulation: 40

g. Laboratories: 40

h. Corridors: 40

i. Public areas: 40

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate inertia bases and locate vibration isolators, with static and dynamic load on each. Indicate assembly, materials, thickness, dimensional data, pressure losses, acoustical performance, layout, and connection details for sound attenuation products fabricated for this project.

C. Product Data: Submit schedule of vibration isolator type with location and load on each. Submit catalog information indicating, materials, dimensional data, pressure losses, and acoustical performance for standard sound attenuation products.

D. Design Data: Submit calculations indicating maximum room sound levels are not exceeded.

E. Test Reports: Indicate dynamic insertion loss and noise generation values of silencers. Acoustic housings meet or exceed specified sound transmission loss values.

F. Manufacturer's Installation Instructions: Submit special procedures and setting dimensions. Indicate installation requirements maintaining integrity of sound isolation.

G. Manufacturer's Certificate: Certify isolators meet or exceed specified requirements.

H. Manufacturer's Field Reports: Indicate sound isolation installation is complete and in accordance with instructions.

I. Submit shop drawings for the items listed below. The shop drawings must be complete when submitted and must be presented in a clear, easily understood form. Incomplete or unclear presentation of shop drawings may be reason for rejection.

1. A complete description of products to be supplied, including product data, dimensions, specifications and installation instructions.

2. Detailed selection data for each vibration isolator supporting equipment, including:

   a. The equipment identification mark

   b. The isolator type

   c. The actual load

   d. The static deflection expected under the actual load

   e. The specified minimum static deflection

3. Steel rails, steel base frames and concrete inertia bases showing all steel work, reinforcing, vibration isolator mounting attachment method and location of equipment attachment bolts.

4. Details required to convey complete understanding of work.

1.5 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of acoustic housings and ductwork lagging. Record actual locations of hangers including attachment points.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with AMCA 300, ANSI S1.13, ARI 575, ANSI S12.36 standards and recommendations of ASHRAE 68.

B. All vibration isolation systems including mountings, and hangers, shall be furnished by the same manufacturer.

C. The vibration isolation systems shall be designed to achieve an 80% to 95% isolation at the lowest rotational speed of the equipment regardless of the condition of the mounting floor.

D. The flexible isolators shall be properly adjusted and installed in accordance with the weight distribution of the equipment to provide a stable mounting decoupled system. Each flexible isolator shall be designed and installed so that the equipment support base remains level during deflection. The natural frequency for each support point, based upon the load per isolator and its stiffness, shall not differ by more than plus or minus 10%.

E. The isolation system shall not cause the equipment to generate any mechanical problem, mechanical failure or misalignment of the couplings and bearings.

F. Furnish information as may be required to verify that all vibration control equipment will meet static deflections and percentage of isolation reduction specified for various uses.

1. Should operation of any system cause noise or vibration which is, in the opinion of the Engineer, "objectionable," Contractor shall, at his own expense, make such changes in piping, equipment, etc., as may be necessary to eliminate the objectionable noise or vibration.

2. Should the installation of any equipment or piping transmit the noise to any portion of the structure which is, in the opinion of the Engineer, "objectionable," Contractor shall, at his own expense, install such isolation and make such changes or additions as may be necessary to prevent the transmission of the noise or vibration.

G. Particular attention is directed to the problem of preventing noise and vibration transmission from Mechanical Equipment Rooms to adjacent areas. It is of paramount importance that no noise or vibration emanating from equipment in these rooms be perceptible in adjacent areas. Contractor shall incorporate in his installation all devices and accessories to accomplish this result. Such devices shall include vibration eliminator bases and sound absorber pads, muffler at air compressor air intakes, acoustical lining or sound traps at fresh air intake louvers, and other sound insulation, all as may be required.

H. All electrical connections, drain connections, piping connections, etc., made to equipment which rests on vibration isolators shall be sufficiently flexible to permit the equipment to be properly installed.

I. When concrete pads are called for to be under isolation, they shall be extended to span at least 2 of the supporting beams and they shall be

reinforced with rods or mesh so that the concrete can act as a beam reinforcing the floor and providing a better support for the isolation. The vibration control equipment manufacturer shall submit templates and weight at each support point to the Concrete Section to achieve this.

J. Where supplementary steel is required to support piping this steel shall be designed to provide a maximum deflection of 0.08 inches at the midspan under the supported load. Piping shall be rigidly supported from the supplementary steel and the supplementary steel isolated from the building structure by means of isolators.

K. Acoustical Performance Specifications: It is the intent that noise levels due to air conditioning and/or ventilating equipment, ducts, grilles, registers, diffusers and air system pressure reducing devices will permit attaining sound pressure levels in occupied spaces conforming to the following NC curves as explained in the latest issue of the ASHRAE Guide and Data Book.

L. Design isolators for equipment installed outdoors to provide adequate restraint to withstand the force of a 100 mph wind applied to any exposed surface of the isolated equipment. Isolators for outdoor equipment shall have bolt holes for attachment to equipment and to supports. The vibration isolation Vendor shall submit verifying shear and over turning calculations, for their product and equipment installation arrangement, stamped by a licensed Professional. The design and supply of miscellaneous support steel above and below isolators will not be the responsibility of the vibration isolation manufacturer.

M. Static deflection of isolators shall be as provided as noted below. All static deflections stated are the minimum acceptable deflection for the mounts under actual load. Isolators selected solely on the basis of rated deflections are not acceptable and will be disapproved.

N. Vibration Criteria:

1. Mechanical and electrical equipment operated by motors over one horsepower and unless otherwise noted, and associated piping and ductwork, shall be isolated from the structure by means of resilient vibration and noise isolators supplied by a single manufacturer to the HVAC Contractor. The isolator manufacturer shall include the complete design for the supplementary basis; a tabulation of the design data on the isolators including outside diameter; free, operating and solid heights of the springs; free and operating

heights of the neoprene or fiberglass isolators; and isolation efficiency based on the lowest operating speed of the equipment supported.

2. All rotating equipment shall be balanced both statically and dynamically. The equipment supporting structure shall not have any natural frequencies within ±20% of the operating speeds. The equipment, while operating, shall not exceed a self-excited vibration velocity of 0.10 inches per second when measured with a vibration meter on the bearing caps of the machine in the vertical, horizontal and axial directions, or at the equipment mounting feet if the bearings are concealed.

3. Vibration testing shall be in accordance with procedure established by "Testing Vibration Isolation Systems", Page 52.38 of ASHRAE HVAC Systems and Applications – 1987.

4. When it is determined by the Owner that any equipment vibration exceeds the specified level, the contractor in consultation with the Professional shall, at no cost to the Owner, determine the source of the vibration and make the necessary corrections or replacement to reduce it to the acceptable level.

O. Sound Pressure Levels:

1. The sound pressure levels around mechanical and electrical equipment (fans, motors, etc.) in equipment spaces shall not exceed 85 dbA at any point, 3 feet from equipment, with all equipment in the room operating. The sound criteria applies to the complete operating range of each piece of equipment.

2. The maximum interior background sound pressure levels for the various usage areas within the building shall be indicated on Table 2, "Recommended Indoor Design Goals for HVAC System Sound Control" – ASHRAE HVAC Systems and Applications – 1987, Page 52.4, or as otherwise specified. Each area, so designated, shall be tested and reported for noise level with all equipment operating and space unoccupied.

3. When equipment or space sound pressure levels exceed the specified criteria, the contractor in consultation with the Professional shall, at no cost to the Department, determine the

source of the noise and make the necessary corrections to reduce it to the acceptable levels.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

C. Design application of duct silencers, acoustic housings, seismic snubbers under direct supervision of Professional Engineer experienced in design of this Work and licensed in the State of NY.

1.8 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.10 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

PART 2 - PRODUCTS

2.1 INERTIA BASES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products may be incorporated into the project:

1. Mason Industries - M.I.I

2. Vibration Eliminator Corp. – V.E.C

3. VMC Group - V.M.C.I

4. Substitutions: Section General Conditions.

B. Furnish materials in accordance with NYCBC.

C. Structural Bases:

1. Design: Sufficiently rigid to prevent misalignment or undue stress on machine, and to transmit design loads to isolators and snubbers.

2. Construction: Welded structural steel with gusset brackets, supporting equipment and motor with motor slide rails.

D. Concrete Inertia Bases:

1. Mass: Minimum of 1.5 times weight of isolated equipment.

2. Construction: Structured steel channel perimeter frame, with gusset brackets and anchor bolts, adequately reinforced, concrete filled.

3. Connecting Point: Reinforced to connect isolators and snubbers to base.

4. Concrete: Reinforced 3,000 psi concrete.

2.2 MOUNTING OF CEILING SUPPORTED FACTORY ASSEMBLED FANS, TUBULAR FANS, AXIAL FANS AND BELTED UTILITY VENT SETS - MOUNTING TYPE V – Not Used

2.3 MOUNTING OF CENTRIFUGAL PUMPS - GREATER THAN 3 HP - MOUNTING TYPE VI – Not Used

2.4 MOUNTING OF CENTRIFUGAL PUMPS (3 HP OR LESS) - MOUNTING TYPE VII – Not Used

2.5 MOUNTING OF REFRIGERATION MACHINE - TYPE VII

A. Each machine component (cooler-condenser and drive compressor) shall be resiliently supported on steel spring isolation mountings. The motor-compressor assembly shall be provided with a rigid steel structural base designed to withstand operating forces of the machine. Base shall be furnished as an integral part of the machine by the manufacturer.

B. Spring mountings shall incorporate unrestrained stable springs with built-in leveling device and resilient vertical limit stops to prevent spring elongation when partial load is removed. The mountings shall also be

capable of providing rigid anchor during erection of machine so that it can be erected at a fixed elevation.

C. Spring mountings shall provide a minimum of one inch static deflection and shall have two layers of acoustical neoprene base pads separated by 16 gauge sheet metal. Mountings shall be one of the following:

Type SLR - M.I.I.
Type ASCM - V.M.C.I.
Type OSC - V.E.C.

2.6 SUPPORT OF WATER PIPING

A. General: The following water piping shall be resiliently supported.

1. All water piping in Mechanical Equipment Rooms.

2. Where shown on drawings.

B. Resilient diagonal mountings or other approved devices shall be provided as required to limit piping motion due to equipment startup or shutdown, to a maximum of 1/8 inch.

Where isolated water piping 8" and over is supported directly be-low exposed steel beams, attachment to the beam shall be made by means of channel beam attachments welded to the underside of the bottom flange and located directly under the web of the beam.

C. The steel spring element of the hangers or floor mounting assembly shall provide 1 inch static deflection.

D. All water piping hanger rod isolators shall be one of the following:

Type PC30N - M.I.I.
Type RSH - V.M.C.I.
Type SNRC - V.E.C.

E. Floor supported water piping shall be mounted on one of the following, or as approved:

Type SLR - M.I.I.
Type ASCM - V.M.C.I.
Type OSC - V.E.C.

F. Mounting of Piping Risers:

1. Pipe riser guides, anchors and supports including piping anchors in Mechanical Equipment Rooms or occupied spaces shall be isolated from the building structure such that there shall be no direct metal-to-metal contact of the piping with the building structure.

2. Piping Guides:

   a. Steel guide bars shall be welded to the pipe at a maximum spacing of 60 deg. 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 riser clamp 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, as described on the drawings.

   b. The all-directional piping anchor isolation mountings shall consist of a telescoping arrangement of two sizes of steel tubing separated by a minimum of 1/2 inch thick heavy duty neoprene and canvas duct 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 or as approved.

   d. Piping shall be constructed with a 360 deg. 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 duct 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 pad 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. 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.

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 and 1/2 inch thick heavy duty neoprene and canvas duct isolation material. A heat shield of 1/4 inch transite shall be provided. The isolation material loading shall not exceed 500 psi.

c. Acoustical pipe anchor mountings shall be Type VPA Mason Industries or as approved.

4. Supports:

a. Piping supports within shafts shall be provided with suitable bearing plates and two (2) 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. Piping isolation supports of the base of risers shall be two layers of 1/2 inch thick heavy duty neoprene and canvas duct 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.

c. All pipe support resilient materials shall be HP Mason Industries, or as approved.

d. Piping penetrations of shafts, floor slab and/or partitions: There shall be no direct contact of piping with shaft walls, floor slabs and/or partition. All uninsulated piping shall be sleeved with one inch fiberglass the full depth of the penetration.

2.7 GRILLES, REGISTERS AND DIFFUSERS

A. The maximum permissible sound power levels in octave bands of grilles, registers and diffusers when operated in an installed condition per plans and specification, shall be as follows:

Maximum Sound Power Level for Terminal Devices Servicing Occupied Spaces

See Acoustical Performance Criteria
Maximum PWL (db) re 10-12 Watts

Octave Bands	NC-35	NC-40
1	62	66
2	56	60
3	50	54
4	46	51
5	43	48
6	42	47
7	41	46
8	42	47

2.8 VARIABLE AIR VOLUME BOXES

A. Discharge Noise:

1. The maximum permissible sound power levels of these units when operated in an installed condition per plans and specifications shall be such that the resulting sound pressure levels in occupied spaces shall conform to noise criteria levels as stated in "Acoustical Performance Criteria" hereinbefore described. Low pressure duct downstream of units shall be acoustically lined but length of lining shall be not less than required to achieve criteria.

B. Radiated Noise:

1. Where located exposed or over occupied spaces, the maximum permissible radiated sound power levels in octave bands when operated in an installed condition per plans and specifications, shall be as follows:

Octave Bands Mid/Freq. (cps)	Maximum PWL (db) re:10-12 Watts	
	NC-35	NC-40
63	72	76
125	70	74
250	61	65
500	60	64
1000	57	62
2000	56	60
4000	66	70
8000	65	70

2. The manufacturer shall submit to the Architect guaranteed discharge and radiated sound power levels in octave bands, and shall substantiate that the equipment operating in an installed condition as per plans and specifications shall conform with those discussed above.

3. Should the architect desire that units be checked for conformance of discharge and radiated noise to the above acoustical performance, the cost of such tests will be paid up by the Owner provided that the test proves conformance. Otherwise, the cost of such tests and cost of corrective measures shall be borne by the manufacturer.

2.9 ACOUSTICAL PERFORMANCE WITHIN EQUIPMENT SPACES

A. Equipment room noise levels and noise transmission to adjacent buildings shall comply with all State and City Noise Ordinances.

2.10 MOTOR ACOUSTICAL PERFORMANCE

A. Noise levels shall be determined in accordance with IEEE Standard u/85 Test "Procedure for Air-Borne Noise Measurements on Rotating Electric Equipment."

2.11 ACOUSTICAL LINING

A. Duct lining for supply, return and exhaust air systems:

1. Duct lining shall be 1-1/2 lb. per cu. ft. density Owens Corning AEROFLEX, Johns Manville or Knauf. Unless greater thicknesses are specified, the minimum thickness installed shall be 1".

   Duct lining shall meet requirements of NFPA-90A and all materials used shall have a flamespread rating of 25 or less and smoke developed rating of no higher than 50.

2. The leading edge (facing into the air flow) or each non-abutting section such as the first section facing into the fan, or the first section after a sound trap shall have a metal nosing.

3. Application: All portions of duct designated to receive duct liner shall be completely covered with Duct Liner. Transverse joints shall be neatly butted and there shall be no interruptions or gaps. The black coated surface of the Duct Liner shall face the air stream. The Duct Liner shall be adhered to the sheet metal with 100% coverage of adhesive and all exposed leading edges and all transverse joints coated with adhesive. Adhesive shall Duct Line, ASC-A-7001C-1972. The Duct Liner shall be additionally secured with mechanical fasteners (mechanical fasteners shall conform to Mechanical Fastener Standard FM-1-1971, available from Sheet Metal and Air Conditioning Contractors National Association), which shall compress the Duct Liner sufficiently to hold it firmly in place. Duct Liner shall be cut to assure overlapped and compressed longitudinal corner joints. Fasteners shall start within 3" of the upstream transverse edges of the liner and 3" from the longitudinal joints and shall be spaced at a maximum of 6" o.c. around the perimeter of the duct, except that they may be a maximum of 6" from a corner break. Elsewhere they shall be a maximum of 16" o.c., except that they shall be placed not more than 6" from a longitudinal joint of the liner nor 12" from a corner break.

4. The following ducts shall be acoustically lined:

   a. Ductwork downstream of VAV terminal units a minimum distance of 15 feet, in all directions, or as shown on drawings.

b. All supply and return air ductwork in mechanical equipment rooms, but not less than 30 ft. from supply fan discharge and 25 ft. from return fan inlets, in all branches and mains.

c. Ductwork upstream of exhaust fans a minimum distance of twenty feet, in all branches or mains, unless sound traps are provided.

d. All transfer ducts and jumper ducts.

e. In addition to above, wherever shown on drawings.

B. Dimensions of lined ducts shown on drawings are the inside dimensions of the duct after the lining has been installed.

C. Duct liner shall meet the requirements of NFPA 90A, 90B and ASTM-C 1071 and installed in accordance with SMACNA.

D. All adhesives shall conform to the current South Coast Air Quality Management District (SCAQMD) Rule #1168. The Volatile Organic Compound (VOC) content shall not exceed 80 grams per liter.

2.12 DUCTWALL EXTERNAL SOUNDPROOFING (DES)

A. Materials:

1. Fiberglass insulation shall be 4 lb. per cubic foot density.

2. Thickness of the fiberglass shall be 1/2 in. greater than height of ductwork angles, one in. minimum.

3. The jacket shall be aluminum (.016) laminated to lead (.015) with a visco-elastic film similar to Muffle-Jac as manufactured by Childers Products Company.

4. Sound transmission loss greater than STC26 for the aluminum/lead laminate.

5. Banding shall be .02 in.x 3/4 in. stainless steel.

6. Sealant: Chil-Seal CP-70 by Childers or equal.

B. Installation:

1. Seal all duct joints airtight.

2. Adhere fiberglass with 100% coverage of adhesive and stick clips on 18 in., centers on the underside of large ducts where required. Fiberglass must cover angles and protrusions by 1/2 in. minimum. Wrap ductwork and insulation with lead/aluminum laminate with largest continuous sheets possible. Overlap all joints 2 in. minimum and seal joints with sealant specified. If fish-mouthing occurs, close gap with sheet metal screws as described below. On the underside of ducts only, stick clips may be used to support jacket. The exterior clip must be isolated from the jacket with an 1/8 in. thick oversized armaflex washer. All duct jacketing must be secured with banding on 12 in. maximum centers. The corners must be reinforced with 3 in. long, lin. x lin. x 1/8 in. thick aluminum extrusion where banding occurs. Use same extrusion under duct to keep jacket from sagging if required. If and only if the banding is not possible, then sheet metal screws (3/4 in. long maximum) may be used to secure the jacketing as described below:

   a. Must not touch interior duct.

   b. After screw has been installed, clean with nonflammable grease solvent.

   c. Dab screw with epoxy adhesive to secure.

C. Provide DES as shown on drawings only.

2.13 DUCTWORK LAGGING

A. Acoustic Insulation: 2 inch thick, 3 to 5 lb/cu ft density glass fiber or mineral wool insulation.

B. Covering: Gypsum board with surface weight minimum 4 lb/sq ft.

2.14 SEISMIC RESTRAINTS – Refer to 23 05 49.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify equipment, ductwork and piping is installed before work in this section is started.

3.2 EXISTING WORK

A. Provide access to existing piping and ductwork and other installations remaining active and requiring access.

B. Extend existing piping and ductwork installations using materials and methods compatible with existing electrical installations.

3.3 INSTALLATION

A. Support duct silencers rigidly to ductwork. Refer to Section 23 33 00.

B. Lag ductwork, where indicated by wrapping with insulation and covering. Apply covering to be airtight. Do not attach covering rigidly to ductwork.

C. Install isolation for motor driven equipment.

D. Bases:

1. Set steel bases for 1 inch clearance between housekeeping pad and base.

2. Set concrete inertia bases for 2 inch clearance between housekeeping pad and base.

E. Adjust equipment level.

F. Install spring hangers without binding.

G. On closed spring isolators, adjust so side stabilizers are clear under normal operating conditions.

H. Prior to making piping connections to equipment with operating weights substantially different from installed weights, block up equipment with temporary shims to final height. When full load is applied, adjust isolators to load to allow shim removal.

I. Provide pairs of horizontal limit springs on fans with more than 6.0 inch static pressure, and on hanger supported, horizontally mounted axial fans.

J. Provide resiliently mounted equipment, piping, and ductwork with seismic snubbers. Provide each inertia base with minimum of four seismic

snubbers located close to isolators. Snub equipment designated for post disaster use to 0.05 inch maximum clearance. Provide other snubbers with clearance between 0.15 inch and 0.25 inch.

K. All equipment, piping, etc., shall be mounted on or suspended from approved foundations and supports, all as specified herein, as shown on the drawings, or as required.

L. All floor-mounted equipment shall be erected on 4" high concrete pads over the complete floor area of the equipment, unless specified to the contrary herein. Wherever hereinafter vibration eliminating devices and/or concrete inertia blocks are specified, these items shall, in all cases, be in turn mounted upon 4" high concrete pads unless specified to the contrary herein.

M. The vibration isolation systems shall be guaranteed to have minimum one inch deflection or as indicated on the schedule or as specified.

N. Mounting sizes shall be determined by the mounting manufacturer, and the sizes shall be installed in accordance with the manufacturer's instruction.

O. The installed vibration isolation system for each floor or ceiling supported equipment shall have a maximum lateral motion under equipment startup or shutdown conditions of l/4". Motions in excess shall be restrained by approved spring type mountings.

P. All mounting systems exposed to weather and other corrosive environments shall be protected with factory applied corrosion resistive materials.

Q. 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 has reached specified minimum deflection. Springs shall have a reserve deflection of 50% of rated deflection before reaching solid.

R. 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.

S. Unless noted otherwise, spring isolators for fans shall have minimum static deflection, when operating at their lowest speed, in accordance with the table listed in Section 1.3.

T. All neoprene isolators shall have a minimum static deflection of 3/8 inch unless otherwise shown.

3.4 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect isolated equipment after installation and submit report. Include static deflections.

C. After start-up, final corrections and balancing of systems take octave band sound measurements over full audio frequency range in areas adjacent to mechanical equipment rooms, duct and pipe shafts, and other critical locations. Provide one-third octave band measurements of artificial sound sources in areas indicated as having critical requirements. Submit complete report of test results including sound curves.

D. Furnish services of testing agency to take noise measurement. Use meters meeting requirements of ANSI S1.4.

END OF SECTION

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SECTION 23 05 49

SEISMIC PROVISIONS AND SEISMIC RESTRAINTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. All work shall be subject to the General Conditions and shall comply with applicable requirements of the Contract.

B. Requirements of Section 230500 shall also govern work specified herein, together with all applicable paragraphs of Mechanical sections.

1.2 DESCRIPTION OF WORK

A. It is the intent of this specification to provide the basis of seismic design for all mechanical and electrical system within the building. Provide seismic restraints, complete, as specified per Contract Documents, and required per applicable codes.

1.3 GENERAL

A. Seismic isolation in this Section replaces standard isolation systems noted in 230548. All piping, equipment, conduit, ductwork, etc. shall be seismically restrained in accordance with the requirements of the NYCBC.

B. The work of this section includes, but is not limited to the following:

1. Seismic restraints for piping and ductwork and equipment.

2. Purchased and/or fabricated equipment must be designed to safely accept external forces in accordance with NYCBC in any direction for all rigidly and resiliently supported equipment, piping and ductwork without failure and permanent displacement of the equipment. Substitution of "Internally Isolated" mechanical equipment in lieu of the specified isolation must be approved for individual equipment units and is acceptable only if above accelerations are certified in writing by equipment manufacturer and stamped by a licensed civil or structural engineer.

3. Seismic restraint calculations must be submitted for all piping, ductwork and equipment. Calculations for factory fabricated

internally isolated equipment must be submitted. These calculations must be signed and sealed by a licensed professional engineer in the State of New York and submitted to the Professional for approval.

1.4 SUBMITTALS

A. The submittal material shall include 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 restraints to be utilized showing compliance with the specifications.

b. Testing reports.

B. Shop Drawings:

1. Drawings showing methods of suspension, support guides for piping, ductwork and equipment.

2. Concrete and steel details for bases including anchor bolt sizes and locations.

3. Number and location of seismic restraints and anchors for each piece of equipment.

4. Specific details of restraints including anchor bolts for mounting and maximum loading at each location, for each piece of equipment piping and ductwork.

5. Seismic restraint calculations stamped by a Professional Engineer verifying design and calculations for seismic restraining system used.

1.5 REFERENCE STANDARDS

A. New York City Building Code (NYCBC)

B. ANSI/SMACNA Seismic Restraint Manual.

Where conflicts exist between the two reference standards, the requirements of the more stringent standard shall apply.

1.6 MANUFACTURER RESPONSIBILITIES

A. Manufacturer of vibration isolation and seismic control equipment shall have the following responsibilities.

1. Determine vibration isolation and seismic restraint sizes and locations.

2. Guarantee specified isolation system deflection.

3. Provide installation instructions, drawings and field supervision to assure proper installation and performance.

PART 2 - PRODUCTS

2.1 GENERAL

A. Seismic restraints shall maintain equipment and ductwork and piping in a captive position. Seismic restraints shall not short circuit vibration isolation systems or transmit objectionable vibration or noise and shall be provided on all equipment as noted in Division 23 Specifications.

B. Details of support methods for typical conditions are described herein. Actual method(s) of restraint for all equipment shall be submitted by the manufacturer of each piece of equipment accompanied by a letter indicating compliance with the criteria established. The Contractor shall provide restraints as indicated on approved Shop Drawings.

2.2 REQUIRED APPLICATIONS

A. All equipment which is bolted directly to concrete housekeeping pads.

B. All floor mounted equipment mounted on vibration isolators.

C. All piping, conduit, ductwork and equipment supported from overhead.

D. Wall hung equipment.

E. All floor-mounted pipes and ducts are not secured to seismic floor stands.

2.3 TYPES OF RESTRAINTS

A. Seismic Restraint, Type I:

1. Each corner or side seismic restraint shall incorporate minimum 5/8" thick pad limit stops. 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 structure to resist seismic forces in accordance with the NYCBC.

2. Seismic spring mountings as described above are an acceptable alternative providing all seismic loading requirements are met.

3. Mason Industries Type Z-1011, Type Z-1225, or approved equal.

B. Seismic Restraint, Type II:

1. Metal cable type with approved end fastening devices to equipment and structure. System to be field bolted to structure or overhead structural members or structure with aircraft cable.

C. Spring Seismic Restraint, Type III:

1. Shall comply with general characteristics of spring isolators. Shall incorporate snubbing restraint in all directions. Shall be capable of supporting equipment at a fixed elevation during equipment erection. Cast or aluminum housings are not acceptable. System to be field bolted to deck to resist seismic forces in accordance with the Building Code.

a. Mason Type SSLFH, or as approved equal.

b. VMCI Type SAWR

c. VEC Type BXL

D. Bolted Seismic Restraint, Type IV:

1. Non-isolated equipment shall be field bolted (powder shots not acceptable) to resist seismic forces unless under 100 pound shear force required.

PART 3 - EXECUTION

3.1 UTILIZATION

A. Equipment, ductwork, conduit and piping supported from overhead:

1. Utilize Seismic Restraint Type II restraining system.

2. For overhead supported equipment, overstress of the building structure must not occur.

3. All structurally suspended overhead equipment, isolated or un-isolated, shall be four-point independently braced with Type II seismic restraining system.

4. Install seismic restraining system Type II: taut for overhead suspended un-isolated equipment, piping or ductwork, and slack with 1/2" cable deflection for isolated system.

B. Equipment mounted directly to concrete housekeeping pads:

1. Utilize Seismic Restraint Type IV and Type I.

2. Bolt sizes and configurations shall be arranged to resist seismic forces in accordance with the Building Code. 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 a licensed civil or structural engineer.

3. Where base anchoring is insufficient to resist seismic forces, supplementary restraining such as seismic restraint system Type II or rigid channel supports shall be used above system's center of gravity to suitably resist seismic forces in accordance with the Building Code. Floor mounted distribution equipment may require this additional restraint.

C. Equipment mounted on vibration isolators:

1. Equipment mounted on springs shall utilize Seismic Restraint Type III (spring mounts) and do not require additional seismic restraints providing that the spring mountings:

a. Comply with general characteristics of spring isolators.

b. Have vertical limit stops and are capable of supporting equipment at fixed elevation during equipment erection.

c. Incorporate seismic snubbing restraint in all directions at specified acceleration loading.

2. Where equipment weight or characteristics exceed capacity of seismic spring mounts, equipment shall be mounted on standard spring isolators, Mason Industries Type SLR or approved equal and provided with Seismic Restraint Type I restraints.

D. Wall mounted equipment, piping and ductwork:

1. Provide and install insert anchors for concrete walls and through bolts with plates for concrete masonry unit and framed walls in accordance with approved submittals.

2. Anchor cabinets and boxes to wall with anchors or bolts. In framed walls, framing shall be constructed to accept horizontal forces from dynamic load under horizontal forces from applicable NYCBC.

END OF SECTION

SECTION 23 05 53

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Nameplates.
2. Tags.
3. Stencils.
4. Pipe markers.
5. Ceiling tacks.
6. Labels.
7. Lockout devices.

B. Related Sections:

1. Section 09 90 00 - Painting and Coating: Execution requirements for painting specified by this section.

1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME A13.1 - Scheme for the Identification of Piping Systems.
2. Owner's color code, if any.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit manufacturers catalog literature for each product required.

C. Shop Drawings: Submit list of wording, symbols, letter size, and color coding for mechanical identification and valve chart and schedule,

including valve tag number, location, function, and valve manufacturer's name and model number.

D. Samples: Submit two tags, labels and pipe markers used on project.

E. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.

1.5 QUALITY ASSURANCE

A. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories, and owner's color code.

B. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.7 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

PART 2 - PRODUCTS

2.1 NAMEPLATES

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Craftmark Identification Systems.

2. Safety Sign Co.

3. Seton Identification Products

4. Substitutions: Section 01 60 00 - Product Requirements.

B. Product Description: Laminated three-layer plastic with engraved black letters on light contrasting background color: 2" x 1" x 1/8" thick with 1/4" high characters.

2.2 TAGS

A. Metal Tags:

1. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

a. Craftmark Identification Systems.

b. Brady

c. Seton Identification Products

d. Substitutions: Refer to Section 01 60 00 - Product Requirements.

2. Brass with stamped letters; tag size minimum 2 inches diameter with finished edges.

B. Information Tags:

1. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

a. Craftmark Identification Systems.

b. Brady

c. Seton Identification Products

d. Or approved equal.

2. Clear plastic with printed "Danger," "Caution," or "Warning" and message; size 3-1/4 x 5-5/8 inches with grommet and self-locking nylon ties.

C. Tag Chart: Typewritten letter size list of applied tags and location in anodized aluminum frame.

2.3 STENCILS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Craftmark Identification Systems

2. Brady

3. Seton Identification Products

4. Or approved equal.

B. Stencils: With clean cut symbols and letters of following size:

1. Ductwork and Equipment: 2 inches high letters.

C. Stencil Paint: As specified in Section 09 90 00, semi-gloss enamel, colors and lettering size conforming to ASME A13.1.

2.4 PIPE MARKERS

A. Color and Lettering: Conform to ASME A13.1 and owner's color code.

B. Plastic Pipe Markers:

1. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

a. Craftmark Identification Systems.

b. Brady

c. Seton Identification Products

d. Or approved equal.

2. Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.

2.5 LABELS

A. Manufacturers: Subject to the requirement of the specification, the following manufacturer's products that may be incorporated into the project:

1. Craftmark Identification Systems.

2. Brady

3. Seton Identification Products

4. Or approved equal.

B. Description: Aluminum size 1.9 x 0.75 inches, adhesive backed with printed identification.

PART 3 - EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with Section 09 90 00 for stencil painting.

3.2 INSTALLATION

A. Apply stencil painting in accordance with Section 09 90 00.

B. Install identifying devices after completion of coverings and painting.

C. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.

D. Install labels with sufficient adhesive for permanent adhesion and seal with clear lacquer. For unfinished canvas covering, apply paint primer before applying labels.

E. Install tags using corrosion resistant chain. Number tags consecutively by location.

F. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

G. Identify air handling units and fans with stencil painting. Identify other small devices with tags.

H. Identify control panels and major control components outside panels with nameplates.

I. Identify valves in main and branch piping with tags.

J. Identify air terminal units and radiator valves with numbered tags.

K. Tag automatic controls, instruments, and relays. Key to control schematic.

L. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

M. Identify ductwork with stenciled painting. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.

N. Provide ceiling tacks to locate valves or dampers above T-bar type panel ceilings. Locate in corner of panel closest to equipment.

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3.3 SCHEDULES

A. Provide color-coded valve schedule for each system and enclose in Lexan frame.

END OF SECTION

SECTION 23 05 93

TESTING, ADJUSTING AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Testing, adjusting and balancing of air systems.
2. Testing, adjusting and balancing of hydronic, steam and refrigerating systems.
3. Measurement of final operating condition of HVAC systems.
4. Sound measurement of equipment operating conditions.
5. Vibration measurement of equipment operating conditions.

B. Related Sections:

1. Section 23 09 23 - Direct-Digital Control System for HVAC: Requirements for coordination between DDC system and testing, adjusting, and balancing work.
2. Section 23 09 93 - Sequence of Operations for HVAC Controls: Sequences of operation for HVAC equipment.

1.2 REFERENCES

A. Associated Air Balance Council:

1. AABC MN-1 - National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems.

B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:

1. ASHRAE 111 - Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems.

C. Natural Environmental Balancing Bureau:

1. NEBB - Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Prior to commencing Work, submit report forms or outlines indicating adjusting, balancing, and equipment data required. Include detailed procedures, agenda, sample report forms and copy of AABC National Project Performance Guaranty or a Copy of NEBB Certificate of Conformance Certification.

C. Prior to commencing Work, submit TAB contractor's qualification including the past five year experience and reference projects and proof of latest calibration date of each instrument.

D. Test Reports: Indicate data on either AABC MN-1 National Standards for Total System Balance forms, forms prepared following ASHRAE 111 or NEBB Report forms.

E. Field Reports: Indicate deficiencies preventing proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.

F. Submit draft copies of report for review prior to final acceptance of Project.

G. Furnish reports in soft cover, 3-ring binder manuals, complete with table of contents page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations. Reports shall be signed/sealed by a Professional Engineer in the state where the project is located.

H. Preliminary Effort:

1. Immediately after award of the HVAC Contract, the TAB Contractor shall review the Drawings and Specifications and shall indicate any deficiencies (or additional features) in the air or water systems which would preclude (or improve) proper adjusting or balancing. These include:

a. Additional air volume dampers.

b. Additional water balance devices.

c. Installation of additional air flow measuring devices.

d. Installation of additional "Peet's Plugs" ports, etc.

2. Submit for approval sample forms that he intends to use for tabulating balancing reports which shall include fan and pump or other equipment tags or labels. These forms should be similar to the AABC forms or NEBB equivalent.

3. Describe the instrumentation (including accuracy limitations) of each device proposed for use on this project for air and water balancing. As a minimum, instrumentation usage application and accuracy limitations acceptable on this project shall be those described in "HVAC Systems - Testing, Adjusting and Balancing" published by Sheet Metal and Air-Conditioning National Association, Inc. (SMACNA).

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of flow measuring stations balancing valves and rough setting.

C. Operation and Maintenance Data: Furnish final copy of testing, adjusting, and balancing report inclusion in operating and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with NYCBC.

B. Perform Work in accordance with AABC MN-1 National Standards for Field Measurement and Instrumentation, Total System Balance, ASHRAE 111 or NEBB Procedural Standards for Testing, Balancing and Adjusting of Environmental Systems.

C. Prior to commencing Work, calibrate each instrument to be used. Upon completing Work, recalibrate each instrument to assure reliability.

1.6 QUALIFICATIONS

A. Agency: Company specializing in testing, adjusting, and balancing of systems specified in this section with minimum three (3) years documented experience certified by AABC or Certified by NEBB.

B. Perform Work under supervision of AABC registered professional engineer experienced in performance of this Work and licensed in State of New York.

1.7 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.8 SEQUENCING

A. Section General Conditions - Summary: Work sequence.

B. Sequence balancing between completion of systems tested and Date of Substantial Completion.

1.9 SCHEDULING

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Schedule and provide assistance in final adjustment and test of life safety smoke evacuation and smoke control systems with Fire Authority.

PART 2 – PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify systems are complete and operable before commencing work. Verify the following:

1. Systems are started and operating 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. 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. Fans are rotating correctly.

7. Fire and volume dampers are in place and operational.

8. Air coil fins are cleaned and combed.

9. Access doors are closed and duct end caps are in place.

10. Air outlets are installed and connected.

11. Duct system leakage is minimized. Duct leak tests are approved

12. Hydronic systems are flushed, filled, vented and pressure tested.

13. Proper strainer baskets are clean and in place or in normal position.

14. Service and balancing valves are open.

3.2 PREPARATION

A. Furnish instruments required for testing, adjusting, and balancing operations.

B. Make instruments available to Architect/Engineer to facilitate spot checks during testing.

C. Periodic Inspections Of The Project During Construction

1. Prior to commencement of balancing, the TAB Contractor shall make periodic inspections of the project during construction (as noted below) and shall report in writing to the Architect any deviations from Contract Documents relating to testing, balancing, and adjustment work concerning:

a. Equipment:

1) Installation

2) Placement

b. Inaccessible installation of the following balancing hardware:

1) Ports

2) Plugs

3) Balance damper handles

4) Other such items

3.3 EXECUTION

A. Assist Division 26 Contractors to set up and test smoke control systems, as part of his Fire Alarm System.

B. The HVAC Contractor and its selected and approved balancing firm shall report to and review the work required with the Architect prior to beginning of work. At least two (2) one-day inspections of the Water and Air Systems at appropriate times during construction shall be made by the balancing firm and it shall report its findings to the Architect. All openings, pressure taps, wells and closures required, over and above those shown on the drawings, to perform the required test and adjustments shall be installed during or after construction at no additional cost to the Owner.

C. The Contractor shall furnish all services for a minimum of two complete adjustments of water systems and air handling and exhaust systems, water and air distribution and controls, for the first cooling season and for the first heating season after the job is in complete operation under load conditions.

D. During all tests, it shall be demonstrated that the systems are free from leaks and that all parts of the system will operate correctly. The Balancing firm shall make final adjustments to all equipment and controls as may be required for proper operation, maintaining correct temperatures in all parts of the building. Controls shall be adjusted by the Control Manufacturer's mechanics on the advise of the balancing firm.

E. The final test report shall include appropriate reference to all problems regarding the system(s) encountered prior to, during and after testing and what action should be taken to correct the problem(s), including noise and vibration.

F. The following work shall be included by the balancing firm:

1. Supervise the balancing of all water circulation systems and parts thereof installed under this Contract to obtain the water quantities and temperature drops in all parts of the system specified in the plans and in the specifications, or as required by the Professional.

2. Supervise the balancing of the air conditioning and ventilating systems to achieve the air quantities specified at each air inlet, outlet and damper shown on the plans at the proper conditions of static pressure and temperature differential. Conduct all leakage tests on high (pressure) velocity ductwork in a manner acceptable to the Architect. Leakages shall not exceed 3% of total air to be delivered.

3. Enlist and provide cooperation of equipment manufacturer where needed to obtain proper equipment performance. Change motor or fan sheaves to field design capacity or most efficient operation conditions as required.

4. Study and report on noise and vibration problems which may develop in the course of system balancing.

5. Submit separate reports on the cooling and heating water circulating systems, ATC system, and heating and ventilating systems. These reports shall certify test methods and instruments used, all readings obtained, temperature and pressure drops, RPM of equipment, amperage of all motors, air quantities at each outlet supply, return and air balancing problems encountered, and suggestions. Reports to be submitted to the Architect and the Owner shall include data on all tests in the form normally used by AABC and NEEB. The reports must, however, be varied to suit these specifications. Reports shall include fan and pump curves for the final speeds developed from the fan manufacturer's performance test data for all major equipment and schematics for all systems tested.

6. Perform tests on heating systems when the outside temperature is averaging less than 30°F and on cooling systems when the outside temperature is above 80°F.

7. Instruct the Building Maintenance employees for a minimum of two weeks during the adjusting and balancing period. Obtain signed statements form each employee verifying this instruction has been received by each.

8. Carry out the "start-up" of the various systems with the Contractor and with any necessary assistance of the equipment manufacturer's representative.

9. Furnish all instruments and provide all instrumentation required to perform the above work. The equipment and instrumentation shall remain the property of the balancing subcontractor, however, all equipment must be first approved by the Architect before being used on the project.

10. Assist the Commissioning Agent to complete the project commissioning procedure.

3.4 INSTALLATION TOLERANCES

A. Air Handling Systems: Adjust to within plus or minus 10 percent of design.

B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 10 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

C. Hydronic Systems: Adjust to within plus or minus 10 percent of design.

3.5 ADJUSTING

A. Section General Conditions - Execution and Closeout Requirements: Testing, adjusting, and balancing.

B. Verify recorded data represents actual measured or observed conditions.

C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.

D. After adjustment, take measurements to verify balance has not been disrupted. If disrupted, verify correcting adjustments have been made.

E. Report defects and deficiencies noted during performance of services, preventing system balance.

F. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

G. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by Owner.

H. Prior to starting of balancing work, the Contractor shall:

1. Adjust all balancing cocks and dampers open.
2. Fill, vent, and clean all water systems.
3. Place all equipment in operating condition.
4. Clean all strainers.
5. Remove all temporary air filters and install design filters.

I. For the duration of the balancing work, the Contractor shall:

1. Maintain mechanics at project at all times for system operation, trouble shooting, assistance, etc.
2. Adjust fan drives or blade pitch or replace sheaves as required to meet system performance requirements.
3. Provide necessary mechanical adjustments in conjunction with balancing procedure.
4. Replace all balancing valves or dampers in systems that cannot be manipulated to satisfy balancing requirements.

J. Standard size (5" x 8") index cards, i.e. "check-out cards", shall be enclosed in a Vinafilm binder securely attached to each device as per the above.

K. In cooperation with the Contractor, the TAB Contractor shall check and verify the satisfactory performance of static pressure of mass flow synchronization control loops and the ability of each control loop to hold a set-point and maintain stable fan or flow synchronization control. Operating tolerances for each loop set-point shall be obtained from the ATC Contractor.

L. The TAB Contractor shall use flow meters where they are required for taking data. This shall include the use of air flow metering stations for air flow measurement in preference to taking data via pitot-static tube traverses of ducts where such devices can be used. Where pitot-static tube traverses are performed, the TAB Contractor shall seal test holes with snap-in plugs or he shall use approved caps made for this purpose. The use of tape to seal test holes shall not be allowed.

M. Maintain specified acoustical performance of air systems; use dampering devices at air terminals to produce pressure drops not in excess of 0.15 in. w.g. for air balance trim.

N. With all boxes in the duct system set at maximum flow, the fan capacity output and static pressure capability shall be determined by measurement and it shall be recorded. Fan capacity deficiencies shall be noted, recorded and reported to the Owner for corrective action. Duct leakage estimates shall also be noted and recorded and, if in excess of specified allowable reported to the Owner for corrective action.

O. After satisfactory balance has been achieved, reset the duct system static pressure controller to the lowest set point compatible with scheduled air delivery.

P. Note and record any box controller limit setting by number where applicable.

Q. If the supply and return air flow serving a particular zone are synchronized for system self-balancing purposes, confirm by measurements the capacity and action of the self-balancing control loop to track and maintain differential flow requirements. Instrument signal air supply pressures will be recorded where possible, depending upon the control loop's supplier.

R. The aim of all balancing adjustments shall be the minimum use of energy for fluid transport.

S. All fans should be set at their lowest rpm or blade pitch to provide design flow; air dampers are to be used only for final trim.

T. TAB Contractor shall verify accuracy and calibrate all measurement devices (flow sensors, pressure sensors, temperature devices, etc.) provided by Controls Contractor.

3.6 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to obtain required or design supply, return, and exhaust air quantities at site altitude.

B. Make air quantity measurements in main ducts by Pitot tube traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts.

E. Use volume control devices to regulate air quantities only to extent adjustments do not create objectionable air motion or sound levels. Effect volume control by using volume dampers located in ducts. The intent is to utilize minimum site energy and all fan systems should be properly setup to their lowest rpm to achieve design flow rates. Air dampers are to be used for final trim only.

F. Vary total system air quantities by adjustment of fan speeds. Provide sheave drive changes to vary fan speed. Vary branch air quantities by damper regulation.

G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.

H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across fan. Make allowances for 50 percent loading of filters.

I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

K. At modulating damper locations, take measurements and balance at extreme conditions. Balance variable volume systems at maximum airflow rate, full cooling, and at minimum airflow rate, full heating.

L. Measure building static pressure and adjust supply, return, and exhaust air systems to obtain required relationship between each to maintain approximately 0.05 inches positive static pressure near building entries.

M. Check motorized damper leakage. Adjust air quantities with mixing dampers set first for cooling, then heating, then modulating.

N. For variable air volume system powered units set volume controller to airflow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable-air-volume temperature control.

O. Verify that leakage on terminal boxes is within the allowable rates, not to exceed 2 percent of design flow.

P. For all air systems, testing shall be done in all modes including minimum outside air mode and 100% economizer mode, etc.

3.7 WATER SYSTEM PROCEDURE

A. Adjust water systems, after air balancing, to obtain design quantities.

B. Use calibrated Venturi tubes, orifices, or other metered fittings and pressure gauges to determine flow rates for system balance. Where flow-metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in system.

C. Adjust systems to obtain specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.

D. Effect system balance with automatic control valves fully open or in normal position to heat transfer elements.

E. Effect adjustment of water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point.

3.8 SCHEDULES

A. Equipment Requiring Testing, Adjusting, and Balancing but not limited to the following:

1. Air Cooled and Water Cooled Self-Contained Air-Conditioning
2. Air Coils.
3. Fans.
4. Air Filters.
5. Air Terminal Units.
6. Air Inlets and Outlets.

B. Report Forms:

1. Title Page:

a. Name of Testing, Adjusting, and Balancing Agency

b. Address of Testing, Adjusting, and Balancing Agency

c. Telephone and facsimile numbers of Testing, Adjusting, and Balancing Agency

d. Project name

e. Project location

f. Project Architect

g. Project Engineer

h. Project Contractor

i. Project altitude

j. Report date

2. Summary Comments:

a. Design versus final performance

b. Notable characteristics of system

c. Description of systems operation sequence

d. Summary of outdoor and exhaust flows to indicate building pressurization

e. Nomenclature used throughout report

f. Test conditions

3. Instrument List:

a. Instrument

b. Manufacturer

c. Model number

d. Serial number

e. Range

f. Calibration date

4. Electric Motors:
    a. Manufacturer
    b. Model/Frame
    c. HP/BHP and kW
    d. Phase, voltage, amperage; nameplate, actual, no load
    e. RPM
    f. Service factor
    g. Starter size, rating, heater elements
    h. Sheave Make/Size/Bore
5. V-Belt Drive:
    a. Identification/location
    b. Required driven RPM
    c. Driven sheave, diameter and RPM
    d. Belt, size and quantity
    e. Motor sheave diameter and RPM
    f. Center to center distance, maximum, minimum, and actual
6. Pump Data – NOT USED:
7. Sound Level Report:
    a. Location
    b. Octave bands - equipment off
    c. Octave bands - equipment on
    d. RC level - equipment on
8. Vibration Test:
    a. Location of points:

1) Fan bearing, drive end

2) Fan bearing, opposite end

3) Motor bearing, center (when applicable)

4) Motor bearing, drive end

5) Motor bearing, opposite end

6) Casing (bottom or top)

7) Casing (side)

8) Duct after flexible connection (discharge)

9) Duct after flexible connection (suction)

b. Test readings:

1) Horizontal, velocity and displacement

2) Vertical, velocity and displacement

3) Axial, velocity and displacement

c. Normally acceptable readings, velocity and acceleration

d. Unusual conditions at time of test

e. Vibration source (when non-complying)

3.9 FINAL APPROVAL

A. This Contract shall include an extended period of 120 days after submittal of the final certified test report (approved by the Architect) for a given system, during which time the Owner may request a spot check, retest and/or resetting of any outlet or other item as listed in the certified test report; however, this request may not exceed 10% of the outlets or devices on each central system.

B. If more than 5% of the total devices on a given central system test outside the prescribed limits set for air balance, the Owner shall have the option of revoking the test report and requiring a complete rebalance of the system in question.

C. If a retest or spot check is requested, the TAB Contractor shall provide technicians and instruments in making any tests required during this period.

D. Final acceptance will not be accorded the certified test report until the extended period of 120 days has expired.

END OF SECTION

SECTION 23 07 00

HVAC INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. HVAC piping insulation, jackets and accessories.
2. HVAC equipment insulation, jackets and accessories.
3. HVAC ductwork insulation, jackets, and accessories.
4. Insulation for engine exhaust pipes.

B. Related Sections:

1. Section 09 90 00 - Painting and Coating: Execution requirements for painting insulation jackets and covering specified by this section.

1.2 REFERENCES

A. ASTM International:

1. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
3. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement.
4. ASTM C449/C449M - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement.
5. ASTM C450 - Standard Practice for Prefabrication and Field Fabrication of Thermal Insulating Fitting Covers for NPS Piping, Vessel Lagging, and Dished Head Segments.
6. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation.

7. ASTM C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.

8. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation.

9. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.

10. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

11. ASTM C585 - Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).

12. ASTM C591 - Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.

13. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

14. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.

15. ASTM C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.

16. ASTM C1071 - Standard Specification for Thermal and Acoustical Insulation (Glass Fiber, Duct Lining Material).

17. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.

18. ASTM C1290 - Standard Specification for Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts.

19. ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

20. ASTM D4637 - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.

21. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

22. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.

23. ASTM E162 - Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.

24. Con Edison Specification S-9021-6.

B. Sheet Metal and Air Conditioning Contractors':

1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

C. National Fire Protection Association:

1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.

D. Underwriters Laboratories Inc.:

1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

2. UL 1978 - Standard for Safety for Grease Ducts.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service and location.

C. Samples: Submit two samples of representative size illustrating each insulation type.

D. Manufacturer's Installation Instructions: Submit manufacturers published literature indicating proper installation procedures.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84, UL 723 and NFPA 258.

B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.

C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

D. Perform Work in accordance with NYCBC.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Applicator: Company specializing in performing Work of this section with minimum three years' experience.

1.6 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.7 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

C. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section General Conditions - Product Requirements: Environmental conditions affecting products on site.

B. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

C. Maintain temperature before, during, and after installation for minimum period of 24 hours.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturers for Glass Fiber and Mineral Fiber Insulation Products:

1. CertainTeed.
2. Knauf.
3. Johns Manville.
4. Owens-Corning.
5. Or approved equal.

B. Manufacturers for Closed Cell Elastomeric Insulation Products:

1. Aeroflex. Aerocell.
2. Armacell, LLC. Armaflex.
3. Nomaco. K-flex.
4. Or approved equal.

C. Furnish materials in accordance with NYCBC.

2.2 PIPE INSULATION

A. TYPE P-1: ASTM C547, molded glass fiber pipe insulation.

1. Thermal Conductivity: 0.23 at 75 degrees F.
2. Operating Temperature Range: 0 to 850 degrees F.
3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
4. Jacket Temperature Limit: minus 20 to 150 degrees F.

5. Density 10 PCF average.

B. TYPE P-3: ASTM C612; semi-rigid, fibrous glass board noncombustible, end grain adhered to jacket.

1. Thermal Conductivity: 0.27 at 75 degrees F.

2. Operating Temperature Range: 0 to 650 degrees F.

3. Vapor Barrier Jacket: ASTM C1136, Type II, factory applied reinforced foil kraft with self-sealing adhesive joints.

4. Jacket Temperature Limit: minus 20 to 150 degrees F.

5. Density 10 PCF average.

C. TYPE P-4: ASTM C612; semi-rigid, fibrous glass board noncombustible.

1. Thermal Conductivity: 0.27 at 75 degrees F.

2. Operating Temperature Range: 0 to 650 degrees F.

3. Density 10 PCF average.

D. TYPE P-5: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.

1. Thermal Conductivity: 0.27 at 75 degrees F.

2. Operating Temperature Range: Range: Minus 70 to 180 degrees F.

E. TYPE P-6: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.

1. Thermal Conductivity: 0.30 at 75 degrees F.

2. Maximum Service Temperature: 300 degrees F.

3. Operating Temperature Range: Range: Minus 58 to 300 degrees F.

F. TYPE P-7: ASTM C534, Type I, flexible, nonhalogen, closed cell elastomeric insulation, tubular.

1. Thermal Conductivity: 0.27 at 75 degrees F.

2. Maximum Service Temperature: 250 degrees F.

3. Operating Temperature Range: Range: Minus 58 to 250 degrees F.

G. TYPE P-8: ASTM C547, Type I rigid, mineral fiber preformed pipe insulation, noncombustible.

1. Thermal Conductivity: 0.23 at 75 degrees F.

2. Maximum Service Temperature: 1200 degrees F.

3. Reinforced Fail Vapor Retarding Jacket: UL listed and treated with fire retardant lagging adhesive. ASTM E93.

4. Consisting of single layer thickness to comply with requirement.

2.3 PIPE INSULATION JACKETS

A. PVC Plastic Pipe Jacket:

1. Product Description: ASTM D1784, One piece molded type fitting covers and sheet material, off-white color.

2. Thickness: 10 mil.

3. Connections: Pressure sensitive color matching vinyl tape.

B. Aluminum Pipe Jacket:

1. ASTM B209.

2. Thickness: 0.016 inch thick sheet.

3. Finish: Smooth.

4. Joining: Longitudinal slip joints and 2 inch laps.

5. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.

6. Metal Jacket Bands: 3/8 inch wide; 3/8 inch thick aluminum.

C. Field Applied Glass Fiber Fabric Jacket System:

1. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.

2. Glass Fiber Fabric:

a. Cloth: Untreated; 9 oz/sq yd weight.

b. Blanket: 1.0 lb/cu ft density.

c. Weave: [5 x 5] [10 x 10] [10 x 20].

3. Indoor Vapor Retarder Finish:

a. Cloth: Untreated; 9 oz/sq yd weight.

b. Vinyl emulsion type acrylic, compatible with insulation, white color.

2.4 PIPE INSULATION ACCESSORIES

A. Vapor Retarder Lap Adhesive: Compatible with insulation.

B. Covering Adhesive Mastic: Compatible with insulation.

C. Piping 1-1/2 inches diameter and smaller: Galvanized steel insulation protection shield. MSS SP-69, Type 40. Length: Based on pipe size and insulation thickness.

D. Piping 2 inches diameter and larger: Steel saddle. Inserts length: not less than 6 inches long, matching thickness and contour of adjoining insulation.

E. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

F. Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement: ASTM C449/C449M.

G. Insulating Cement: ASTM C195; hydraulic setting on mineral wool.

H. Adhesives: Compatible with insulation.

2.5 EQUIPMENT INSULATION

A. TYPE E-2: ASTM C612; glass fiber, rigid board, noncombustible with factory applied reinforced aluminum foil jacket.

1. Thermal Conductivity: 0.24 at 75 degrees F.

2. Operating Temperature Range: 0 to 450 degrees F.

3. Density: 3.0 pound per cubic foot.

4. Jacket Temperature Limit: minus 20 to 150 degrees F.

B. TYPE E-5: ASTM C612; glass fiber, semi-rigid board, noncombustible.

1. Thermal Conductivity: 0.23 at 75 degrees F.

2. Maximum Operating Temperature: 850 degrees F.

3. Density: 3.0 pound per cubic foot.

4. Thermal Conductivity: 0.46 at 400 degrees F.

5. Maximum Operating Temperature Range: 1900 degrees F.

6. Density: 18.5 PCF

C. TYPE E-8: ASTM C534, Type II, flexible, closed cell elastomeric insulation, sheet.

1. Thermal Conductivity: 0.27 at 75 degrees F.

2. Operating Temperature Range: Range: Minus 70 to 220 degrees F.

2.6 EQUIPMENT INSULATION JACKETS

A. Aluminum Equipment Jacket:

1. ASTM B209.

2. Thickness: 0.016 inch thick sheet.

3. Finish: Smooth.

4. Joining: Longitudinal slip joints and 2 inch laps.

5. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.

6. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.

B. Field Applied Glass Fiber Fabric Jacket System:

1. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.

2. Glass Fiber Fabric:

a. Cloth: Untreated; 9 oz/sq yd weight.

b. Blanket: 1.0 lb/cu ft density.

c. Weave: 10 x 10.

3. Indoor Vapor Retarder Finish:

a. Cloth: Untreated; 9 oz/sq yd weight.

b. Vinyl emulsion type acrylic, compatible with insulation, white color.

2.7 EQUIPMENT INSULATION ACCESSORIES

A. Vapor Retarder Lap Adhesive: Compatible with insulation.

2.8 DUCTWORK INSULATION

A. TYPE D-1: ASTM C1290, Type III, flexible glass fiber, commercial grade with factory applied reinforced aluminum foil jacket meeting ASTM C1136, Type II.

1. Thermal Conductivity: 0.25 at 75 degrees F.

2. Maximum Operating Temperature: 250 degrees F.

3. Density: 1.5 pound per cubic foot.

B. TYPE D-2: ASTM C612, Type IA or IB, rigid glass fiber, with factory applied all service facing meeting ASTM C1136, Type II.

1. Thermal Conductivity: 0.22 at 75 degrees F.

2. Density: 4.25 pound per cubic foot.

C. TYPE D-4: ASTM C1071, Type I, flexible, glass fiber duct liner with coated air side.

1. Thermal Conductivity: 0.24 at 75 degrees F.

2. Density: 1.5 pound per cubic foot.

3. Maximum Operating Temperature: 250 degrees F.

4. Maximum Air Velocity: 2,000 feet per minute.

5. 1 inch minimum.

6. Treated with EPA register anti-microbial agent proven to resist microbial growth as determined by ASTM G-21 and G-22.

D. TYPE D-5: ASTM C1071, Type II, rigid, glass fiber duct liner with coated air side.

1. Thermal Conductivity: 0.23 at 75 degrees F.

2. Density: 3.0 pound per cubic foot.

3. Maximum Operating Temperature: 250 degrees F.

4. Maximum Air Velocity: 4,000 feet per minute.

5. 1 inch minimum.

6. Treated with EPA register anti-microbial agent proven to resist microbial growth as determined by ASTM G-21 and G-22

2.9 DUCTWORK INSULATION JACKETS

A. Outdoor Duct Jacket: Flexible self-adhering weatherproof system similar to Flex Clad 250.

B. Membrane Duct Jacket: ASTM D4637; Type I, EPDM; non-reinforced, 0.060 inch thick, 48 inch wide roll; white color.

2.10 DUCTWORK INSULATION ACCESSORIES

A. Vapor Retarder Tape:

1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

B. Vapor Retarder Lap Adhesive: Compatible with insulation.

C. Adhesive: Waterproof, ASTM E162 fire-retardant type.

D. Liner Fasteners: Galvanized steel, welded with integral head.

E. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

F. Lagging Adhesive: Fire resistive to ASTM E84, NFPA 255 and UL 723.

G. Impale Anchors: Galvanized steel, 12 gage self-adhesive pad.

H. Adhesives: Compatible with insulation.

I. Membrane Adhesives: As recommended by membrane manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify piping, equipment and ductwork have been tested before applying insulation materials.

C. Verify surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION - PIPING SYSTEMS

A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.

B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions.

C. Piping Systems Conveying Fluids Below Ambient Temperature:

1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.

2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.

3. Insulate fittings, joints, valves and all appurtenances with molded insulation of like material and thickness as adjacent pipe. Finish with PVC fitting covers.

D. Glass Fiber Board Insulation:

1. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Fasten insulation to equipment with studs, pins, clips, adhesive, wires, or bands.

2. Fill joints, cracks, seams, and depressions with bedding compound to form smooth surface. On cold equipment, use vapor retarder cement.

3. Cover wire mesh or bands with cement to a thickness to remove surface irregularities.

E. Hot Piping Systems less than 140 degrees F:

1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.

2. Insulate fittings, joints, valves and all appurtenances with molded insulation of like material and thickness as adjoining pipe. Finish with PVC fitting covers.

3. Insulate unions and flanges.

F. Hot Piping Systems greater than 140 degrees F:

1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.

2. Insulate fittings, joints, valves and all appurtenances with molded insulation of like material and thickness as adjoining pipe. Finish with PVC fitting covers.

3. Insulate flanges and unions.

G. Inserts and Shields:

1. Piping 1-1/2 inches Diameter and Smaller: Install galvanized steel shield between pipe hanger and insulation.

2. Piping 2 inches Diameter and Larger: Install saddle between support shield and piping and under finish jacket.

a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.

b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.

3. Piping Supported by Roller Type Pipe Hangers: Install galvanized steel shield between roller and inserts.

4. 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. Insulation inserts shall be not less than following lengths:

2-1/2 in. pipe size and smaller	6 in. long
3 in. to 6 in. pipe size	9 in. long
8 in. to 10 in. pipe size	12 in. long
larger than 10 in. pipe size	18 in. long

H. Insulation Terminating Points:

1. Ducted Coil Branch Piping: Terminate hot water piping at the coil connections including coil header.

2. Chilled Water Coil Branch Piping: Insulate chilled water piping and associated components up to coil connection.

3. Condensate Piping: Insulate entire piping system and components to prevent condensation.

I. Closed Cell Elastomeric Insulation:

1. Push insulation on to piping.

2. Miter joints at elbows.

3. Seal seams and butt joints with manufacturer's recommended adhesive.

4. When application requires multiple layers, apply with joints staggered.

5. Insulate fittings and valves with insulation of like material and thickness as adjacent pipe.

J. High Temperature Pipe Insulation:

1. Install single layer to meet thickness scheduled. Multiple layers of insulation will not be accepted.

2. All insulation surfaces not in shaft construction, shall maintain a maximum of 100°F for piping insulation and 130°F for equipment insulation.

3. Stagger joints between jackets.

4. Supplied with pre-formed jacket.

K. Piping Exterior to Building: Provide vapor retarder jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor retarder cement. Cover with aluminum jacket with seams located at 3 or 9 o'clock position on side of horizontal piping with overlap facing down to shed water or on bottom side of horizontal piping.

L. Buried Piping: Insulate only where insulation manufacturer recommends insulation product may be installed in trench, tunnel or direct buried. Install factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with 1 mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with polyester film.

M. Heat Traced Piping Interior to Building: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracing.

N. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces: Aluminum jacket and fitting covers.

O. Heat Traced Piping Exterior to Building: Insulate fittings, joints, valves and all appurtenances with molded insulation of like material, thickness, and finish as adjoining pipe. Size insulation large enough to enclose pipe and heat tracer. Cover with aluminum jacket with seams located at 3 or 9 o'clock position on side of horizontal piping with overlap facing down to shed water.

P. Prepare pipe insulation for finish painting. Refer to Section 09 90 00.

Q. Insulation at Strainers: Provide removable insulation.

3.3 INSTALLATION - EQUIPMENT

A. Factory Insulated Equipment: Do not insulate.

B. Exposed Equipment: Locate insulation and cover seams in least visible locations.

C. Fill joints, cracks, seams, and depressions with bedding compound to form smooth surface. On cold equipment, use vapor retarder cement.

D. Equipment Containing Fluids Below Ambient Temperature:

1. Insulate entire equipment surfaces.

2. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Fasten insulation to equipment with studs, pins, clips, adhesive, wires, or bands.

3. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.

4. Finish insulation at supports, protrusions, and interruptions.

E. Equipment Containing Fluids 140 degrees F Or Less:

1. Insulate flanges and unions with removable sections and jackets.

2. Install insulation with factory-applied or field applied jackets, with vapor barrier. Finish with glass cloth and adhesive.

3. Finish insulation at supports, protrusions, and interruptions.

F. Equipment Containing Fluids Over 140 degrees F Or Less:

1. Insulate flanges and unions with removable sections and jackets.

2. Install insulation with factory-applied or field applied jackets, with vapor barrier. Finish with glass cloth and adhesive.

3. Finish insulation at supports, protrusions, and interruptions.

G. Equipment in Mechanical Equipment Rooms or Finished Spaces: Finish with aluminum jacket.

H. Equipment Located Exterior to Building: Install vapor barrier jacket or finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal equipment.

I. Cover glass fiber, cellular glass, hydrous calcium silicate insulation with metal mesh and finish with heavy coat of insulating cement and aluminum jacket.

J. Nameplates and ASME Stamps: Bevel and seal insulation around; do not cover with insulation.

K. Equipment Requiring Access for Maintenance, Repair, or Cleaning: Install insulation for easy removal and replacement without damage.

L. Prepare equipment insulation for finish painting. Refer to Section 09 90 00.

3.4 INSTALLATION - DUCTWORK SYSTEMS

A. Duct dimensions indicated on Drawings are finished inside dimensions.

B. Insulated ductwork conveying air below ambient temperature:

1. Provide insulation with vapor retarder jackets.

2. Finish with tape and vapor retarder jacket.

3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.

4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

C. Insulated ductwork conveying air above ambient temperature:

1. Provide with or without standard vapor retarder jacket.

2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.

D. Ductwork Exposed in Mechanical Equipment Rooms or Finished Spaces (below 10 feet above finished floor): Finish with aluminum jacket.

E. External Glass Fiber Duct Insulation:

1. Secure insulation with vapor retarder jacket with wires and seal jacket joints with vapor retarder adhesive or tape to match jacket.

2. Secure insulation without vapor retarder jacket with staples, tape, or wires.

3. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift ductwork off trapeze hangers and insert spacers.

4. Seal vapor retarder penetrations by mechanical fasteners with vapor retarder adhesive.

5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

F. Duct and Plenum Liner:

1. Adhere insulation with adhesive for 100 percent coverage.

2. Secure insulation with mechanical liner fasteners. Comply with SMACNA Standards for spacing.

3. Seal and smooth joints. Seal and coat transverse joints.

4. Seal liner surface penetrations with adhesive.

5. Cut insulation for tight overlapped corner joints. Support top pieces of liner at edges with side pieces.

6. Provide metal nosings at section joints.

G. Prepare duct insulation for finish painting. Refer to Section 09 90 00.

3.5 SCHEDULES

A. Cooling Services Piping Insulation Schedule:

PIPING SYSTEM	INSULATION TYPE	PIPE SIZE	INSULATION THICKNESS inches
Condenser/Economizer Water Supply and Return 40 to 60 degrees F	P-1	All	1.5 (40) 1.5

PIPING SYSTEM	INSULATION TYPE	PIPE SIZE	INSULATION THICKNESS inches
Condenser Water and associated filtration piping	P-1	All	1.5 (40)
Condensate Piping from Cooling Coils	P-5	All sizes	0.75

B. Heating Services Piping Insulation Schedule:

PIPING SYSTEM	INSULATION TYPE	PIPE SIZE	INSULATION THICKNESS inches
Low Pressure Steam Supply and condensate return up to 15 psi up to 250 degrees F	P-1 P-3	1-1/2 inches and smaller 2 inches and up	1.5 3.0
Drain Piping	P-1	All sizes	1

C. Equipment Insulation Schedule:

EQUIPMENT	INSULATION TYPE	INSULATION THICKNESS inches
Air Cooled and Water Cooled A/C Units Cold Surfaces (Not Factory Insulated)	E-8	1.0

D. Ductwork Insulation Schedule:

DUCTWORK SYSTEM	INSULATION TYPE	INSULATION THICKNESS inches
Outside Air Intake	D-2	2
Equipment Casings	D-2	2
Supply Ducts (internally insulated) in MER's or as specified	D-4	1.5

DUCTWORK SYSTEM	INSULATION TYPE	INSULATION THICKNESS inches
Return Ducts (internally insulated) in MER's or as specified	D-4	1.5 (40)
Supply Ducts located above hung ceilings that are not internally insulated	D-1	1.5 (40)
Return Ducts located above hung ceilings or in shaft	D-1	1.5 (40)
Supply ducts in MER's and exposed to view	D-2	1.5
Spill/exhaust ducts from louver to motorized damper	D-2	1.5
Rectangular Supply Ducts Downstream of Variable Air Volume Boxes (internally insulated)	D-4	1.5 (40)
Rectangular and Round Supply Ducts Downstream of Variable Air Volume Boxes (externally insulated)	D-1	1.0
Round Supply Ducts Downstream of Variable Air Volume Boxes (externally insulated)	D-1	1.0
Transfer Air Ducts (internally insulated)	D-1	1.0

Refer to Section 230548 "NOISE AND VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT" for specific applications of internally insulated ducts.

END OF SECTION

SECTION 23 08 00

COMMISSIONING OF HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. HVAC commissioning description.
2. HVAC commissioning responsibilities.

B. Related Sections:

1. Section 23 05 93 - Testing, Adjusting and Balancing for HVAC: For requirements and procedures concerning testing, adjusting, and balancing of mechanical systems.

1.2 REFERENCES

A. Associated Air Balance Council:

1. AABC - AABC Commissioning Guideline.

B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:

1. ASHRAE Guideline 1 - The HVAC Commissioning Process.

C. National Environmental Balancing Bureau:

1. NEBB - Procedural Standards for Building Systems Commissioning.

1.3 COMMISSIONING DESCRIPTION

A. HVAC commissioning process includes the following tasks:

1. Testing and startup of HVAC equipment and systems.
2. Equipment and system verification checks.
3. Assistance in functional performance testing to verify testing and balancing, and equipment and system performance.

4. Provide qualified personnel to assist in commissioning tests, including seasonal testing.

5. Complete and endorse functional performance test checklists provided by Commissioning Authority to assure equipment and systems are fully operational and ready for functional performance testing.

6. Provide equipment, materials, and labor necessary to correct deficiencies found during commissioning process to fulfill contract and warranty requirements.

7. Provide operation and maintenance information and record drawings to Commissioning Authority for review verification and organization, prior to distribution.

8. Provide assistance to Commissioning Authority to develop, edit, and document system operation descriptions.

9. Provide training for systems specified in this Section with coordination by Commissioning Authority.

B. Equipment and Systems to Be Commissioned:

1. Piping systems.

2. Ductwork.

3. Variable frequency drives.

4. Self-contained air conditioning units.

5. Variable volume terminal units.

6. Fans.

7. Fire dampers.

8. Smoke dampers.

9. Indoor air quality.

10. Equipment sound control.

11. Equipment vibration control.

12. Automatic temperature control system.

13. Testing, Adjusting and Balancing work.

C. Perform seasonal function performance tests for the following equipment and systems:

1. Self-contained air conditioning units.

1.4 COMMISSIONING SUBMITTALS

A. Section General Conditions - Commissioning: Requirements for commissioning submittals.

B. Draft Forms: Submit draft of system verification form and functional performance test checklist.

C. Test Reports: Indicate data on system verification form for each piece of equipment and system as specified.

D. Field Reports: Indicate deficiencies preventing completion of equipment or system verification checks equipment or system to achieve specified performance.

1.5 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record revisions to equipment and system documentation necessitated by commissioning.

C. Operation and Maintenance Data: Submit revisions to operation and maintenance manuals when necessary revisions are discovered during commissioning.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with ASHRAE Guideline.

B. Perform Work in accordance with NYCBC.

C. Maintain one copy of each document on site.

1.7 COMMISSIONING RESPONSIBILITIES

A. Equipment or System Installer Commissioning Responsibilities:

1. Attend commissioning meetings.

2. Ensure temperature controls installer performs assigned commissioning responsibilities as specified below.

3. Ensure testing, adjusting, and balancing agency performs assigned commissioning responsibilities as specified.

4. Provide instructions and demonstrations for Owner's personnel.

5. Ensure subcontractors perform assigned commissioning responsibilities.

6. Ensure participation of equipment manufacturers in appropriate startup, testing, and training activities when required by individual equipment specifications.

7. Develop startup and initial checkout plan using manufacturer's startup procedures and functional performance checklists for equipment and systems to be commissioned.

8. During verification check and startup process, execute HVAC related portions of checklists for equipment and systems to be commissioned.

9. Perform and document completed startup and system operational checkout procedures, providing copy to Commissioning Authority.

10. Provide manufacturer's representatives to execute starting of equipment. Ensure representatives are available and present during agreed upon schedules and are in attendance for duration to complete tests, adjustments and problem-solving.

11. Coordinate with equipment manufacturers to determine specific requirements to maintain validity of warranties.

12. Provide personnel to assist Commissioning Authority during equipment or system verification checks and functional performance tests.

13. Prior to functional performance tests, review test procedures to ensure feasibility, safety and equipment protection and provide necessary written alarm limits to be used during tests.

14. Prior to startup, inspect, check, and verify correct and complete installation of equipment and system components for verification checks included in commissioning plan. When deficient or incomplete work is discovered, ensure corrective action is taken and re-check until equipment or system is ready for startup.

15. Provide factory supervised startup services for equipment and systems specified in Section 23 81 19. Coordinate work with manufacturer and Commissioning Authority.

16. Perform verification checks and startup on equipment and systems as specified.

17. Assist Commissioning Authority in performing functional performance tests on equipment and systems as specified.

18. Perform operation and maintenance training sessions scheduled by Commissioning Authority.

19. Conduct HVAC system orientation and inspection.

B. Temperature Controls Installer Commissioning Responsibilities:

1. Attend commissioning meetings.

2. Review design for ability of systems to be controlled including the following:

a. Confirm proper hardware requirements exists to perform functional performance testing.

b. Confirm proper safeties and interlocks are included in design.

c. Confirm proper sizing of system control valves and actuators and control valve operation will result capacity control identified in Contract Documents.

d. Confirm proper sizing of system control dampers and actuators and damper operation will result in proper damper positioning.

e. Confirm sensors selected are within device ranges.

f. Review sequences of operation and obtain clarification from Architect/Engineer.

g. Indicate delineation of control between packaged controls and building automation system, listing BAS monitor points and BAS adjustable control points.

h. Provide written sequences of operation for packaged controlled equipment. Equipment manufacturers' stock sequences may be included, when accompanied by additional narrative to reflect Project conditions.

3. Inspect, check, and confirm proper operation and performance of control hardware and software provided in other HVAC sections.

4. Submit proposed procedures for performing automatic temperature control system point-to-point checks to Commissioning Authority and Architect/Engineer.

5. Inspect check and confirm correct installation and operation of automatic temperature control system input and output device operation through point-to-point checks.

6. Perform training sessions to instruct Owner's personnel in hardware operation, software operation, programming, and application in accordance with commissioning plan and requirements of Section 23 09 93.

7. Demonstrate system performance and operation to Commissioning Authority during functional performance tests including each mode of operation.

8. Provide control system technician to assist during Commissioning Authority verification check and functional performance testing.

9. Provide control system technician to assist testing, adjusting, and balancing agency during performance of testing, adjusting, and balancing work.

10. Assist in performing operation and maintenance training sessions scheduled by Commissioning Authority.

C. Testing, Adjusting, and Balancing Agency Commissioning Responsibilities:

1. Attend commissioning meetings.

2. Participate in verification of testing, adjusting, and balancing report for verification or diagnostic purposes. Repeat sample of 20 percent of measurements contained in testing, adjusting, and balancing report as indicated.

3. Assist in performing operation and maintenance training sessions scheduled by Commissioning Authority.

1.8 COMMISSIONING MEETINGS

A. Section General Conditions - Commissioning: Requirements for commissioning meetings.

B. Attend initial commissioning meeting and progress commissioning meetings as required by Commissioning Authority.

1.9 SCHEDULING

A. Prepare schedule indicating anticipated start dates for the following:

1. Piping system pressure testing.

2. Piping system flushing and cleaning.

3. Ductwork cleaning.

4. Ductwork pressure testing.

5. Equipment and system startups.

6. Automatic temperature control system checkout.

7. Testing, adjusting and balancing.

8. HVAC system orientation and inspections.

9. Operation and maintenance manual submittals.

10. Training sessions.

B. Schedule seasonal tests of equipment and systems during peak weather conditions to observe full-load performance.

C. Schedule occupancy sensitive tests of equipment and systems during conditions of both minimum and maximum occupancy or use.

1.10 COORDINATION

A. Section General Conditions - Administrative Requirements: Requirements for coordination.

B. Notify Commissioning Authority minimum of four (4) weeks in advance of the following:

1. Scheduled equipment and system startups.

2. Scheduled automatic temperature control system checkout.

3. Scheduled start of testing, adjusting, and balancing work.

C. Coordinate programming of automatic temperature control system with construction and commissioning schedules.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install additional balancing dampers, balancing valves, access doors, test ports, and pressure and temperature taps required by Commissioning Authority.

B. Place HVAC systems and equipment into full operation and continue operation during each working day of commissioning.

C. Install replacement sheaves and belts to obtain system performance, as requested by Commissioning Authority.

D. Install test holes in ductwork and plenums as requested by Commissioning Authority for taking air measurements.

3.2 COMMISSIONING

A. Seasonal Sensitive Functional Performance Tests:

1. Test heating equipment at winter design temperatures.

2. Test cooling equipment at summer design temperatures with fully occupied building.

3. Participate in testing delayed beyond Final Completion to test performance at peak seasonal conditions.

B. Be responsible to participate in initial and alternate peak season test of systems required to demonstrate performance.

C. Occupancy Sensitive Functional Performance Tests:

1. Test equipment and systems affected by occupancy variations at minimum and peak loads to observe system performance.

2. Participate in testing delayed beyond Final Completion to test performance with actual occupancy conditions.

END OF SECTION

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SECTION 23 09 23

DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Control equipment and software.

B. Related Sections:

1. Section 23 09 00 - Instrumentation and Control for HVAC.

2. Section 23 09 93 - Sequence of Operations for HVAC Controls: Sequences of operation implemented using products specified in this section.

3. Section 26 05 00 - Equipment Wiring Connections: Execution requirements for electric connections specified by this section.

1.2 REFERENCES

A. American National Standards Institute:

1. ANSI MC85.1 - Terminology for Automatic Control.

2. ANSI/ASHRAE Standard 135 – BACnet – A Data Communication Protocol for Building Automation and Control Networks.

1.3 SYSTEM DESCRIPTION

A. Automatic temperature controls field monitoring and control system using field programmable microprocessor based units and control system required in Section 23 09 93.

B. Base system on distributed system of fully intelligent, stand-alone controllers, operating in a multi-tasking, multi-user environment on token passing network, with central and remote hardware, software and interconnecting wire and conduit.

C. Provide computer software and hardware, operator input/output devices, control units, local area networks (LAN), sensors, control devices and actuators.

D. Provide controls for variable air volume terminals, reheat coils, heaters, and when directly connected to control units.

E. Provide control systems consisting of thermostats, control valves, dampers and operators, indicating devices, interface equipment and other apparatus and accessories to operate mechanical systems, and to perform sequences specified in Section 23 09 93.

F. Provide installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.

1.4 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal Procedures.

B. Shop Drawings: Indicate the following:

1. Trunk cable schematic showing programmable control-unit locations and trunk data conductors.

2. System schematics, including:

a. Sequence of Operations

3. System diagrams.

4. Connected data points, including connected control unit and input device.

5. System graphics showing monitored systems, data connected and calculated point addresses, and operator notations. Submit demonstration diskette containing graphics.

6. System configuration with peripheral devices, batteries, power supplies, diagrams, modems and interconnections.

7. Description and sequence of operation for operating, user, and application software.

8. Use terminology in submittals conforming to ASME MC85.1.

9. Coordinate submittals with information requested in Section 23 09 93.

C. Product Data: Submit data for each system component and software module.

D. Manufacturer's installation instructions: submit installation instruction for each control system component.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of control components, including control units, thermostats, and sensors.

1. Revise shop drawings to reflect actual installation and operating sequences.

2. Submit data specified in "Submittals" in final "Record Documents" form.

C. Operation and Maintenance Data:

1. Submit interconnection wiring diagrams complete field installed systems with identified and numbered system components and devices.

2. Submit keyboard illustrations and step-by-step procedures indexed for each operator function.

3. Submit inspection period, cleaning methods, cleaning materials recommended and calibration tolerances.

1.6 QUALITY ASSURANCE

A. The DDC system shall be designed and installed, commissioned and serviced by a manufacturer employed, factory-trained personnel. Manufacturer shall have an in-place support facility within 100 miles of the site with technical staff, spare parts inventory and necessary test and diagnostic equipment.

The manufacturer shall provide an on-site, experienced project manager for this work, responsible for direct supervision of the design, installation, start up and commissioning of the DDC.

The Contractor shall be regularly engaged in the manufacturing, installation and maintenance of DDC systems and shall have a minimum of three (3) years of demonstrated technical expertise and experience in the manufacture, installation and maintenance of DDC systems similar in size and complexity to this project. A maintained service organization consisting of at least ten (10) competent servicemen and provide a list of projects, similar in size and scope to this project completed.

B. Materials and equipment shall be the catalogued products of manufacturers regularly engaged in production and installation of automatic temperature control systems and shall be manufacturer's latest standard design that complies with the specification requirements.

C. All electronic equipment shall conform to the requirements of FCC Regulation, Part 15, Governing Radio Frequency Electromagnetic Interference and be so labeled.

D. The manufacturer of the DDC shall provide documentation supporting compliance with ISO-9002 (model for quality assurance in production, installation, and servicing) and ISO-140001 (the application of well-accepted business management principles to the environment). The intent of this specification requirement is to ensure that the products from the manufacturer are delivered through a quality system and framework that will assure consistency in the products delivered for this project.

E. This system shall have a documented history of compatibility by design for a minimum of 15 years. Future compatibility shall be supported for no less than 10 years. Compatibility shall be defined as the ability to upgrade existing field panels to current level of technology, and extend new field panels on a previously installed network.

F. Compatibility shall be defined as the ability for any existing field panel microprocessor to be connected and directly communicate with new field panels without bridges, routers or protocol converters.

1.7 PRE-INSTALLATION MEETINGS

A. Convene minimum one (1) week prior to commencing work of this section.

1.8 FIELD MEASUREMENTS

A. Verify Field Measurements Prior To Fabrication.

1.9 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

1.10 MAINTENANCE SERVICE

A. Section General Conditions - Execution and Closeout Requirements: Requirements for maintenance service.

B. Furnish service and maintenance of control systems for one (1) year from Date of Substantial Completion.

C. Furnish complete service of controls systems, including callbacks. Make minimum of 4 complete normal inspections of approximately 8 hours duration in addition to normal service calls to inspect, calibrate, and adjust controls. Submit written report after each inspection.

D. Furnish four (4) complete inspections per year, one in each season, to inspect, calibrate, and adjust controls. Submit written report after each inspection.

E. Examine unit components bi-monthly. Clean, adjust, and lubricate equipment.

F. Include systematic examination, adjustment, and lubrication of unit, and controls checkout and adjustments. Repair or replace parts in accordance with manufacturer's operating and maintenance data. Use parts produced by manufacturer of original equipment.

G. Perform work without removing units from service during building normal occupied hours.

H. Provide emergency call back service during working hours for this maintenance period.

I. Maintain locally, near Place of the Work, adequate stock of parts for replacement or emergency purposes. Have personnel available to ensure fulfillment of this maintenance service, without unreasonable loss of time.

J. Perform maintenance work using competent and qualified personnel under supervision and in direct employ of manufacturer or original installer.

K. Do not assign or transfer maintenance service to agent or subcontractor without prior written consent of Owner.

1.11 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

PART 2 - PRODUCTS

2.1 HARDWARE

A. Local Control Panel and Operator Keypad Display:

1. Local Control Panel (DDC Controller)

a. DDC Controllers shall be a 16-bit stand-alone, multi-tasking, multi-user, real-time digital control processors consisting of modular hardware with plug-in enclosed processors, communication controllers, power supplies and input/output point modules. Controller size shall be sufficient to fully meet the requirements of the sequence of operation for each equipment.

b. Each DDC Controller shall have sufficient memory to support its own operating system and databases, including:

1) Control processes

2) Energy management applications

3) Alarm management applications including custom alarm messages for each level alarm for each point in the system.

4) Historical/trend data for points specified

5) Maintenance support applications

6) Custom processes

7) Operator I/O

8) Dial-up communications

9) Manual override monitoring

c. Each DDC Controller shall support firmware upgrades without the need to replace hardware.

d. Provide all processors, power supplies and communication controllers so that the implementation of a point only requires the addition of the appropriate point input/output termination module and wiring.

e. DDC Controllers shall provide a minimum two (2) serial data communication ports for operation of operator I/O devices such as industry standard printers, operator terminals, modems and portable laptop operator's terminals. DDC Controllers shall allow temporary use of portable devices without interrupting the normal operation of permanently connected modems, printers or terminals.

f. The operator shall have the ability to manually override automatic or centrally executed commands at the DDC Controller via local, point discrete, on-board hand/off/auto operator override switches for digital control type points and gradual switches for analog control type points.

1) Switches shall be mounted either within the DDC Controllers key-accessed enclosure, or externally mounted with each switch keyed to prevent unauthorized overrides.

2) DDC Controllers shall monitor the status of all overrides and inform the operator that automatic control has been inhibited. DDC Controllers shall also collect override activity information for reports.

g. DDC Controllers shall provide local LED status indication for each digital input and output for constant, up-to-date verification of all point conditions without the need for an operator I/O device. Graduated intensity LEDs or analog indication of value shall also be provided for each analog output. Status indication shall be visible without opening the panel door.

h. Each DDC Controller shall continuously perform self-diagnostics, communication diagnosis and diagnosis of all panel components. The DDC Controller shall provide both local and remote annunciation of any detected component failures, low battery conditions or repeated failure to establish communication.

i. In the event of the loss of normal power, there shall be an orderly shutdown of all DDC Controllers to prevent the loss of database or operating system software. Non-volatile memory shall be incorporated for all critical controller configuration data and battery backup shall be provided to support the real-time clock and all volatile memory for a minimum of 60 days.

1) Upon restoration of normal power, the DDC Controller shall automatically resume full operation without manual intervention.

2) Should DDC Controller memory be lost for any reason, the user shall have the capability of reloading the DDC Controller via the local RS-232C port, via telephone line dial-in or from a network workstation PC.

j. Provide a separate DDC Controller for each AC unit and/or other HVAC systems indicated on the drawing. It is intended that each unique system be provided with its own point resident DDC Controller.

2. Local Keypad Display (Lok)

a. General Purpose Controller Plug-in: Keypad and display shall be provided. The LOK shall plug directly into any general purpose/multi-application controller and enable maintenance personnel to access and modify specified building control parameters in any DDC control panel. The LOK shall be panel mounted or wall mounted.

b. Interface: The LOK shall comprise a minimum of four (4) function keys and employ a backlit display for easy reading in poor lighting conditions. Each function key shall act as a 'hot-key' to menus comprised of control parameters. The

display shall utilize English language descriptors rather than cryptic code and a menu penetration technique to access data. Clearly marked 'up' and 'down' arrow keys shall be used to move between points descriptors listed in each menu. The LOK backlit display shall be 4 by 40 characters or 2 by 16 characters, as specified by location in the I/O Point Summary.

c. Menu Language: The English language menus in the LOK shall be constructed using industry standard HTML. Access to building control parameters shall be protected by password entry.

2.2 DDC SOFTWARE

A. Overview:

The system shall continuously perform Direct Digital Control (DDC) functions at the local control module in a standalone mode. Using Graphical Programming, the operator shall be able to design and modify control sequence of operation and all tuning parameters.

1. Minimum Function:

Each control module shall perform the following functions:

a. Identify, time/date stamp and report BACnet events

b. Execute all application programs specified

c. Execute DDC algorithms

d. Trend and store data

2. System Performance:

The system shall conform to the following:

a. Graphic Display: The system shall display a graphic with 20 dynamic points with all current data within 10 seconds.

b. Graphic Refresh: The system shall update a graphic with 20 dynamic points with all current data within at least 20 seconds and will allow a manual update/refresh without having to redraw the graphics.

c. Object Command: The maximum time between the command of a binary object by the operator and the reaction by the device shall be less than 2 seconds. Analog objects should start to adjust within 2 seconds.

d. Object Scan: All changes of state and change of analog values will be transmitted over the high-speed network such that any data used or displayed at a controller or workstation will have been current within the previous 6 seconds.

e. Alarm Response Time: The maximum time from when an object goes into alarm to when it is annunciated at the workstation shall not exceed 45 seconds.

f. Program Execution Frequency: Custom and standard applications shall be capable of running as often as once every 5 seconds. The Contractor shall be responsible for selecting execution times consistent with the mechanical process under control.

g. Performance: Programmable controllers shall be able to execute DDC PID control loops at a selectable frequency of at least once per five (5) second. The controller shall scan and update the process value and output generated by this calculation at this same frequency.

h. Multiple Alarm Annunciation: All workstations on the network must receive alarms within 5 seconds of each other.

i. Reporting Accuracy: The system shall report all values with an end-to-end accuracy as listed or better than those listed in Table 1.

j. Stability of Control: Control loops shall maintain measured variable at set point within the tolerances listed in Table 2.

k. In the case were instrumentation is specified for applications in laboratories or special applications areas Table 1 and Table 2 shall be the minimum required specification. The job specific specification as formulated by the engineer of record shall have precedence over the accuracies indicated in Table 1 and Table 2.

l.

TABLE 1 Reporting Accuracy	
Measured Variable	Reported Accuracy
Space Temperature	±0.5°C (±1°F)
Ducted Air	±0.5°C (±1°F)
Outside Air	±1.0°C (±2°F)
Dew Point	±1.5°C (±3°F)
Water Temperature	±0.5°C (±1°F)
Delta-T	±0.15° (±0.25°F)
Relative Humidity	±1% RH
Water Flow	±5% of full scale
Airflow (terminal)	±10% of full scale (see Note 1)
Airflow (measuring stations)	±5% of full scale
Airflow (pressurized spaces)	±3% of full scale
Air Pressure (ducts)	±25 Pa (±0.1 in. w.g.)
Air Pressure (space)	±3 Pa (±0.01 in. w.g.)
Water Pressure	±2% of full scale (see Note 2)
Electrical (A, V, W, Power Factor)	5% of reading (see Note 3)
Carbon Dioxide (CO2)	±50 ppm
Note 1: 10%-100% of scale	
Note 2: For both absolute and differential pressure	
Note 3: Not including utility-supplied meters	

TABLE 2		
Control Stability and Accuracy		
Controlled Variable	Control Accuracy	Range of Medium
Air Pressure	±50 Pa (±0.2 in. w.g.) ±3 Pa (±0.01 in. w.g.)	0-1.5 kPa (0-6 in. w.g.) 25 to 25 Pa (·0.1 to 0.1 in. w.g.)
Airflow	±10% of full scale	
Space Temperature	±1.0°C (±2.0°F)	
Duct Temperature	±1.5°C (±3°F)	
Humidity	±5% RH	
Fluid Pressure	±10 kPa (±1.5 psi) ±250 Pa (±1.0 in. w.g.)	0-1 MPa (1-150 psi) 0-12.5 kPa (0-50 in. w.g.) differential

3. Control Failure Mode:

In the event of a control module failure, all points under its control shall be commanded to the failure mode. All DDC software shall reside in the respective control module.

a. Orderly Shutdown: Power failures shall cause the control module to go into an orderly shutdown with no loss of program memory.

b. Automatic Restart: Upon resumption of power, the control module shall automatically restart and print out the time and date of the power failure and restoration at the respective Workstation system.

c. Automatic Restart: The restart program shall automatically restart affected field equipment. The operator shall be able to define an automatic power up time delay for each piece of equipment under control.

4. Programming:

a. Provide sufficient internal memory for the specified sequences of operation and trend logging. There shall be a minimum of 25% of available memory free for future use.

b. Point Naming: (Future)

c. Software Programming:

Provide programming for the system and adhere to the sequences of operation provided. All other system programming necessary for the operation of the system, but not specified in this document, also shall be provided by the contractor. Imbed into the control program sufficient comment statements to clearly describe each section of the program. The comment statements shall reflect the language used in the sequences of operation. Use the appropriate technique based on the following programming types:

1) Text-based:

a) Must provide actions for all possible situations

b) Must be modular and structured

c) Must be commented

2) Graphic-based:

a) Must provide actions for all possible situations

b) Must be documented

3) Parameter-based:

a) Must provide actions for all possible situations

b) Must be documented

4) Operator Interface:

a) Standard Graphics: Provide graphics for all mechanical systems and floor plans of the building. This includes each chilled water system, hot water system, chiller, boiler, air handler and all terminal equipment. Point information on the graphic displays shall dynamically update. Show on each graphic all input and output points for the system. Also show relevant calculated points such as set points.

b) Show terminal equipment information on a "graphic" summary table. Provide dynamic information for each point shown.

c) The contractor shall provide all the labor necessary to install, initialize, start up, and troubleshoot all operator interface software and its functions as described in this section. This includes any operating system software, operator interface database, and any third party software installation and integration required for successful operation of the operator interface.

2.3 APPLICATIONS SOFTWARE

A. General:

All software application algorithms described below MUST reside at the local Multi-Application or Single-Application Controller level. Systems that rely on a workstation PC, server or router to perform these functions are NOT acceptable. The following applications software shall be provided for the purpose of optimizing energy consumption while maintaining occupant comfort:

1. Time of Day Scheduling (TOD):

The system shall be capable of the following scheduling features:

a. Schedule by Type: Scheduling by building, area, zone, groups of zones, individually controlled equipment and groups of individually controlled equipment. Each schedule shall provide beginning and ending dates and times (hours: minutes). A weekly repeating schedule, i.e. between 8:00 a.m. and 5:00 p.m., Monday through Friday shall constitute one schedule.

b. Weekly Schedule: Provide separate schedules for each day of the week. Each of these schedules should include the capability for start, stop, optimal start, optimal stop, and night economizer. Each schedule may consist of up to 10 events. When a group of objects are scheduled together, provide the capability to adjust the start and stop times for each member.

c. Schedule in Advance: Dated schedules shall be entered up to 9 (nine) years in advance.

d. Self-Deleting: Schedules shall be self-deleting when effective dates have passed.

e. Holiday Schedules: Provide the capability for the operator to define up to 99 special or holiday schedules. These schedules may be placed on the scheduling calendar and will be repeated each year. The operator shall be able to define the length of each holiday period.

f. Leap Year: Leap years shall be adjusted automatically without operator intervention.

2. Optimum Start/Stop (OSS)/Optimum Enable/Disable (OED):

This application provides software to start and stop equipment on a sliding schedule based on the individual zone temperature and the heating/cooling capacity in °F/hour of the equipment serving that zone. The heating/cooling capacity value shall be operator adjustable. Temperature compensated peak demand limiting shall remain in effect during morning start up to avoid setting a demand peak.

3. Source Temperature Optimization (STO):

The system shall automatically perform source optimization for all air handling units, chillers and boilers in response to the needs of other downstream pieces of equipment, by increasing or decreasing supply temperature set points, i.e. chilled water, discharge air, etc. using owner defined parameters. In addition to optimization, the STO capability shall also provide for starting and stopping primary mechanical equipment Based on zone occupancy and/or zone load conditions.

a. Set point Reset: The STO program will allow set points for various equipment in the heating/cooling chain to be reset between an operator's defined maximum and a minimum set point Based on the actual requirements of the building zones. The actual set point shall be calculated Based on the number of heating or cooling requests which are currently being received from the equipment or zones served. Once every update period, the STO program surveys the network to see if any piece of equipment requires any additional heating or cooling from its source. As an example, a VAV air handler is the source of cold air for a number of VAV boxes. Assume that the STO program for the air handler has the following parameters established for it by the owner:

Optimized set point description:

1) Initial set point is 60.00

2) Max. set point is 65.00

3) Min. set point is 55.00

4) Every 2.0 mins trim by 0.25 and respond by -0.50 but no more than 2.0.

a) Every two minutes, the STO program will total up all of the requests and calculate a new set point:

(1) New set point = previous set point + 'trim by' + ('respond by' x no. of req.). Assuming four requests were received and the previous set point was 57.00 degrees, the new set point would be:

(2) New set point = 57.00 + 0.25 + (-0.50 x 4) = 55.25°F

(3) If (the number of requests received) x (the 'respond by' value) > (the 'but no more than' value), use the 'but no more than' value inside the parenthesis in the above calculation.

4. Demand Limiting (DL) - Temperature Compensated

The DL application shall be programmable for a minimum of six separate time of day KW demand billing rate periods. The system shall be capable of measuring electrical usage from multiple meters serving one building and each piece of equipment being controlled on the LAN shall be programmable to respond to the peak demand information from its respective meter.

a. Sliding Window: The demand control function shall utilize a sliding window method with the operator being able to establish the kilowatt threshold for a minimum of three adjustable demand levels. The sliding window interval shall be operator selectable in increments of one minute, up to 60 minutes. Systems that incorporate rotating shed tables are NOT acceptable.

b. Set points for Defined Demand Level: The operator shall have the capability to set the individual equipment temperature set points for each operator defined demand

level. Equipment shall not be shed if these reset set points are not satisfied; rather the set point shall be revised for the different established demand levels. The system shall have failed meter protection, such that when a KW pulse is not received from the utility within an operator adjustable time period, an alarm will be generated. The system software will automatically default to a predetermined fail-safe shed level.

c. Information Archiving: The system shall have the ability to archive demand and usage information for use at a later time. System shall permit the operator access to this information on a current day, month-to-date and a year-to-date basis.

5. Day/Night Setback (DNS)

The system shall allow the space temperature to drift down [up] within a preset [adjustable] unoccupied temperature range. The heating [cooling] shall be activated upon reaching either end of the DNS range and shall remain activated until the space temperature returns to the DNS range.

a. Outside & Exhaust Air: The system shall be capable of closing all outside air and exhaust air dampers during the unoccupied period, except for 100% outside air units.

b. Unoccupied Space Temperature: Unoccupied space temperature shall be monitored by the DDC temperature sensors located in the individual zones being controlled or within a representative room.

c. Parameter Changes: Operator shall be able to define, modify or delete the following parameters.

1) DNS set point temperature(s)

2) Temperature band for night heating operation

3) Period when the DNS is to be activated

6. Timed Local Override (TLO):

The system shall have TLO input points that permit the occupants to request an override of equipment that has been scheduled OFF.

The system shall turn the equipment ON upon receiving a request from the local input device. Local input devices shall be push button (momentary contact), wind-up timer, or ON/OFF switches as detailed in the I/O summary.

a. Equipment on Time: If a push button is used the system operator shall be able to define the duration of equipment ON time per input pulse and the total maximum ON time permitted. The input point will cancel override time already entered. If a wind-up timer is used the equipment will stay in override mode until the timer expires. Year to date, month-to-date and current day override history shall be maintained for each TLO input point. History data shall be accessible by the operator at any time and shall be capable of being automatically stored on hard disk and/or printed on a daily basis.

7. Space Temperature Control (STC):

There shall be two space temperature set points, one for cooling and one for heating, separated by a dead band. Only one of the two set points shall be operative at any time. The cooling set point is operative if the actual space temperature has more recently been equal to or greater than the cooling set point. The heating set point is operative if the actual space temperature has more recently been equal to or less than the heating set point. There are two modes of operation for the set points, one for the occupied mode (example: heating = 72°F or 22°C, cooling = 76°F or 24.4°C) and one for the unoccupied mode (example: heating = 55°F or 12.7°C, cooling = 90°F or 32°C).

a. Schedule: The occupied/unoccupied modes may be scheduled by time, date, or day of week.

b. Color Code: One of seven colors shall be generated to represent the comfort conditions in the space, and shall be displayed graphically at the operator station.

1) If the actual space temperature is in the dead band between the heating set point and the cooling set point, the color displayed shall be green for the occupied mode, representing ideal comfort conditions.

If in the unoccupied mode, the color displayed shall be gray representing 'after-hours' conditions.

2) If the space temperature rises above the cooling set point, the color shall change to yellow. Upon further rise beyond the cooling set point plus an offset, the color shall change to orange. Upon further rise beyond the cooling set point plus the yellow band offset, plus the orange band offset, the color shall change to red indicating unacceptable high temperature conditions. At this point an alarm shall be generated to notify the operator.

3) When space temperature falls below the heating set point, the color shall change to light blue. Upon further temperature decrease below the heating set point minus an offset, the color shall change to dark blue. Upon further space temperature decrease below the heating set point minus the light blue band offset minus the dark blue band offset the color shall change to red indicating unacceptable low temperature conditions. At this point an alarm shall be generated to notify the operator.

c. Operator Definable: All set points and offsets shall be operator definable. When in the occupied mode, start-up mode, or when heating or cooling during the night setback unoccupied mode, a request shall be sent over the network to other equipment in the HVAC chain, such as to an AHU fan that serves the space, to run for ventilation. The operator shall be able to disable this request function if desired.

d. Additional Cooling: When comfort conditions are warmer than ideal, indicated by the colors yellow, orange, and high temperature red, a request for additional cooling shall be sent over the network to other cooling equipment in the HVAC chain, such as a chiller. This information is to be used for optimization of equipment in the HVAC chain. The operator shall be able to disable this function if desired.

e. Additional Heating: When comfort conditions are cooler than ideal; indicated by the colors light blue, dark blue and

low temperature red; a request for additional heating shall be sent over the network to other heating equipment in the HVAC chain, such as a boiler. This information is to be used for optimization of equipment in the HVAC chain. The operator shall be able to disable this function if desired.

f. Cooling/Heating Set points: The cooling [and heating] set points may be increased [decreased] under demand control conditions to reduce the cooling (heating) load on the building during the demand control period. Up to three levels of demand control strategy shall be provided. The operator may predefine the amount of set point increase [decrease] for each of the three levels. Each space temperature sensor in the building may be programmed independently.

g. Optimum Start: An optimum start-up program transitions from the unoccupied set points to the occupied set points. The optimum start-up algorithm considers the rate of space temperature rise for heating and the rate of space temperature fall for cooling under nominal outside temperature conditions; it also considers the outside temperature; and the heat loss and gain coefficients of the space envelope (AI: Space Temperature).

h. PID Loop: A PID control loop, comparing the actual space temperature to its set point, shall modulate the dampers [and heating coil valve or heating stages in sequence] to achieve the set point target.

i. Troubleshooting: The Out-of-Service property shall be adjustable (writable) using BACnet services for all Analog, Binary, Multi-state, Loop and Program objects. This capability is of particular value during commissioning or for diagnosing problems subsequent to installation and acceptance.

2.4 HVAC CONTROL PROGRAMS

A. General:

1. Support Inch-pounds and S.I. metric units of measurement.

2. Identify each Control system.

B. Optimal Run Time:

1. Control start-up and shutdown times of equipment for both heating and cooling.

2. Based on occupancy schedules, outside air temperature, seasonal requirements, and interior room mass temperature.

3. Start-up systems by using outside air temperature, room mass temperatures, and adaptive model prediction for how long building takes to warm up or cool down under different conditions.

4. Use outside air temperature to determine early shut down with ventilation override.

5. Analyze multiple building mass sensors to determine seasonal mode and worse case condition for each day.

6. Operator commands:

   a. Define term schedule.

   b. Add/delete fan status point.

   c. Add/delete outside air temperature point.

   d. Add/delete mass temperature point.

   e. Define heating/cooling parameters.

   f. Define mass sensor heating/cooling parameters.

   g. Lock/unlock program.

   h. Request optimal run-time control summary.

   i. Request optimal run-time mass temperature summary.

   j. Request point summary.

   k. Request saving profile summary.

7. Control Summary:

   a. Control system begin/end status.

   b. Optimal run time lock/unlock control status.

c. Heating/cooling mode status.

d. Optimal run time schedule.

e. Start/Stop times.

f. Selected mass temperature point ID.

g. Optimal run-time system normal start-times.

h. Occupancy and vacancy times.

i. Optimal run time system heating/cooling mode parameters.

8. Mass temperature summary:

a. Mass temperature point type and ID.

b. Desired and current mass temperature values.

c. Calculated warm-up/cool-down time for each mass temperature.

d. Heating/cooling season limits.

e. Break point temperature for cooling mode analysis.

9. Point summary:

a. Control system identifier and status.

b. Point ID and status.

c. Outside air temperature point ID and status.

d. Mass temperature point ID and status.

e. Calculated optimal start and stop times.

f. Period start.

C. Supply Air Reset:

1. Monitor heating and cooling loads in building spaces, terminal reheat systems, both hot deck and cold deck temperatures on dual duct and multizone systems, single zone unit discharge temperatures.

2. Adjust discharge temperatures to most energy efficient levels satisfying measured load by:

   a. Raising cooling temperatures to highest possible value.

   b. Reducing heating temperatures to lowest possible level.

3. Operator commands:

   a. Add/delete fan status point.

   b. Lock/unlock program.

   c. Request point summary.

   d. Add/Delete discharge controller point.

   e. Define discharge controller parameters.

   f. Add/delete air flow rate.

   g. Define space load and load parameters.

   h. Request space load summary.

4. Control summary:

   a. Control system status (begin/end).

   b. Supply air reset system status.

   c. Optimal run time system status.

   d. Heating and cooling loop.

   e. High/low limits.

   f. Deadband.

   g. Response timer.

   h. Reset times.

5. Space load summary:

   a. System status.

   b. Optimal run time status.

c. Heating/cooling loop status.

d. Space load point ID.

e. Current space load point value.

f. Control heat/cool limited.

g. Gain factor.

h. Calculated reset values.

i. Fan status point ID and status.

j. Control discharge temperature point ID and status.

k. Space load point ID and status.

l. Airflow rate point ID and status.

D. Static Pressure Reset:

1. Monitor static pressure in supply air system and corresponding VAV box position.

2. Reduce static pressure setpoint and resultant fan speed to utilize minimum fan energy.

E. Enthalpy Switchover:

1. Calculate outside and return air enthalpy using measured temperature and relative humidity; determine energy expended and control outside and return air dampers.

2. Operator commands:

a. Add/delete fan status point.

b. Add/delete outside air temperature point.

c. Add/delete discharge controller point.

d. Define discharge controller parameters.

e. Add/delete return air temperature point.

f. Add/delete outside air dewpoint/humidity point.

g. Add/delete return air dewpoint/humidity point.

h. Add/delete damper switch.

i. Add/delete minimum outside air.

j. Add/delete atmospheric pressure.

k. Add/delete heating override switch.

l. Add/delete evaporative cooling switch.

m. Add/delete air flow rate.

n. Define enthalpy deadband.

o. Lock/unlock program.

p. Request control summary.

q. Request HVAC point summary.

3. Control summary:

a. HVAC control system begin/end status.

b. Enthalpy switchover optimal system status.

c. Optimal return time system status.

d. Current outside air enthalpy.

e. Calculated mixed air enthalpy.

f. Calculated cooling cool enthalpy using outside air.

g. Calculated cooling cool enthalpy using mixed air.

h. Calculated enthalpy difference.

i. Enthalpy switchover deadband.

j. Status of damper mode switch.

F. Freeze Protection.

2.5 PROGRAMMING APPLICATION FEATURES

A. Trend Point:

1. Sample up to 50 points, real or computed, with each point capable of collecting 10,000 samples at intervals specified in minutes, hours, days, or month.

2. Output trend logs as line-graphs or bar graphs. Output graphic on terminal, with each point for line and bar graphs designated with a unique color, vertical scale either actual values or percent of range, and horizontal scale time base. Print trend logs up to 12 columns of one point/column.

B. Alarm Messages:

1. Allow definition of minimum of 100 messages, each having minimum length of 100 characters for each individual message.

2. Assign alarm messages to system messages including point's alarm condition, point's off-normal condition, totaled point's warning limit, hardware elements advisories.

3. Output assigned alarm with "message requiring acknowledgment".

4. Operator commands include define, modify, or delete; output summary listing current alarms and assignments; output summary defining assigned points.

C. Weekly Scheduling:

1. Automatically initiate equipment or system commands, Based on selected time schedule for points specified.

2. Program times for each day of week, for each point, with one minute resolution.

3. Automatically generate alarm output for points not responding to command.

4. Allow for holidays, minimum of 366 consecutive holidays.

5. Operator commands:

a. System logs and summaries.

b. Start of stop point.

c. Lock or unlock control or alarm input.

d. Add, delete, or modify analog limits and differentials.

e. Adjust point operation position.

f. Change point operational mode.

g. Open or close point.

h. Enable/disable, lock/unlock, or execute interlock sequence or computation profile.

i. Begin or end point totals.

j. Modify total values and limits.

k. Access or secure point.

l. Begin or end HVAC or load control system.

m. Modify load parameter.

n. Modify demand limiting and duty cycle targets.

6. Output summary: Listing of programmed function points, associated program times, and respective day of week programmed points by software groups or time of day.

D. Interlocking:

1. Permit events to occur, Based on changing condition of one or more associated master points.

2. Binary contact, high/low limit of analog point or computed point capable of being used as master. Master capable of monitoring or commanding multiple slaves.

3. Operator commands:

a. Define single master/multiple master interlock process.

b. Define logic interlock process.

c. Lock/unlock program.

d. Enable/disable interlock process.

e. Execute terminate interlock process.

f. Request interlock type summary.

2.6 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Disconnect Switch: Factory-Mount On Equipment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section General Conditions - Administrative Requirements: Coordination and project conditions.

B. Verify conditioned power supply is available to control units and to operator workstation.

C. Verify field end devices, wiring, and pneumatic tubing is installed prior to installation proceeding.

3.2 INSTALLATION

A. Install control units and other hardware in position on permanent walls where not subject to excessive vibration.

B. Install software in control units and in operator workstation. Implement features of programs to specified requirements and appropriate to sequence of operation. Refer to Section 23 09 93.

C. Install with 120 volts alternating current, 15 amp dedicated emergency power circuit to each programmable control unit.

D. Install conduit and electrical wiring in accordance with Section 26 05 00.

E. Install electrical material and installation in accordance with appropriate requirements of Division 26.

F. Install all devices, sensors, etc. In sheet metal enclosures to prevent dust, dirt and water damage. Provide outdoor rated enclosures for devices exposed to weather.

3.3 MANUFACTURER'S FIELD SERVICES

A. Section General Conditions - Quality Requirements: Manufacturers' field services.

B. Start and commission systems. Allow adequate time for start-up and commissioning prior to placing control systems in permanent operation.

C. Furnish service technician employed by system installer to instruct owner's representative in operation of systems plant and equipment for a 3-day period.

3.4 COMMISSIONING, TESTING AND ACCEPTANCE

A. Perform a three-phase commissioning procedure consisting of field I/O calibration and commissioning, system commissioning and integrated system program commissioning. Document all commissioning information on commissioning data sheets which shall be submitted prior to acceptance testing. Commissioning work which requires shutdown of system or deviation from normal function shall be performed when the operation of the system is not required. The commissioning must be coordinated with the owner and construction manager to ensure systems are available when needed. Notify the operating personal in writing of the testing schedule so that authorized personnel from the owner and construction manager are present throughout the commissioning procedure.

1. Prior to system program commissioning, verify that each control panel has been installed according to plans, specifications and approved shop drawings. Test, calibrate and bring on line each control sensor and device. Commissioning to include, but not be limited to:

a. Sensor accuracy at 10, 50 and 90% of range.

b. Sensor range.

c. Verify analog limit and binary alarm reporting.

d. Point value reporting.

e. Binary alarm and switch settings.

f. Actuator ranges.

g. Fail safe operation on loss of control signal, electric power, network communications.

B. After control devices have been commissioned (i.e. calibrated, tested and signed off), each DDC program shall be put on line and commissioned.

The contractor shall, in the presence of the owner and construction manager, demonstrate each programmed sequence of operation and compare the results in writing. In addition, each control loop shall be tested to verify proper response and stable control, within specified accuracy's. System program test results shall be recorded on commissioning data sheets and submitted for record. Any discrepancies between the specification and the actual performance will be immediately rectified and retested.

C. After all DDC programs have been commissioned, the contractor shall verify the overall system performance as specified. Tests shall include, but not be limited to:

1. Data communication, both normal and failure modes.
2. Fully loaded system response time.
3. Impact of component failures on system performance and system operation.
4. Time/Date changes.
5. End of month/ end of year operation.
6. Season changeover.
7. Global application programs and point sharing.
8. System backup and reloading.
9. System status displays.
10. Diagnostic functions.
11. Power failure routines.
12. Battery backup.
13. Smoke Control, stair pressurization, stair, vents, in concert with Fire Alarm System testing.
14. Testing of all electrical and HVAC systems with other division of work.

D. Submit for approval, a detailed acceptance test procedure designed to demonstrate compliance with contractual requirements. This acceptance

test procedure will take place after the commissioning procedure but before final acceptance, to verify that sensors and control devices maintain specified accuracy's and the system performance does not degrade over time.

E. Using the commissioning test data sheets, the contractor shall demonstrate each point. The contractor shall also demonstrate all system functions. The contractor shall demonstrate all points and system functions until all devices and functions meet specification.

F. The contractor shall supply all instruments for testing and turn over same to the owner after acceptance testing.

1. All test instruments shall be submitted for approval.

2. Test Instrument Accuracy:

Temperature:	1/4F or 1/2% full scale, whichever is less.
Pressure:	High Pressure (psi): 1/2 psi or 1/2% full scale, whichever is less.
Low Pressure: (in w.c.)	1/2% of full scale
Humidity:	2% RH
Electrical:	1/4% full scale

G. After the above tests are complete and the system is demonstrated to be functioning as specified, a thirty day performance test period shall begin. If the system performs as specified throughout the test period, requiring only routine maintenance, the system shall be accepted. If the system fails during the test, and cannot be fully corrected within eight hours, the owner may request that performance tests be repeated.

3.5 DEMONSTRATION AND TRAINING

A. Section General Conditions: Requirements for Demonstration and instruction.

B. Furnish basic operator training for 16 persons on data display, alarm and status descriptors, requesting data, execution commands and log requests. Include a minimum of 40 hours instructor time. Furnish training on site.

C. Demonstrate complete and operating system to owner.

3.6 ELECTRICAL WIRING AND MATERIALS

A. Provide the items included under this Section and all other Sections for HVAC work. This work includes providing required conduit, wire, fittings, transformers, backboxes and related wiring accessories. All conduit and wiring shall be installed in accordance with Division 26 Specifications.

B. Provide conduit and wiring between thermostats, aquastats and unit heater motors, all control and alarm wiring for all control and alarm devices for all Sections of Specifications.

C. Provide 120 volt, single phase, 60 hertz emergency power to every DDC Controller panel, HVAC/Mechanical Equipment Controller, PC console, power supply, transformer, annunciator, modems, printers and to other devices as required. It is the intent that the entire building management system except terminal equipment shall be operative under emergency power conditions in the building.

D. Provide status function conduit and wiring for equipment covered under this Section.

E. Provide conduit and wiring between the DDC panels and the temperature, humidity, or pressure sensing elements, including low voltage control wiring in conduit.

F. Provide conduit and control wiring for devices specified in this Section.

G. Provide conduit and signal wiring between motor starters/disconnect switches in motor control centers and high and/or low temperature relay contacts and remote relays in DDC panels located in the vicinity of motor control centers.

H. Provide conduit and wiring between the PC workstation, electrical panels, metering instrumentation, indicating devices, miscellaneous alarm points, remotely operated contactors, and DDC panels, as shown on the drawings or as specified.

I. All wiring to be compliant to local building and electrical codes.

J. Provide all conduit wiring for steam heating systems, chillers, AC units, etc. as required for a complete and operational system.

K. Provide electrical wall box and conduits for all wall mounted devices.

L. 120 Volt wiring will be provided by Division 26 in multiple locations on the 8th Floor for VAV boxes. HVAC contractor shall extend this wiring as required and provide all 120 volt to 24 volt transformers and wiring to each VAV box, controller, etc.

M. Reference Division 26 Specifications and drawings for conduit, wiring and accessories requirements.

N. All wiring in space with no ceiling shall be in EMT.

END OF SECTION

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SECTION 23 09 93

SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes points to be connected to DDC control system.

B. Related Sections:

1. Section 23 09 00 - Instrumentation and Control for HVAC: For equipment, devices, and system components to implement sequences of operation.

2. All sections related to products requiring control and monitoring.

1.2 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate mechanical system controlled and control system components.

1. Label with settings, adjustable range of control and limits. Submit written description of control sequence.

2. Submit flow diagrams for each control system, graphically depicting control logic.

3. Submit draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and value.

4. Coordinate submittals with information requested in Section 23 09 00.

1.3 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of components and set points of controls, including changes to sequences made after submission of shop drawings.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 POINTS TO BE CONNECTED TO DDC SYSTEM

A. All fans:

1. Start/Stop and running Status
2. Interlock with respective system
3. Alarm failure on start/stop

B. VAV Boxes:

1. Space Temperature
2. Flow Rate
3. Damper position and valve position (if applicable)

C. Miscellaneous HVAC Points:

1. Outdoor air temperature and relative humidity
2. Variable Frequency Drives - General Fault

D. Miscellaneous Electrical Points:

1. Fire Alarm Status

3.2 VARIABLE VOLUME AIR HANDLING UNITS

A. Safeties:

1. Automatic Operation: When alarmed, smoke detectors will stop the supply air and (through software interlock) the return air fan. When smoke condition is cleared and detectors are reset, the system resumes normal operation.
2. Freezestat Operation: The freezestat (low temperature) detectors one for each preheat coil, are located downstream of the coils and are set for activation at 35°F.
3. Upon activation, the supply fan and (through software interlocked) the return air fan both shut down. To prevent nuisance fan

shutdowns, there is a time delay of 0-30 seconds (adjustable) for both detectors before activation occurs. Once the fans have been shut down, manual reset, through a push button located at the DDC Panel, is required to restart them.

4. Static Pressure Operation: The supply fan shall shut down upon a high discharge pressure or low suction pressure condition and shall stop the associated return fan through software interlock. The return fan shall shut down upon a low suction pressure condition and shall stop the associated supply fan through software interlock. Once the fans have been shut down, manual reset, through a push button located at the DDC Panel, is required to restart them.

B. Unit Off:

1. Upon unit shutdown on schedule, the fan motors will be de-energized, the air handling unit's minimum and maximum outside air dampers and spill air dampers will close; the return air damper will open; the condenser water valve will close.

2. Whenever the air handling system is off and when the outside air temperature drops below 35°F, the steam heating coil valves shall opened. If the steam heating coil valves fails to open, an alarm shall be issued to DDC controller.

3. The preheat coil control valves will remain under control of the preheat coil discharge temperature sensors, to maintain a setpoint of 39°F (adjustable) during cold weather.

C. System Start Up:

1. The supply air fan of the air handling unit shall be started per operation schedule from DDC controller and enable the outdoor air fan, spill air and return air dampers. The condender air fan will be started through software interlock. The supply and return air fans shall start with their respective variable speed drives at minimum flow position and remain at minimum flow for sixty seconds (adjustable).

2. During system start up in winter, the economizer cycle will be locked out for five minutes (adjustable) to prevent unstable operation of the maximum outside air damper.

D. Unit On:

See Sequence of Operations on Drawing M-402.00 for ACU-9-1 and on Drawing M-403.00 for ACU-9-2.

E. Seasonal Mode:

1. There are two seasonal modes of operation: "Heating Season" and "Cooling Season". System operation is automatically indexed to "Cooling Season" when program verifies that condenser water from the cooling tower plant (ACU-9-2) is less than 55°F, as sensed by the primary condenser water temperature sensor located in the MER, and the outside air temperature (main outside temperature) is greater than 61°F, then the controls will be indexed to cooling (ACU-9-1 and ACU-9-2). When the outdoor air temperature is between 55°F and 60°F, 100% outside air will be used for cooling; below 56°F, outside air temperature program indexes system to "Heating Season". These modes may also be manually commanded at the console keyboard. Below 56°F, the cooling coil control valves for the air handling units shall be commanded to the closed position.

2. The air handling unit system's air discharge temperature is maintained at a given setpoint for the heating and cooling season:
   Heating Season – 60°F (adjustable)
   Cooling Season – 55°F (adjustable)

F. Zone Control Temperature Reset:

1. DDC system shall poll damper position of VAV boxes to determine if supply air discharge setpoint can be reset up in 1°F increments to allow for energy savings.

G. Night Setback:

1. Under a winter night setback mode, space sensors for each radiators shall operate the control valve to modulate flow of steam to maintain space set-back temperature. When space temperature falls below 55°F, the AHU shall start with no outdoor air capability, and the steam heating coil shall open to maintain space temperature setpoint.

H. Indication:

1. System Monitoring: The DDC system will monitor: temperature transmitters, mixed air temperature, preheat air temperature, supply air temperature, return air temperature, outside air temperature; condenser water supply temperature; condenser water return temperature, static pressure transmitter, supply and return air flow, outdoor air flow, fan status, condenser water flow, air flow measuring stations, VAV box CFMs, Fire Alarm Status (shutdown and purge), Freezestat Status, Dirty Filter Alarm, High and Low Pressure Alarm.

I. Alarms:

The following alarms will be displayed at the DDC System Console:

	ATC Item	Alarm Setpoint (adj.)
1)	Freezestats	35°F
2)	Dirty Air Filters	1.25" w.g.
3)	Supply Air Fan Failure	1" w.g.
4)	Return Air Fan Failure	1" w.g.
5)	Winter Discharge Air	62°F; 52°F High/Low
6)	Static Pressure (varies per system)	1.5" w.g.
7)	Safety Shutdown	
8)	CFM Differential	
9)	VFD Fault Indication	
10)	Carbon Dioxide Level	1000 ppm
11)	Outdoor Air Flow Rate	<50% of minimum outdoor flow rate as indicated in Contract Schedule
12)	Supply Air Flow Rate	
13)	Return Air Flow Rate	

3.3 VAV BOXES

A. Controls for Variable Air Volume Terminal Units - Cooling Only:

1. The VAV terminal box controller monitors the space temperature sensor and velocity sensor. The controller shall modulate the cold

supply air damper to maintain the desired room temperature. If the space temperature is below its adjustable 75° setpoint, the primary air damper shall modulate to its minimum position. As the space temperature rises above its setpoint, the primary damper shall modulate open.

2. The supply air volume will be limited by its minimum and maximum supply air volume settings.

3. When the air handling system is in warm-up mode or cool-down mode, the primary air damper shall be fully open.

4. The damper motor and controls shall be furnished by the ATC contractor, for installation by the VAV box manufacturer at its factory.

5. All VAV terminal units shall be addressable from the standalone controllers.

B. Controls for Variable Air Volume Terminal Units - Hot Water Reheat with Minimum Primary Air: Not Used

3.4 DIFFERENTIAL PRESSURE CONTROLLERS

A. A differential pressure controller, pipe to sense differential pressure between supply and return lines, shall control a bypass water valve to maintain an adjustable pressure differential between the supply and return lines. Provide same for each condenser water and steam heating system.

3.5 TYPICAL EXHAUST FAN CONTROL

A. When the toilet exhaust fan is off, its associated backdraft damper shall be closed. When the exhaust fan is on, its associated backdraft damper shall open.

B. Start/stop of toilet exhaust fan through light switch.

3.6 ELECTRICAL ROOM VENTILATION

A. A room thermostat shall cycle the VAV box air damper on and off to maintain desired conditions of 80°F (adjustable).

3.7 NIGHT SET-BACK MODE FOR ALL HVAC SYSTEMS

A. A space thermostat shall cycle supply fan of each unit to maintain thermostat's setting whenever the AC system is not running but the space temperature falls below 50°F. When running under this mode, the outside air dampers shall stay closed and steam heating coils active. In spaces served by the radiator, maintain 50°F temperature for perimeter zone. A space temperature sensor shall open valves for the radiators.

3.8 VARIABLE FREQUENCY DRIVES (VFD)

A. VFD's shall have four distinct modes of operation:

1. OFF – VFD and motor are off.

2. HAND – VFD output is manually controlled via speed selector input on drive.

3. AUTO – VFD output is controlled by DDC.

4. BYPASS – Drive Electronics are bypassed and unit acts as an across-the-line-starter operating at 100% speed. This allows for maintenance of drive while motor is still operating.

B. VFD's shall have full communication capabilities with the BAS. Provide all interfaces, gateways, etc. as required for communications between the VFD's and BAS.

END OF SECTION

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THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

August 14, 2013

ADDENDUM No. # 1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PW357MOCS
Mayor's Office of Contract Services Renovation

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 item listed below apply to the project:

1. **Bidders Questions and Responses to Questions:**

   See Attachment A

2. **Revisions to Specifications:**

   See Attachment B.

3. **Revisions to Drawings:**

   See Attachment C.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-2200, (718) 391-1727, or by fax at (718) 391-2615.

David Resnick, R.A
Deputy Commissioner

The Weber Group
Name of Bidder

By: _____

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

ADDENDA CONTROL SHEET

BID OPENING DATE: August 16, 2013

PROJECT No. : PW357MOCS

TITLE: Mayor's Office of Contract Services Renovation

ADDENDA ISSUED	NO. OF DWG	DATE	APPROVED BY: ARCHITECTURE/ ENGINEERING	APPROVED BY: GENERAL COUNSEL
#1 Bidder's Questions and Responses; Specifications; Drawings		8/14/13	[signature]	[signature] 8/14/13

THE CITY OF NEW YORK
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David Resnick, R.A.
Deputy Commissioner

_____
Name of Bidder

By: _____

DDC PROJECT #: **PW357MOCS**

PROJECT NAME: Mayor's Office of Contract Services Renovation

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Please provide a specification for the carpet tile required for this project.	See attached specification. (Spec Section 00 96 85 Carpet Tile attached)
2	Drawing P-108 indicates a plumbing riser modification at column line 7 and C. Please clarify scope of work for this riser.	There is no work for plumbing risers at column line C and 7. The risers are shown for reference only.
3	Refer to TOC-2 Table of Contents. **230900 Instrumentation and Control for HVAC** which is included in the Table of contents are missing in the bid document. Please provide 230900 specs.	Specification Section 23 09 00 is provided in this addendum.
4	1. Please clarify the limits of the radiator covers. Do they only cover the radiator or do they go wall to wall. They don't seem to be within the perimeter walls. 2. Please advise the location in the specification for these radiator cover.	1. Radiators and respective covers are indicated on M109. 2. The intent is to match the covers on the 8th floor.
5	Drawing A-109.00, Note #18, indicates that demolition of the exterior wall is part of this contract. During the site visit, we were informed that the only demolition would be for the Exterior wall removal at the ramp location. Please confirm that the demolition of exterior wall is included in the demolition contract down the structural element, as provided at the site visit.	Note #18 refers to removal of all exterior wall furring. Additional partial exterior wall removal is required to facilitate installation of link between buildings. The only exterior wall removal is partial removal to install new ramp for the link between the two buildings and yes all exterior wall furring shall be removed and replaced with new per plans.
6	What is the full height of new walls? The only given height is from floor to ceiling. Please verify.	Refer to A701 – partitions must be framed to deck above.
7	Reference drawing A-913. BL6 (8'-2 1/8" x 2'-10", ½" tempered glazing is shown in the schedule but not on the plan. Is there BL6 to be constructed? If yes, where is it located?	Yes, BL6 is required for the training room.
8	Please clarify the extent of note #17 on drawing A-109.00.	Prime and paint per note #17 from this level up to one level above 10th floor landing.

9	Please provide the existing Fire Alarm Vendor for the building.	The existing Fire Alarm Vendor for the building is Altronix.
10	Please provide the locations of the window shades; they don't seem to be called for on the drawings.	Window shades shall be provided at every single window, within the contract area, except the (2) mechanical rooms, existing windows in staircase, existing restrooms and not in the existing electrical room.
11	Please provide lintel detail for new opening between 253 and 256 Broadway.	The contractor is responsible for the lintel at the new opening. Detail will be provided during construction.
12	Who is responsible for the black iron for the ceiling grid.	The contractor is responsible for all new black iron required for the ceiling grid.
13	1. Specification Section 06 20 00 "Finish Carpentry", 1.01 Description of Work identifies items not located or quantified on the drawings. The bidding contractor requests an architectural detail and quantities of these items. 2. Specification Section 06 41 00 "Custom Casework", 1.01 Description of Work identifies items not located or quantified on the drawings. With exception to Item 10, Louvered Panels for Cabinet Doors, the bidding contractor requests detail and quantities as to where the remaining items are to be installed. 3. Specification Section 12 50 00 "Window Shades" is missing detail in regards to model no., type and finish of window shades. Please clarify. 4. Drawing A-710 identifies kitchen appliances (i.e. refrigerator and microwave). There is no appliance finish schedule or specification for kitchen appliances. Please provide the bidding contractor with a specification and appliance schedule. 5. Demolition specifications have been incorporated into this contract. However, Drawing A-069 states demolition is for reference only. Please confirm whether we are to include demolition work as outline in specification section 02 07 00. 6. Note No. 03 of Drawing A-421 states "Windows shall be brought into a good state	1. Specifications note 'where indicated'. All quantities by the contractor should be based on drawings for completion of the work indicated. 2. Refer to 1 above. 3. Shall be selected by owner from manufacturer's standard line, GC to provide samples for owner selection. 4. Appliances are owner furnished, contractor installed. 5. Demolition is not included in this contract. 6. Note No. 03. Of Drawing A-421 is deleted. See Attachment C, Revisions to drawings. 7. Corner guards are not required.

	of repair, all broken or missing hardware, locks, balances, pole rings, or parts affecting the windows general operation shall be replaced or refurbished. All replacement parts should match existing." The bidding contractor cannot adequately price this work without further clarification to 1) the extent of repair, 2) the type and finish of hardware and glass and 3) the availability of hardware. The bidding contractor is requesting that either an allowance be included in the bid or detailed clarification as to the extent of the repair. 7. Note 3 of Drawing A-109 requests contractor to install corner guards. However, no specification is given. Please provide us with specification so we can ascertain cost of materials.	

DDC PROJECT #: **PW357MOCS**

PROJECT NAME: Mayor's Office of Contract Services Renovation

ATTACHMENT B – REVISIONS TO THE SPECIFICATIONS

1. Added Specification Section 00 96 85 "Carpet Tile"
2. Specification Section 23 09 00 "Instrumentation and Control for HVAC" is included with this addendum.

DDC PROJECT #: **PW357MOCS**

PROJECT NAME: Mayor's Office of Contract Services Renovation

ATTACHMENT C – REVISIONS TO THE DRAWINGS

The following drawings are revised and included in this addendum:

1. A109 - Added door to conference room
2. A710 - Revised the edge detail
3. A809 - Revised ceiling plan, coordination and placement of diffusers
4. A910 - Revised door schedule and provided new door type "LL"
5. A913 - Revised BL-6 to provide full height glazing
6. E109 - Provide a 100A disconnect switch 256 work area
7. E401:
    a. Tap riser in 256 Work Area and
    b. Show 100A disconnect switch serving panel RP-9E section 1 & 2
8. E502 - Remove Panel RP-9E from distribution panel SDP-PA
9. FA209 - Added two combination speaker strobes
10. FA401:
    a. FA added two combination speaker strobes
    b. Add note number 11
    c. Add 1-1/2" RGS conduit

The following drawing is revised as indicated:

1. Drawing A-421, Note No. 03 is deleted.

SECTION 09685

TILE CARPETING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all tile carpeting as indicated on Drawings and as specified herein, including carpet adhesives, underlayment, accessories and temporary protection.

1.02 SUSTAINABILITY REQUIREMENTS

A. The Contractor shall implement practices and procedures to meet the Project's sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in the Specifications, Sustainability Requirements, and as specified in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be proposed by the Contractor or their sub-contractors if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainability requirements included in the Section are as follows:

1. Meet established minimum pre-consumer percent content for tile carpeting.

2. Documentation of Recycled materials.

3. Meet Carpet and Rug Institute's "Green Label Plus" requirements.

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American Society of Testing and Materials (ASTM), latest editions.

D1335 Test Method for Tuft Bind of Pile Yarn Floor Coverings.

D2646 Test Methods for Backing Fabric Characteristics of pile yarn floor coverings.

D3936 Test Method for resistance to delamination of the secondary backing of pile yarn floor covering.

D6859 Test method for pile thickness of finished level pile yarn floor coverings.

D7330 Test method for assessment of surface appearance change in pile floor coverings using standard reference scales.

E648 Test method for critical radiant flux of floor covering systems using a radiant heat source.

E662 Test method for specific optical density of smoke generated by solid materials.

F710 Practice for preparing concrete floors to receive resilient flooring

2. Department of Commerce Standards

DOC-FF1-1970 - Methanine pill test.

3. New York City Building Code, latest edition.

4. American Association of Textile Chemists and Colorists (AATCC), latest edition.

5. American National Standards Institute/NSF International.

ANSI/NSF 140-2005: Sustainable carpet assessment standard.

6. Code of Federal Regulations

40 CFR 59, Subpart D-2002: National Volatile Organic Compound Emission Standards for Architectural Coatings.

7. NFPA

NFPA 253-2006: Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

1.04 SUBMITTALS

A. Product Data

Submit manufacturer's technical product literature and installation instructions for each type of carpeting material, adhesive and installation accessory required. Include method of installation.

1. Submit written data on physical characteristics, durability, resistance to fading and flame resistance characteristics.

B. Shop Drawings

Submit carpet tile layout and pile-direction pattern drawings for each area to receive carpet. Drawings shall show the following:

1. Carpet manufacturer, styles, patterns, and colors.
2. Pile Direction.
3. Pattern of Installation.
4. Pattern type, location and direction.
5. Types, colors, details and location of edge guards, reducing strips and other accessories.
6. Columns, partitions, built in equipment and cabinets, doors, recesses and other items that require cutouts to be made in the carpet.
7. Transition details to other flooring materials.

C. Samples

1. Carpet
   a. Submit manufacturers complete range of sample sets for each type of carpet tile specified for color and pattern selection.
   b. Submit three (3) full size samples of carpet tile for each type and color selected.
   c. Label samples, stating color, pattern, weight/sq.yd., density, pile height, location where to be installed (room and school) and manufacturer's name.
2. Carpet Reducer and Edge Strips: two pieces of each, 12" in length, min.

D. Material Certificates

Submit certificates from the manufacturers of the specified materials stating compliance with the applicable requirements set forth for all materials specified in this Section.

E. Warranties

Submit warranties per Article 1.08 of this Section.

F. Extra Materials

Provide extra materials per Article 1.09 of this Section.

G. Low Emitting Materials Compliance Submittals:

1. Provide documentation for each adhesive to be used indicating that the adhesives comply with V.O.C. requirements.

1.05 QUALITY ASSURANCE

A. Installer Qualifications

1. Certify that Installer is experienced in the supervision of carpet tile installation with at least five years experience in this type of Work and who is certified by the International Certified Floorcovering Installers Association at the Master II certification level.

B. Regulatory Requirements

1. Fire Performance Characteristics: Provide carpet tiles and adhesive, that has been tested for the following fire performance requirements, in accordance with test methods listed by an inspecting agency acceptable to N.Y. City Dept. of Buildings.

a. Flammability: As follows:

1. Rating: Passing Methenamine Pill Test.

2. Test Method: DOC FF1-1970 or ASTM D2859

b. Critical Radiant Flux: As follows:

1. Rating: Not less than 0.45 watts per sq. centimeter.

2. Test Method: ASTM E648. At least 15 minute exposure.

c. Specific Optical Density: As follows:

1. Specific Optical Density Rating: Not more than 300 in first 4 minutes tested in flaming or non-flaming mode.

2. Test Method: ASTM E662.

C. Certifications

1. Submit certified independent laboratory testing data indicating that material meets requirements for Fire Resistance specified above, in accordance with N.Y.C. Building Code Requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original bundles, clearly labeled with name of manufacturer, brand name, quality or grade and lot number.

1.07 PROJECT CONDITIONS

A. Do not deliver or install carpet tiles until spaces are enclosed and weathertight.

B. Maintain room temperature at minimum 60°F for at least 24 hours prior to installation.

C. Do not install carpet tiles over concrete substrate until concrete has cured 30 days minimum.

D. Do not install the carpet tiles until painting and finishing work has been completed.

1.08 WARRANTIES/GUARANTIES

A. Submit copies of manufacturer's product warranties for each product specified.

B. Contractor shall furnish a warranty/guarantee to include:

1. Five (5) year unconditional guarantee covering satisfactory workmanship, materials and installation, starting from the date of Substantial Completion.

2. Warranty to provide adjustments as required by Art. 3.05.

1.09 MAINTENANCE

A. Maintenance Instructions

Submit manufacturer's instructions for optimum maintenance of carpet tiles. Include precautions against materials and methods that may be detrimental.

B. Extra Materials

After completion of Work, furnish not less than 100 square feet of each type, color, and pattern of carpeting required. Deliver to the Authority's Representative (to be transferred to the custodian).

Furnish replacement materials from same production run as materials installed. Package replacement materials with appropriate labels on covering, describing contents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Patcraft Commercial Carpet, Dalton, GA 30722

B. J. & J. Industries, Dalton, GA 30722

C. The Mohawk Group, Kennesaw, GA 30144

D. or approved equal

2.02 MATERIALS

A. Carpet

The following requirements are provided as a range of product standard requirements. Actual carpets will vary according to manufacturer's requirements. Final carpet must be approved by the Project Architect.

1. Carpet Fiber: Nylon.
2. Carpet Construction: Tufted through back.
3. Dye Method: 100% Solution Dyed.
4. Carpet Style: Level-Loop or Multi Level-Loop pile.
5. Min/Max. Stitches per inch: 10 / 12 per inch
6. Gauge: 1/8 to 1/10.
7. Min./Max. Face Yarn Weight: 26/32 oz. per sq. yd.
8. Tuft Bind: 20 lb. min.
9. Min. Plies: 3
10. Backing; Primary: Reinforced thermoplastic copolymer

    Secondary: Manufacturer's standard material

11. Tile Size: 24" x 24".

12. Static Resistance: Min. 3.5 KV Resistance for 20% RH at 70% F by Test Method AATCC 134.

13. Fade Resistance: Maximum gray scale factor of 40 hours by Test Method AATCC 16E.

14. Colors: as selected by Commissioner.

15. Installation Method: Glue-down installation as approved by the N.Y.C. Department of Buildings or as otherwise specified.

B. Provide carpet tiles that comply with testing and product requirements of Carpet and Rug Institute's "Green Label Plus" program.

C. Carpet shall be manufactured with a minimum of 10% of pre-consumer content materials.

2.03 ACCESSORIES

A. Adhesive

1. As recommended by manufacturer of carpet for direct glue down applications. Comply with fire performance requirements for carpet.

2. All adhesives used shall comply with V.O.C. requirements.

B. Carpet Edge Strip

Heavy-duty vinyl carpet edge strip as manufactured by Burke Flooring, San Jose, CA. or Stoler Industries/All State Rubber Corp., Dalton, GA., minimum 2" wide anchorage flange. Colors as selected by Commissioner.

C. Carpet Reducer Strip

Solid heavy-duty vinyl carpet reducer strip as manufactured by Burke Flooring, San Jose, CA. or Stoler Industries/All State Rubber Corp., Dalton, GA., minimum 1/2 inch tapered. Colors as selected by Architect.

D. Patching Compound

Type as recommended by carpet manufacturer.

E. Floor Filler

Type as recommended by carpet manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates for moisture content and other conditions under which tile carpeting is to be installed. Notify the Authority in writing of major conditions detrimental to proper completion of the Work. Do not proceed until unsatisfactory conditions have been corrected as start of Work constitutes acceptance that all conditions are satisfactory.

B. For concrete subfloors, verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.

2. Subfloor finishes comply with the requirements specified in Section 03300 "Cast-in-Place Concrete" for slabs receiving carpet tile.

3. Subfloors are free of cracks, ridges, depressions, scale and foreign deposits.

C. For wood subfloors, verify the following:

1. Underlayment over subfloor complies with requirements specified in Division 6 Section "Rough Carpentry."

2. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

D. Installation of carpet tiles will signify the Contractor's acceptance of the substrate as satisfactory to receive his work.

3.02 PREPARATION

A. Repair minor holes, cracks, depressions, and rough areas using material recommended by carpet or adhesive manufacturer.

B. Clear away debris and scrape up cementitious deposits from surfaces to receive carpet tiles; vacuum clean immediately before installation. Check concrete surfaces to ensure no

dusting through installed carpet tiles; apply sealer where required to prevent dusting.

C. Install carpet tiles prior to installation of cabinets, furniture or demountable partitions and after all other trades, including painting, have completed their work.

3.03 CARPET TILES INSTALLATION GENERAL

A. Maintain dye lot integrity. Do not mix dye lots in same area.

B. Extend carpet under open-bottomed obstructions and under removable flanges and furnishings.

C. Provide cut-outs where required for recesses, and bind cut edges properly where not concealed by protective carpet edge strips or overlapping flanges.

D. Provide carpet edge strips where edge of carpet is exposed; anchor edge strips to substrate.

E. Provide reducer strips to meet conditions where carpet meets other flooring materials.

3.04 GLUE-DOWN INSTALLATION

A. Fit carpet tiles into each space prior to application of adhesive. Trim edges and butt cuts with seaming cement.

B. Apply adhesive uniformly, to comply with manufacturer's instructions. Butt carpet edges tightly to form seams without gaps. Promptly remove any adhesive from carpet by an approved method.

C. Unless otherwise approved by the carpet installer, allow glue-down installation a minimum of 48 hours to cure before subjecting it to any traffic, moving of furniture or final cleaning

3.05 ADJUSTMENTS

A. Included in the Work of this Contract as part of the Warranty stipulated in Art. 1.07 is the provision that the carpet subcontractor shall repair seams, joints and edges, after installation is completed

1. The Authority shall determine if and when this Work is required, but it shall be within 12 months after final approval of finished installation.

2. Contractor will be notified fourteen (14) days prior to the time he would be required to return to the site for this repair work

3. Provide service telephone number to the Authority's Representative (who will submit it to the custodian).

3.06 CLEANING

A. Immediately remove spots and smears of cement from carpet tiles with solvent.

B. Upon completion of installation, remove all tools and equipment and dispose of all waste and excess materials. Carefully and thoroughly vacuum clean the entire floor areas using a commercial type vacuum cleaner with a face-beater element satisfactory to the Authority.

C. All excess carpet tiles that are in good condition and can be used for repairs are to be left on the job site and placed in an orderly manner in an area designated by the Authority's Representative (who will submit them to the custodian).

3.07 PROTECTION

A. Upon completion and final inspection by the Authority, provide reinforced Kraft paper runners 36" wide at all traffic areas as directed by the Authority.

B. Prior to final inspection, no traffic will be allowed on the installed carpet.

END OF SECTION

SECTION 23 09 00

INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Air supply piping and tubing.
2. Control panel enclosures.
3. Thermostats.
4. Time clocks.
5. Alarm system.
6. Control air dampers.
7. Electric damper actuators.
8. Control valves.
9. Electric valve actuators.
10. Outside air measuring and modulation device.
11. Direct digital control system components.
12. Duct-mounted smoke detector.
13. Differential pressure monitor.

B. Related Sections:

1. Section 23 05 13 - Common Motor Requirements for HVAC Equipment: Product requirements for electric motors.
2. Section 23 09 93 - Sequence of Operations for HVAC Controls: Sequences of operation implemented using products specified in this section.
3. Section 23 21 16 - Hydronic Piping Specialties: Product requirements for thermometer sockets and gage taps for placement by this section. Installation requirements for piping products furnished in this section.

4. Section 23 33 00 - Air Duct Accessories: Product requirements for duct mounted thermometers. Installation requirements for dampers and other duct mounted products furnished in this section.

1.2 REFERENCES

A. Air Movement and Control Association International, Inc.:

1. AMCA 500 - Test Methods for Louvers, Dampers, and Shutters.

B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:

1. ASHRAE 62 - Ventilation for Acceptable Indoor Air Quality.

C. American Society of Mechanical Engineers:

1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.

2. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

D. ASTM International:

1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

2. ASTM A536 - Standard Specification for Ductile Iron Castings.

3. ASTM B32 - Standard Specification for Solder Metal.

4. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

5. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.

6. ASTM D2737 - Standard Specification for Polyethylene (PE) Plastic Tubing.

E. American Welding Society:

1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

F. National Electrical Manufacturers Association:

1. NEMA DC 3 - Residential Controls - Electrical Wall Mounted Room Thermostats.

2. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

G. National Fire Protection Association:

1. NFPA 72 - National Fire Alarm Code.

2. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.

H. Underwriters Laboratories, Inc.:

1. UL 1820 - Fire Test of Pneumatic Tubing for Flame and Smoke Characteristics.

1.3 SUBMITTALS

A. Section General Conditions - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate operating data, system drawings, wiring diagrams, and written detailed operational description of sequences. Coordinate submittals with information requested in Section 23 09 93.

C. Product Data: Submit description and engineering data for each control system component. Include sizing as required.

D. Samples: Submit two (2) of each type of room thermostat and cover, thermostat guard and each exposed control component.

E. Design Data: Indicate data for sizing of air tubing.

F. Manufacturer's Installation Instructions: Submit installation requirements for each control component.

G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section General Conditions - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of control components, including panels, thermostats, and sensors.

C. Operation and Maintenance Data: Submit inspection period, cleaning methods, recommended cleaning materials, and calibration tolerances.

1.5 QUALITY ASSURANCE

A. Provide pneumatic copper tubing for compressed air service located in plenums, walls and MER's.

B. Control Air Damper Performance: Test in accordance with AMCA 500.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three (3) years documented experience, and with service facilities within 100 miles of Project.

B. Installer: Company specializing in performing Work of this section with minimum 3 years' experience.

1.7 PRE-INSTALLATION MEETINGS

A. Section General Conditions - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.8 DELIVERY, STORAGE AND HANDLING

A. Section General Conditions - Product Requirements: Product storage and handling requirements.

B. Accept controls on site in original factory packaging Inspect for damage.

1.9 COORDINATION

A. Section General Conditions - Administrative Requirements: Requirements for coordination.

B. Coordinate installation of control components in piping systems with work of Section 23 21 16.

C. Coordinate installation of control components in duct systems with work of Section 23 33 00.

1.10 WARRANTY

A. Section General Conditions - Execution and Closeout Requirements: Product warranties and product bonds.

1.11 MAINTENANCE SERVICE

A. Section General Conditions - Execution and Closeout Requirements: Requirements for maintenance service.

B. Furnish service and maintenance of control system for one (1) year from Date of Substantial Completion.

C. Furnish complete service of controls systems, including callbacks. Perform minimum of four (4) complete normal inspections of approximately eight (8) hours duration in addition to normal service calls to inspect, calibrate, and adjust controls. Submit written report after each inspection.

D. Furnish four (4) complete inspections per year to inspect, calibrate, and adjust controls. Submit written report after each inspection.

E. Examine unit components bi-monthly. Clean, adjust, and lubricate equipment.

F. Include systematic examination, adjustment, and lubrication of unit, and controls checkout and adjustments. Repair or replace parts in accordance with manufacturer's operating and maintenance data. Use parts produced by manufacturer of original equipment.

G. Perform work without removing units from service during building normal occupied hours.

H. Provide emergency call back service at all hours for this maintenance period.

I. Maintain an adequate stock of parts locally, for replacement or emergency purposes. Ensure personnel availability to ensure fulfillment of this maintenance service without unreasonable loss of time.

J. Perform maintenance work using competent and qualified personnel under supervision and in direct employ of manufacturer or original installer.

K. Do not assign or transfer maintenance service to agent or subcontractor without prior written consent of Owner.

1.12 EXTRA MATERIALS

A. Section General Conditions - Execution and Closeout Requirements: Spare parts and maintenance products.

PART 2 - PRODUCTS

2.1 CONTROL COMPONENT MANUFACTURERS

A. Manufacturers:

1. Honeywell, Building Control Solutions.
2. Johnson Controls, Inc.
3. Siemens Building Technologies, Inc.
4. Or approved equal.

2.2 AIR SUPPLY PIPING AND TUBING

A. Copper Tubing: ASTM B280, Type ACR hard drawn.

1. Fittings: ASME B16.22 wrought copper.
2. Joints: Braze, AWS A5.8 BCuP silver/phosphorus/copper alloy with melting range 1190 to 1480 degrees F.

B. Copper Tubing: ASTM B88, Type K, hard drawn.

1. Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.
2. Joints: [Solder, lead free, [ASTM B32,] 95-5 tin-antimony, or tin and silver, with melting range 430 to 535 degrees F.] [Braze, AWS A5.8 BCuP silver/phosphorus/copper alloy with melting range 1190 - 1480 degrees F.]

C. Copper Tubing: ASTM B88, Type K, annealed.

1. Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.

2. Joints: [Solder, lead free, [ASTM B32,] 95-5 tin-antimony, or tin and silver, with melting range 430 to 535 degrees F.] [Braze, AWS A5.8 BCuP silver/phosphorus/copper alloy with melting range 1190 to 1480 degrees F.]

D. Virgin Polyethylene Non-metallic Tubing: ASTM D2737, with flame-retardant harness for multiple tubing.

1. Fittings: Polyethylene.

2. Joints: Compression or push-on type.

3. Limited to use in control panels.

2.3 CONTROL PANEL ENCLOSURES

A. Furnish for each system under automatic control with relays and controls mounted in cabinet and temperature indicators, pressure gages, pilot lights, push buttons and switches flush on cabinet panel face.

B. Construction: NEMA 250, Type 4 steel stainless steel enclosure.

C. Covers: Continuous hinge, held closed by flush latch operable by key.

D. Enclosure Finish: Manufacturer's standard enamel.

2.4 THERMOSTATS

A. Electric Room Thermostats:

1. Type: NEMA DC 3, 24 volts, with setback/setup temperature control.

2. Service: cooling and heating one-step cooling and one-step heating.

3. Covers: Locking with set point adjustment and setpoint indication with thermometer.

B. Line Voltage Thermostats:

1. Integral manual On/Off/Auto selector switch, single or two-pole.

2. Dead band: Maximum 2 degrees F.

3. Cover: Locking with set point adjustment and setpoint indication with thermometer.

4. Motor capacity rating.

C. Room Thermostat Accessories:

1. Thermostat Covers: Brushed aluminum.

2. Insulating Bases: For thermostats located on exterior walls.

3. Thermostat Guards: Locking transparent plastic-mounted on separate base.

4. Adjusting Key: Matching device.

5. Aspirating Boxes: For thermostats requiring flush installation.

D. Outdoor Reset Thermostat:

1. Remote bulb or bimetal rod and tube type, proportioning action with adjustable throttling range, adjustable setpoint.

2. Scale range: -10 to 70 degrees F.

E. Immersion Thermostat: Remote bulb or bimetallic rod and tube type, proportional action with adjustable setpoint and adjustable throttling range.

F. Air-stream Thermostats:

1. Remote bulb or bimetallic rod and tube type, proportional action with adjustable setpoint in middle of range and adjustable throttling range.

2. Averaging service remote bulb element: 20 feet.

3. Furnish with flange and shield.

G. Electric Low Limit Duct Thermostat:

1. Snap acting, single pole, single throw, automatic reset switch tripping when temperature sensed across any 12 inches of bulb length is equal to or below set point.

2. Bulb length: Minimum 20 feet.

3. Furnish one thermostat for every 20 sq. ft of coil surface.

H. Electric High Limit Duct Thermostat:

1. Snap acting, single pole, single throw, automatic reset switch tripping when temperature sensed across any 12 inches of bulb length is equal to or above set point.

2. Bulb length: Minimum 20 feet.

3. Furnish one thermostat for every 20 sq. ft of coil surface.

I. Time Clocks

1. Seven-day programming switch timer with synchronous timing motor and seven-day dial. Continuously charged Ni-cad battery driven for power failure with 8 hour carry over and multiple switch trippers to control systems for minimum of two and maximum of eight signals each day with two normally open and two normally closed output switches.

2. Solid-state programmable time control with three (3) separate programs, 24 hour battery carry over duty cycling, 365 day calendar with 20 programmable holidays and choice of fail safe operation for each program and system fault alarm.

2.5 ALARM SYSTEM

A. Enclosure Construction: NEMA 250, Type 4.

B. Furnish alarm panel with individual indication, horn, silenced acknowledge switch, and test switch.

C. At alarm condition indication, light flashes and alarm sounds. Horn stops when acknowledge switch is pushed and system indicates alarm conditions by continuous light until trouble condition has cleared. Alarm sounds again when second alarm occurs before first one has cleared.

D. Furnish remote panels with duplicate functions of primary panel. Furnish alarm silence/acknowledge switch to acknowledge alarm from each panel.

E. Furnish dry contacts at main alarm panel for use with remote alarm monitoring system to indicate [each] alarm condition.

2.6 CONTROL AIR DAMPERS

A. Performance: Test in accordance with AMCA 500.

B. Frames: Galvanized steel [Extruded aluminum] [Stainless steel], welded or riveted with corner reinforcement, minimum 12 gage gage.

C. Blades: Galvanized steel [Extruded aluminum] [Stainless steel], one-piece aerofoil blade, maximum blade size 8 inches wide, 48 inches long, minimum 22 gage gage, attached to minimum 1/2 inch shafts with set screws.

D. Blade Seals: Neoprene mechanically attached, field replaceable.

E. Jamb Seals: Stainless steel spring.

F. Shaft Bearings: Lubricant free, stainless steel, single row, ground, flanged, radial, anti-friction type with extended inner race.

G. Linkage Bearings: Oil impregnated sintered bronze.

H. Control Air Damper Leakage: Maximum leakage rate of 3.0 cfm per square foot at 1.0 inches wg pressure differential.

I. Maximum Pressure Differential: 6 inches wg.

J. Temperature Limits: - 40 to 200 degrees F.

2.7 ELECTRIC DAMPER ACTUATORS

A. Operation: Two-position or Reversing type proportional motor with spring-return as required by operational sequences.

B. Enclosure Rating: NEMA 250 Type 4.

C. Mounting: Direct mount.

D. Stroke: 90 seconds end to end full stroke, 15 seconds return to normal for spring return.

E. Protection: Electronic stall protection.

F. Control Input: 0-10 VDC or 0-20 mA DC.

G. Power: Nominal 24 volt AC.

H. Torque: Size for minimum 150 percent of required duty.

I. Duty cycle: rated for 65,000 cycles.

J. Accessories:

1. Cover mounted transformer.
2. Auxiliary potentiometer.
3. Damper linkage.
4. Direct drive feedback potentiometer.
5. Output position feedback.
6. Field selectable rotational, spring return direction, field adjustable zero and span.
7. End switch.

2.8 CONTROL VALVES

A. All control valves shall be fully proportioning, unless otherwise specified, quiet in operation and shall be arranged to fail safe, in either a normally open or normally closed position, in the event of power or instrument compressed air failure. The open or closed failure position shall be as specified or as required to suit process conditions. All heating valves shall be fail open; all cooling valves shall fail closed. Provisions shall be made for valves operating in sequence, with other valves or dampers, to have adjustable operating ranges and starting points to provide flexibility and adjustment in sequencing and throttling range.

B. Performance Requirements

1. Valves are to be sized and guaranteed to meet the requirements as specified and as indicated on the Drawings.
2. Unless otherwise specified, the following performance requirements shall be used for valve sizing:
   a. All control valves shall have a manual override.
   b. Flow Rates:
      1) Normal flow rate: See equipment schedule on Drawings.

2) Minimum flow rates: 20:1 turndown for heat transfer equipment; 5:1 turndown for pump discharge throttling and for pressure reducing stations.

3) Maximum flow rate: To be considered only where specified or shown on the Drawings.

c. Pressure Drops:

1) The control valve operator shall be sized to shutoff against a differential pressure equal to the pump design head plus 30%.

2) Flowing pressure drop at design conditions: If not indicated on the drawings or in the Specifications, use 5 psi.

d. Cavitation:

1) Valve selections shall be free of cavitation over the whole range of performance. Obtain relevant upstream pressure for each valve prior to valve selection, and include the documentation for the cavitation check in the shop drawing submittal.

2) All valves will be checked for cavitation and noise during their shop drawing review. If any valve shows light incipient cavitation, it may be accepted, but only after consultation with the owner's engineer. Any valve which suffers critical or damaging cavitation shall be replaced by the contractor without extra charge.

e. Ports and Trim:

1) Control valves shall be single-seated and shall have equal percentage flow characteristics.

f. Actuator for control valves shall be electric/electronic type or pneumatic type, as applicable.

C. Globe Pattern:

1. 2 inches and Smaller: Bronze body, bronze trim, rising stem, renewable composition disc, screwed ends with back seating capacity packable under pressure.

2. 2-1/2 inches and Larger: Iron body, bronze trim, rising stem, plug-type disc, flanged ends, renewable seat and disc.

3. Hydronic Systems:

   a. Rate for service pressure of 125 psig at 250 degrees F.

   b. Replaceable plugs and seats of stainless steel.

   c. Sizing: Size for 3 psig maximum pressure drop at design flow rate.

   d. Furnish two-way valves with equal percentage characteristics. Furnish three way valves with linear characteristics. Size two way valve actuators to close valves against pump shut off head.

4. Steam Systems:

   a. Rate for service pressure of 125 psig at 250 degrees F.

   b. Replaceable plugs and seats of stainless steel.

   c. Sizing: Pressure drop across steam valve at maximum flow as indicated on Drawings.

   d. Sizing: Pressure drop across steam valve equal to maximum flow of 80 percent of inlet steam pressure for low-pressure systems and 42 percent for high-pressure systems.

   e. Furnish valves with modified linear characteristics.

D. Ball Valves:

1. Threaded ends for 2-way valves 3 inches and smaller. Threaded ends for 3-way valves 2 inches and smaller.

2. Forged brass body, chrome plated brass ball and blowout proof stem and EPDM O-rings with minimum 600 psig rating.

3. Fluid Temperature Range: minus 20 to 250 degrees F.

4. Sizing: 3 psig maximum pressure drop at design flow rate.

5. Flow Characteristics: Furnish 2-way valves with equal percentage characteristics. Furnish 3-way valves with equal percentage characteristic through control port and linear characteristic through bypass port.

6. Size 2-way valve actuators to close valves against pump shut off head.

E. Butterfly Valves:

1. Service Pressure Rating: 125 psig at 250 degrees F.

2. Construction: ASTM A126 cast-iron or ASTM A536 ductile-iron body and bonnet, extended neck, stainless-steel stem, field-replaceable EPDM or Buna N sleeve and stem seals.

3. Body Style: Wafer, or Lug.

4. Disc: Stainless steel.

5. Resilient replaceable seat for service to 250 degrees F.

   a. Size for 1 psig maximum pressure drop at design flow rate.

6. Use only for open-close two-position operation.

F. Terminal Unit Control Valves: - Not Used

G. Characterized Control Valves:

1. Factory fabricated of type, body material, and pressure class based on maximum pressure and temperature rating of the piping system, unless otherwise indicated.

2. Pressure Independent Control Valves

   a. Manufacturers:

      1) Belimo Aircontrols (USA), Inc.

      2) Flow Control Industries

   b. The modulating control valves shall be pressure independent.

c. The control valves shall accurately control the flow from 0 to 100% full rated flow with an equal percentage flow characteristic. The flow shall not vary more than ± 5% due to system pressure fluctuations across the valve with a minimum of 5 PSID across the valve.

d. Forged brass body rated at no less than 400 PSI, chrome plated brass ball and stem, female NPT union ends, dual EPDM lubricated O-rings and TEFZEL characterizing disc.

e. Combination of actuator and valve shall provide a minimum close-off pressure rating of 200 PSID.

f. The control valve shall require no maintenance and shall not include replaceable cartridges.

g. All actuators shall be electronically programmed by use of a handheld programming device or external computer software. Programming using actuator mounted switches or multi-turn actuators are NOT acceptable. Actuators for 3-wire floating (tri-state) on 1/2 inch – 1 inch pressure independent control valves shall fill in place and have a mechanical device inserted between the valve and the actuator for the adjustment of flow. Actuators shall be provided with an auxiliary switch to prove valve position.

h. The actuator shall be the same manufacturer as the valve, integrally mounted to the valve at the factory via a single screw on a four-way DIN mounting base.

i. The control valve shall require no maintenance and shall not include replaceable cartridges.

j. The manufacture shall warrant all components for a period of 5 years from the date of acceptance, with the first two years unconditional.

k. The use of pressure independent valves piped in parallel to achieve the rated coil flow shall be permitted. Actuators shall be electronically programmed to permit sequencing the flow with a single control output point. The use of external devices to permit sequencing is NOT acceptable.

2.9 ELECTRIC VALVE ACTUATORS

A. Fully factory assembled. Size to operate with sufficient reserve power to provide smooth modulating action or two-position action under every condition.

B. Motor: Permanent split-capacitor or shaded-pole type. Gear trains completely oil immersed and sealed. Furnish spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.

C. Actuator: Direct-coupled type non-hydraulic designed for minimum 100,000 full-stroke cycles at rated torque. Furnish actuator with rating of not less than twice thrust needed for actual operation of valve.

1. Coupling: V-bolt and V-shaped, toothed cradle.

2. Overload Protection: Electronic overload or digital rotation-sensing circuitry.

3. Fail-Safe Operation: Mechanical, spring-return mechanism. Furnish external, manual gear release on non-spring-return actuators.

4. Furnish spring-return actuators with manual override. Complete manual override to take no more than 10 turns.

5. Power Requirements:

a. Two-Position Spring Return: 24 volt AC or DC, maximum 10 vA.

b. Modulating: 24 volt AC, maximum 15 vA.

6. Proportional Signal: 2 to 10 volt dc or 4 to 20 mA, and 2 to 10 volt dc position feedback signal.

7. Temperature Rating: minus 22 to 140 degrees F.

8. Run Time: 200 seconds open, 40 seconds closed.

D. Size for torque required for valve close-off at maximum pump differential pressure, regardless of water loop system pressures.

2.10 OUTSIDE AIR MEASURING AND MODULATION DEVICE

A. Factory assembled damper, airflow monitor, actuator, and accessories.

B. Damper and airflow measurement assembly sized to accommodate minimum outside airflow as indicated on Drawings.

C. Construction:

1. Frame: Extruded aluminum.

2. Blades:

a. Modulating Air Control:

1) Style: Airfoil-shaped, single-piece.

2) Action: Opposed.

3) Orientation: Horizontal.

4) Material: Heavy gage 6063-T5 extruded aluminum.

5) Width: Maximum 5 inches.

b. Stationary Sensing:

1) Style: Airfoil-shaped, single-piece.

2) Orientation: Horizontal.

3) Material: Heavy gage 6063-T5 extruded aluminum.

4) Width: Maximum 5-1/4 inches.

5) Finish: Anodized.

3. Bearings: Self-lubricating molded synthetic sleeve, turning in extruded hole in frame.

4. Seals:

a. Blade: Extruded rubber. Mechanically attached to blade edge.

b. Jamb: Stainless steel, flexible metal compression type.

c. Linkage: Concealed in frame.

d. Axles: Minimum 1/2 inch diameter plated steel, hex-shaped, mechanically attached to blade.

e. Mounting: Vertical.

f. Electric Actuator: 24 V, 60 Hz, modulating, with position feedback.

5. Digital Controller: Application specific controller. Programming logic and calibration in nonvolatile EPROM. Controller uses generic 0 - 10 vdc inputs and outputs for interface to building automation system.

6. Air Straightener Section: 3 inches deep section contained in 5 inch long sleeve attached to damper-airflow monitor frame.

7. Finish: Mill aluminum.

D. Performance Data:

1. Temperature Rating: Withstand -40 to 140 degrees F.

2. Accuracy: Plus or minus 5 percent.

3. Leakage: Maximum of 2 cfm per square foot at 1.0 inches wg pressure differential.

4. Measures from 15 percent to 100 percent of unit nominal air flow.

5. Adjusts air flow for temperature variations.

6. Provides 2 to 10 volt DC signal corresponding to actual air flow.

E. Accessories:

1. Actuator Heater: Allow actuator operation in ambient temperatures to -40 degrees F.

2.11 AIR FLOW MONITORING STATIONS

A. Fan Inlet Airflow Traverse Probes:

1. Provide on all fans, airflow traverse probes mounted in the fan inlets capable of continuously measuring the air handling capacity (air volume) of the respective centrifugal or vane-axial fan(s).

2. The fan inlet airflow traverse probes shall contain multiple total and static pressure sensors placed at concentric area centers along the

exterior surface of the cylindrical probe and internally connected to their respective averaging manifolds. Sensors shall not protrude beyond the surface of the probe, nor be adversely affected by particle contamination normally present in building system airflows.

3. The fan inlet airflow traverse probes (two per inlet) shall have dual end support swivel brackets suitable for mounting in the fan inlet bell and symmetrical averaging signal takeoffs and fittings, and shall be of stainless steel construction.

4. The fan inlet airflow traverse probes shall not induce a measurable pressure drop, nor shall the sound level within the system be amplified by its presence in the fan inlet bell. The probes shall be capable of producing steady, non-pulsating signals of standard total and static pressure, without need for flow corrections or factors, with an accuracy of 3% of actual flow over a fan operating range of 6 to 1 capacity turndown. The probes shall be suitable for 10,000 fpm operation.

B. Air flow measuring stations shall be provided at points indicated on the mechanical drawings or control diagrams, or required by sequences of operation, with careful attention paid to upstream and downstream straight run requirements for proper installation. Vendor requirements for AMU installation shall be carefully followed.

C. Each air flow measuring station shall be fabricated of a heavy gauge galvanized steel casing with 90 degree connecting flanges in a configuration and size approximating that of the duct or opening in which it is to be mounted. Each station shall be complete with aluminum flow straightener, copper symmetrical total and static pressure sensors and self-averaging manifolds, internal piping, and external pressure transmission ports with flexible tubing and quick-connect fittings. An identification label shall be placed on each station casing, listing model No., size, area, design flow, and differential pressure at design flow.

D. The maximum allowable pressure loss through the station shall not exceed 0.05 inches w.g. at 1500 fpm, or 0.20 inches w.g. at 3000 fpm. The sound level within the duct shall not be amplified (nor shall additional sound be generated by the air measuring unit). Each station shall be capable of measuring the airflow rate within an accuracy of 2% as determined by U.S. - G.S.A. Certification Tests, and shall contain a minimum of one total pressure sensor per 36 square inches of station measuring area.

E. Each air flow measuring station shall be furnished with an electronic differential pressure transmitter capable of transmitting a 4 to 20 mA DC output signal. Accuracy shall be ±0.5% of span including linearity, hysteresis and repeatability. Repeatability shall be ±0.05% of span. Each transmitter shall have a 1" x 2" stainless steel tag permanently attached with screws with the tag number, design flow, and the differential pressure at design flow permanently engraved on its surface.

F. Each air flow measuring station shall be furnished with a local differential pressure gage calibrated to full range with graduations in both inches W.C. and in CFM. Dwyer magnehelic 2000 series.

G. Static Pressure Sensors/Transmitters - Air Side:

1. Duct static pressure sensors shall consist of a sensing tube, transmitter and electrical box for wiring connections.

2. Two wire transmitter shall provide 4-20 mA DC output linear over specified pressure range.

3. Wiring connections shall accept 16 AWG wire.

4. Calibrated end to end accuracy shall be ±0.25% of full range, including linearity, hysteresis, and repeatability.

H. Airflow Pressurization Control Centers: - Not Used

I. Outdoor Air Monitoring Systems:

1. General:

a. The outside air flow measuring system shall be capable of measuring outdoor at low velocities.

2. Outdoor Air Flow/Temperature Measurement Devices:

a. Each ATMD shall consist of one or more sensor probes and a single, remotely mounted, microprocessor-based transmitter capable of independently processing up to 16 independently wired sensor assemblies.

1) Each sensor assembly shall contain two individually wired, hermetically sealed bead-in-glass thermistors.

2) Thermistors shall be mounted in the sensor assembly using a marine-grade, waterproof epoxy. Thermistor

leads shall be protected and not exposed to the environment.

3) The airflow rate of each sensor assembly shall be equally weighted and averaged by the transmitter prior to output.

4) The temperature of each sensor assembly shall be velocity weighted and averaged by the transmitter prior to output.

5) Each transmitter shall have a 16-character alpha-numeric display capable of displaying airflow, temperature, system status, configuration settings and diagnostics.

6) Devices using chip-in-glass or diode-case chip thermistors are not acceptable.

7) Devices using less than two thermistors in each sensor assembly are not acceptable.

8) Devices using platinum wire RTDs are not acceptable.

9) Devices having electronic circuitry mounted in or at the sensor probe are not acceptable.

10) Pitot tubes and arrays are not acceptable.

11) Vortex shedding devices are not acceptable.

3. All Sensor Probes:

a. Each sensor assembly shall independently determine the airflow rate and temperature at each measurement point.

b. Each sensor assembly shall be calibrated at a minimum of 16 airflow rates and 3 temperatures to standards that are traceable to the National Institute of Standards and Technology (NIST).

c. Airflow accuracy shall be +/-2% of Reading over the entire operating airflow range.

1) Devices whose accuracy is the combined accuracy of the transmitter and sensor probes must demonstrate

that the total accuracy meets the performance requirements of this specification throughout the measurement range.

d. Temperature accuracy shall be +/-0.15°F over the entire operating temperature range of -20°F to 160°F.

e. The operating humidity range for each sensor probe shall be 0-99% RH (non-condensing).

f. Each sensor probe shall have an integral, U.L. listed, plenum rated cable and terminal plug for connection to the remotely mounted transmitter. All terminal plug interconnecting pins shall be gold plated.

g. Each sensor assembly shall not require matching to the transmitter in the field.

h. A single manufacturer shall provide both the airflow/temperature measuring probe(s) and transmitter for each measurement location.

4. Duct And Plenum Probes:

a. Probes shall be constructed of extruded, gold anodized, 6063 aluminum tube. All wires within the aluminum tube shall be Kynar coated.

b. Probe assembly mounting brackets shall be constructed of 304 stainless steel. Probe assemblies shall be mounted using one of the following options:

1) Insertion mounted through the side or top of the duct

2) Internally mounted inside the duct or plenum

3) Standoff mounted inside the plenum

c. The number of sensor housings provided for each location shall be as follows:

Duct or Plenum Area (sq.ft.)	Total # Sensors / Location
<2	4
2 to < 4	6
4 to < 8	8

8 to <16	12
>=16	16

d. The operating airflow range shall be 0 to 5,000 FPM unless otherwise indicated on the plans.

5. Transmitters:

a. The transmitter shall have an integral LCD display capable of simultaneously displaying airflow and temperature. The LCD display shall be capable of displaying individual airflow and temperature readings of each independent sensor assembly.

b. The transmitter shall be capable of field configuration and diagnostics using an on-board pushbutton interface and LCD display.

c. The transmitter shall have a power switch and operate on 24 VAC (isolation not required).

1) The transmitter shall use a switching power supply fused and protected from transients and power surges.

2) The transmitter shall use "watch-dog" circuitry to assure reset after power disruption, transients and brown-outs.

d. All interconnecting pins, headers and connections on the main circuit board, option cards and cable receptacles shall be gold plated.

e. The operating temperature range for the transmitter shall be -20° F to 120° F. The transmitter shall be installed at a location that is protected from weather and water.

f. The transmitter shall be capable of communicating with the Siemens BMS using the following interface:

1) Linear analog output signals for airflow and temperature: Field selectable, fuse protected and isolated, 0-10VDC/4-20mA (4-wire)

g. The transmitter shall be capable of accepting an infra-red interface card for downloading airflow and temperature data

or uploading transmitter configuration data using a handheld PDA (Palm or Microsoft Windows Mobile operating systems).

1) Provide PDA upload/download software.

   a) Download software shall be capable of displaying and saving individual sensor airflow rates, the average airflow rate, individual sensor temperatures and the average temperature received from the transmitter.

   b) Upload software shall be capable of displaying and saving all setup parameters that can be configured using the on-board pushbutton interface and LCD display.

2) Provide a Microsoft Excel file capable of creating balance reports from PDA data files transferred to a Windows 98 or higher based PC.

3) Provide a Microsoft Excel file to create configuration data files that can be transferred from a Windows 2000, Windows XP or higher based PC to a PDA for upload to one or more transmitters.

4) The ATMD shall be UL listed as an entire assembly.

5) The ATMD shall carry the CE Mark for European Union shipments.

6) The manufacturer's authorized representative shall review and approve placement and operating airflow rates for each measurement location indicated on the plans.

7) A written report shall be submitted to the consulting mechanical engineer if any measurement locations do not meet the manufacturer's placement requirements.

6. Installation:

   a. Install airflow/temperature measurement devices in accordance with manufacturer's instructions at the locations indicated on the plans.

b. The mounting of the outdoor air probes shall be coordinated with the sheet metal contractor, in accordance with the manufacturer's recommendations.

c. A written report shall be submitted to the engineer confirming that the probes are installed in accordance with the manufacturer's recommendations.

d. Install electronic cables according to Division 26 requirements.

e. Install low-voltage power, signal and communication cable according to Division 16 requirements.

7. Adjusting:

a. Duct and plenum devices shall not be adjusted without approval from the engineer.

8. Acceptable Manufacturers:

a. Subject to compliance with requirements of this Section, provide products that comply with this specification by one of the following vendors:

1) EBTRON, Inc. Model GTx116-P (basis of design)

2) Kurz Instraments

3) Fluid Components International (FCI)

4) Or approved equal

2.12 INDOOR AIR QUALITY (CO2/VOC) SENSORS

A. Provide indoor air quality sensors to monitor Carbon Dioxide (CO_2) and Volatile Organic Compound (VOC) levels.

B. The sensors shall be of microprocessor-based photoacoustic type with heated stannic dioxide semiconductor.

C. The CO_2 sensors shall have no more than 1% drift during the first year of operation and minimal drift thereafter so that no calibration will be required.

D. The units shall be wall or duct mounted type as indicated on plans and in the sequence of operation.

E. Wall mounted sensors shall be provided with plastic cover whose color is approved by the architect, without LED indicators.

F. Duct mounted sensors shall be provided with LED indicators in a dust proof plastic housing with transparent cover.

G. The VOC sensor shall have automatic self-calibrating capability to ensure accuracy.

H. The sensor shall meet the following requirements:

Operating voltage:	24 VAC +/- 20%
Frequency:	50/60 Hz
Power consumption:	max. 6 VA
CO2 measuring range:	0 – 2000 ppm
Tolerance:	+/- 100 ppm
Output:	0 – 10 VAC
Calibration:	none required
VOC measurement range:	0 – 10 V VOC
Permissible air velocity in duct:	<26.2 Ft/s.

I. The sensors shall be model: Siemens QPA63 Series

2.13 RELAYS

A. Control relays shall be UL listed plug-in type with dust cover and LED "energized" indicator. Contact rating, configuration, and coil voltage shall be suitable for application.

B. Time delay relays shall be UL listed solid-state plug-in type with adjustable time delay. Delay shall be adjustable ±200% (minimum) from set point shown on plans. Contact rating, configuration, and coil voltage shall be suitable for application. Provide NEMA 1 enclosure when not installed in local control panel.

2.14 VOLTAGE TRANSFORMERS

A. AC voltage transformers shall be UL/CSA Recognized, 600 VAC rated, complete with built-in fuse protection.

B. Transformers shall be suitable for ambient temperatures of 4°C to 55°C (40°F to 130°F) and shall provide ±0.5% accuracy at 24 VAC and a 5 VA load.

C. Windings (except for terminals) shall be completely enclosed with metal or plastic material.

2.15 WEATHER STATION

A. The weather station shall initially be used to measure outside air dry bulb temperature and relative humidity.

B. The components of the station shall be:

1. Temperature monitoring accomplished through the use of Model No. 3015 which includes a thermistor, 100 feet of sensor cable, and a signal conditioner with an output of 0-1 V. Monitoring range shall be (-)40°F to (+)120°F. Accuracy shall be $\pm$1°F.

2. Relative humidity monitoring accomplished through the use of Model No. 3013 which includes an RH sensor (LVDT), 100 feet of sensor cable, and a signal conditioner with an output of 0-1 V. Monitoring range shall be 0-100% RH. Accuracy shall be $\pm$2% RH over the range of 20-90% RH.

3. PA-03-3A driver for each sensor located in the chassis to convert the 0-1V sensor output to a 4-20mA output.

4. Surge arrestors at sensor inputs to prevent system damage from high voltage lightning spikes.

5. Chassis assembly, BPC-250, used to house the signal conditioners for the sensors, the driver for each sensor output and a PS-01-2 120/240V, 50/60 Hz power supply.

6. Mounting mast of sufficient height such that sensors shall be mounted at least ten (10) feet above any obstruction. Mounting of station shall also be such that it is free from any temperature disturbances such as exhausts, etc.

7. The weather station shall be mounted on the roof of the Building.

2.16 DIRECT DIGITAL CONTROL SYSTEM COMPONENTS

A. Temperature Sensors:

1. Type: Resistance temperature detector (RTD) or thermistor.

2. Accuracy:

   a. ±1°F for standard applications. Where high accuracy is required, furnish accuracy of plus or minus 0.2°F.

   b. Sensing Accuracy: ±0.5°FF.

   c. Display Accuracy and Resolution: Minimum of plus or minus 1°F.

3. Built-in communications port.

4. Space Sensors: Digital with LCD display, day-night override button, and set point slide adjustment override options. Set point slide adjustment capable of being software limited by automation system to limit amount of room adjustment.

5. Outside Air Sensors: Watertight inlet fitting, furnish with shield from direct sunlight.

6. Duct Temperature Sensors:

   a. Rigid or averaging type as indicated in sequence of operations. Averaging sensor minimum length: 5 feet in length.

   b. Duct Cross Sections Greater Than 10 square feet: Furnish serpentine averaging element to sense stratified air temperatures.

7. Piping Temperature Sensors: Furnish with separable brass well.

8. Liquid immersion temperature:

Temperature monitoring range	+30/250°F (-1°/121°C)
Output signal	Changing resistance
Accuracy at Calibration point	±0.5°F (+/-0.3°C)

9. Duct (single point) temperature:

Temperature monitoring range	+20/120°F (-7°/49°C)
Output signal	Changing resistance

Accuracy at Calibration point	±0.5°F (+/-0.3°C)

10. Duct Average temperature:

Temperature monitoring range	+20° ±120°F(-7°/+49°C)
Output signal	4 – 20 mA DC
Accuracy at Calibration point	±0.5°F (±03°C)
Sensor Probe Length	25' L (7.3m)

B. Humidity Sensors:

1. Type: Capacitance or bulk polymer resistance.
2. Drift: Not to exceed 3 percent of full scale per year.
3. Room Sensors:
   a. Sensing Range: 0 to 100 percent.
   b. Accuracy of plus or minus 5 percent relative humidity.
4. Duct Sensors:
   a. Sensing Range: 0 to 100percent.
   b. Accuracy of plus or minus 5 percent relative humidity.
   c. Furnish with sampling chamber.
   d. Element guard.
   e. Mounting plate.
5. Outdoor Air Humidity Sensors:
   a. Sensing Range: 20 to 95 percent relative humidity.
   b. Suitable for ambient conditions of minus 40 to 170 degrees F.
   c. Accuracy: Plus or minus 2 percent relative humidity at 77 degrees F.
   d. Element guard.
   e. Mounting plate.

C. Differential Pressure Switches:

1. Furnish as specified in sequences of operation for status purposes in air and water applications.

2. Fully adjustable differential pressure settings.

3. UL Listed, SPDT snap-acting, pilot duty rated (125 VA minimum).

4. NEMA 250 Type 1 enclosure.

5. Scale range and differential suitable for intended application.

D. Static Pressure Sensor:

1. Non-directional sensor with suitable range for expected input, and temperature compensated.

2. Accuracy: plus or minus 1 percent of full scale with repeatability of 0.5 percent.

3. Output: 4 to 20 mA, 0-5 vDC, 0-10 vDC.

4. Building Static Pressure Range: minus 0.1 to 0.1 inches water column, minus 0.25 to 0.25 inches water column, minus 0.5 to 0.5 inches water column, minus 1.0 to 1.0 inches water column, jumper selectable.

5. Duct Static Pressure Range: 0 to 1 inches water column, 0 to 2.5 inches water column, 0 to 5 inches water column, 0 to 10 inches water column, jumper adjustable.

E. Liquid Differential Pressure Transmitter:

Ranges	0-5/30 inches H20
	0-25/150 inches H20
	0-125/750 inches H20
Output	4 – 20 mA DC
Calibration Adjustments	Zero and span
Accuracy	$\pm$-0.2% of span
Linearity	$\pm$-0.1% of span
Hysteresis	$\pm$-0.05% of span

F. Static Pressure Sensors:

1. Differential pressure type.

2. Sensor range closely matched to system static pressure, minus 0.5 to 0.5 inches water column, minus 1 to 1 inches water column or 0 to 2.5 inches water column.

3. Accuracy: Plus or minus 5 percent of sensing range.

G. Carbon Dioxide Sensors:

1. Sensors designed for indoor carbon dioxide levels in accordance with ASHRAE Standard 62.

2. 4 to 20 ma. linear output over range of 0 to 2000 ppm of carbon dioxide for interface to DDC control system.

3. For duct mounted sensors furnish airtight enclosure complete with sampling tube.

H. Air Flow Switches:

1. Paddle or differential pressure type, as indicated in sequences of operation.

2. UL Listed, SPDT snap-acting with pilot duty rating (125 VA minimum).

3. Appropriate scale range and differential adjustment.

4. Adjustable sensitivity.

5. NEMA 250 Type 1 enclosure.

I. Water Flow Switches:

1. Paddle type with stainless steel or bronze paddle.

2. UL Listed, SPDT snap-acting with pilot duty rating (125 VA minimum).

3. Appropriate scale range and differential adjustment.

4. Adjustable sensitivity.

5. NEMA 250 Type 1 enclosure.

6. Furnish vapor proof type for chilled water applications.

J. Carbon Monoxide Detectors: Single or multi-channel, dual-level detectors, using solid-state sensors with 3 year minimum life, maximum 15 minute sensor replacement, suitable over a temperature range of 23 to 130 degrees F, calibrated for 50 and 100 ppm, with maximum 120 second response time to 100 ppm carbon monoxide.

K. Carbon Dioxide Sensor and Transmitter: Single detectors, using solid-state infrared sensors, suitable over a temperature range of 23 to 130 degrees F, calibrated for 0 to 2 percent, with continuous or averaged reading, 4 to 20 mA output, and wall mounted.

L. Oxygen Sensor and Transmitter: Single detectors, using solid-state zircon cell sensing, suitable over temperature range of minus 32 to 1100 degrees F, calibrated for 0 to 5 percent, with continuous or averaged reading, 4 to 20 mA output, wall mounted.

M. Refrigerant Detectors: Dual-level detectors, using solid-state sensors, with alarm preset for 300 ppm, alarm indicator light, alarm silence light and button, alarm test light and button, and trouble light. Provide auxiliary relay preset for 150 ppm.

N. Occupancy Sensor: Passive infrared, with time delay, daylight sensor lockout, sensitivity control, and 180 degree field of view with vertical sensing adjustment, for flush mounting.

O. Flow Measurement - Waterside

1. Onicon Flow Measurement:

a. The hot water flow measurement systems shall be a Onicon F-1210 Dual Turbine, or approved equal.

b. The flow measurement system shall run on a 115 VAC power source.

c. Accuracy shall be + 0.25% of actual value. Linearity shall be + 0.1% of actual value. Rangeability: 100 - 1.

d. Output shall be 4-20mA DC linear over calibrated range.

e. The flow measurement system shall be in accordance with the P&ID's.

2. Straight Run Requirements:

   a. Manufacturer's recommendations shall be carefully adhered to with respect to straight run requirements to obtain specified accuracies.

   b. Submit for approval, location of flow elements in piping clearly indicating upstream and downstream straight run dimensions.

3. Tagging:

   a. Each flow element shall have a 1" x 2" stainless steel tag either permanently attached with screws or attached with a six inch chain.

   b. The stainless steel tag shall have the tag number, design flow, and, when applicable, the differential pressure at design flow permanently engraved on its surface.

P. Freezestats:

1. Install freezestats for each steam heating coil, condenser/economizer and provide protection for every square foot of coil surface area with one linear foot of element.

2. Upon detection of low temperature, the freezestats shall stop the associated supply fans and return the automatic dampers to their normal position. Provide manual reset.

3. Low limit freeze protection thermostats shall have 20' low point sensitive elements (not averaging type) installed to cover the entire coil face area. The elements shall be suspended at least 12" to 15" downstream of the preheater coil. These thermostats shall be 24 volt, two-position, manually reset type. Provide multiple freeze-stats to cover entire face of multi-coil banks. Every 20 square feet of coil requires one freeze-stat as minimum. Freezestats shall be hard wired.

Q. Firestats:

1. Provide manual reset, fixed temperature line voltage type with a bi-metal actuated switch.

2. Switch shall have adequate rating for required load.

R. Current Sensing Relay:

1. Provide solid-state, adjustable, current operated relay. Provide a relay which changes switch contact state in response to an adjustable set point value of current in the monitored A/C circuit.

2. Adjust the relay switch point so that the relay responds to motor operation under load as an "on" state and so that the relay responds to an unloaded running motor as an "off" state. A motor with a broken belt is considered an unloaded motor.

3. Provide status device for all fans and pumps.

S. Pressure Transmitter - Water Side:

1. Transmitter shall provide a 4-20 ma DC output signal linear over calibrated pressure range.

2. Transmitter shall have the capability to adjust zero and span externally over the full range of the instrument.

3. Transmitter shall be capable of operating from -20°F to +180°F and from 0 to 100%RH. Temperature effect shall be $\pm$1.0% of span per 100°F.

4. Transmitter shall be capable of withstanding pressures up to 1000 psig without damage to the instrument.

5. Stability shall be $\pm$0.25% of upper range limit for six months.

6. Accuracy (including linearity, repeatability, and hysteresis) shall be $\pm$0.25% of calibrated span.

7. Transmitter shall be capable to be pipe or panel mounted in any position with no effect upon operation.

8. Transmitter shall be furnished with flat mounting bracket for vertical mounting to a 2 inch pipe stand and drain/vent valve applicable for service conditions.

T. Differential Pressure Transmitter - Water Side:

1. Transmitter shall provide a 4-20 ma DC output signal linear over calibrated pressure range.

2. Transmitter shall have the capability to adjust zero and span externally over the full range of the instrument.

3. Transmitter shall be capable of operating from -20°F to +180°F and from 0 to 100%RH. Temperature effect shall be ±1.0% of span per 100°F.

4. Transmitter shall be capable of withstanding pressures ranging from 0 psig to 2000 psig on either side without damage to the instrument.

5. Stability shall be ±0.25% of upper range limit for six months.

6. Accuracy (including linearity, repeatability, and hysteresis) shall be ±0.20% of calibrated span. Linearity shall be ±0.1% of span; hysteresis shall be ±0.05% of span.

7. Transmitter shall be capable to be pipe or panel mounted in any position with no effect upon operation.

8. Transmitter shall be furnished with flat mounting bracket for vertical mounting to a 2 inch pipe stand and drain/vent valve applicable for service conditions.

U. Temperature Transmitter - Water Side:

1. Transmitter shall provide a 4-20 ma DC output signal linear over calibrated temperature range.

2. Transmitter shall have the capability to adjust zero and span externally over the full range of the instrument.

3. Transmitter shall be capable of operating from -25°C to +85°C.

4. Transmitter output shall fail upscale on loss of sensor input.

5. Stability shall be ±0.20% of calibrated span for six months.

6. Accuracy (including linearity, repeatability, and hysteresis) shall be ±0.20% of calibrated span.

7. Transmitter shall be furnished with mounting bracket for mounting to a 2 inch pipe stand. Transmitter shall be capable to be pipe or panel mounted in any position with no effect upon operation.

8. Transmitter to be furnished complete with integrally mounted 100 Ohm Platinum RTD sensor.

V. Differential Temperature Transmitter - Water Side:

1. Transmitter shall provide a 4-20 ma DC output signal linear over calibrated temperature range.

2. Transmitter shall have the capability to adjust zero and span externally over the full range of the instrument.

3. Transmitter shall be capable of operating from -25°C to +85°C.

4. Transmitter output shall fail upscale on loss of sensor input.

5. Stability shall be $\pm$0.20% of calibrated span for six months.

6. Accuracy (including linearity, repeatability, and hysteresis) shall be $\pm$0.10% of calibrated span.

7. Transmitter shall be capable to be pipe or panel mounted in any position with no effect upon operation.

8. Transmitter to be furnished complete with two (2) 100 Ohm Platinum RTD sensors wired in compensation loop configuration. Johnson Yokagawa or approved equal.

9. Transmitter shall be furnished with mounting bracket for mounting to a 2 inch pipe stand.

10. Natural Gas Flow Meters:

a. Meters shall be clamp-on type similar to Parametrics with 4-20 mA and pulse output.

2.17 DUCT-MOUNTED SMOKE DETECTOR

A. Product Description: NFPA 72, ionization type with the following features:

1. Auxiliary SPDT relay contact.

2. Key-operated normal-reset-test switch.

3. Duct sampling tubes extending width of duct.

4. Visual indication of detector actuation.

5. Duct-mounted housing.

B. Furnish four-wire detector with separate power supply and signal circuits.

C. Coordinate with Fire Alarm Contractor and Electrical Contractor for input, output and power requirement.

2.18 DIFFERENTIAL PRESSURE MONITOR

A. Through-the-wall measurement for differential pressure.

B. Digital Display:

1. Differential pressure in inches or Pascal.

2. State of pressure mode.

3. High pressure alarm.

4. Low pressure alarm.

5. General failure.

6. Status of door switch.

7. Anteroom status.

C. Keyed switch to change mode from positive to negative to neutral.

D. LED indicator for normal and alarm status.

E. Audible horn indicating alarm condition with silencing button.

F. Communications port.

G. Two remote pressure transmitters.

H. Auxiliary alarm relay output.

I. Door switch contact.

J. Calibration tool.

2.19 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics: In accordance with Section 26 05 03.

B. Motors: In accordance with Section 23 05 13.

C. Disconnect Switch: Factory mount disconnect switch on equipment.

2.20 DIGITAL ENERGY MONITORS – Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify pneumatic tubing is clear of water, oil or other contaminants and compressed air supply has filter and dryer operating before installing control devices or actuators.

C. Verify air handling units and ductwork installation is complete and air filters are in place before installing sensors in air streams.

D. Verify location of thermostats and s and other exposed control sensors with Drawings before installation.

E. Verify building systems to be controlled are ready to operate.

3.2 INSTALLATION

A. Install copper tubing at all locations except as follows:

1. In mechanical rooms, at installer's option, install bundled plastic tubing within equipment enclosure only.

B. Solder copper tubing joints except at instruments or equipment. Install compression fittings at instruments or equipment.

C. Install copper tubing concealed from view in finished spaces.

D. Install copper tubing exposed only in mechanical rooms and other unfinished spaces.

E. Install tubing mechanically attached to supporting surfaces.

F. Install sleeves through concrete surfaces in minimum one inch sleeves, extended 6 inches above floors and one inch below bottom surface of slabs.

G. Purge tubing with dry, oil-free compressed air before connecting control instruments.

H. Install instrument air tubing with check and hand valves to expansion tanks with Schraeder fittings and hose.

I. Install instrument air tubing with check and hand valves to chiller.

J. Install thermostats, s, space temperature sensors and other exposed control sensors after locations are coordinated with other Work.

K. Install thermostats, s, space temperature sensors and other exposed control sensors 60 inches above floor. Align with light switches and s. Install freeze protection thermostats using flanges and element holders.

L. Install outdoor reset thermostats and outdoor sensors indoors, with sensing elements outdoors with sun shield.

M. Provide separable sockets for liquids and flanges for air bulb elements. Refer to Section 23 21 16.

N. Install guards on thermostats in public areas.

O. Install control panels adjacent to associated equipment on vibration free walls or freestanding supports. Use one cabinet for each system. Install engraved plastic nameplates for instruments and controls inside cabinet and engraved plastic nameplates on cabinet face. Label with appropriate equipment or system designation.

P. Install "hand/off/auto" selector switches to override automatic interlock controls when switch is in "hand" position.

Q. Install conduit, boxes and electrical wiring, etc. in accordance with Section 26 05 03.

R. Install all devices, sensors, etc. in sheet metal enclosures to prevent dust, dirt and water damage. Provide outdoor rated enclosures for devices exposed to weather.

3.3 ELECTRICAL WIRING AND MATERIALS

A. Install, connect and wire the items included under this Section and all other Sections of HVAC work. This work includes providing required conduit, wire, fittings, backboxes, transformers and related wiring accessories. All conduit, wiring and accessories shall be installed in accordance with Division 26 Specifications.

B. Provide conduit and wiring between thermostats, aquastats and unit heater motors, all control and alarm wiring for all control and alarm devices for all Sections of Specifications.

C. Provide 120 volt, single phase, 60 hertz emergency power to every B.M.S. DDC Controller panel, HVAC/Mechanical Equipment Controller, PC console, power supply, transformer, annunciator, modems, printers and to other devices as required. It is the intent that the entire building management system except terminal equipment shall be operative under emergency power conditions in the building.

D. Provide status function conduit and wiring for equipment covered under this Section.

E. Provide conduit and wiring between the B.M.S. panels and the temperature, humidity, or pressure sensing elements, including low voltage control wiring in conduit.

F. Provide conduit and control wiring for devices specified in this Section.

G. Provide conduit and signal wiring between motor starters/disconnect switches in motor control centers and high and/or low temperature relay contacts and remote relays in B.M.S. panels located in the vicinity of motor control centers.

H. Provide conduit and wiring between the PC workstation, electrical panels, metering instrumentation, indicating devices, miscellaneous alarm points, remotely operated contractors, and B.M.S. panels, as shown on the drawings or as specified.

I. All wiring to be compliant to local building code and the NEC.

J. Provide all conduit wiring for boiler systems, chillers, AC units, etc. as required for a complete and operational system.

K. Provide electrical wall box and conduits for all wall mounted devices.

L. 120 Volt wiring will be provided by Division 26 in the Telecom Closets on each floor for VAV boxes. HVAC contractor shall extend this wiring as

required and provide all 120 volt to 24 volt transformers and wiring to each VAV box, controller, etc.

3.4 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting and balancing.

B. After completion of installation, test and adjust control equipment. Submit data showing set points and final adjustments of controls.

C. Test pneumatic systems to system pressure maximum of 30 psig. Check calibration of instruments. Recalibrate instruments out of calibration. Replace defective instruments.

3.5 DEMONSTRATION AND TRAINING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for demonstration and training.

B. Demonstrate complete operation of systems, including sequence of operation prior to Date of Substantial Completion.

C. Demonstrate complete and operating system to Owner.

END OF SECTION

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FMS ID: **PW357MOCS**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS
30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary and Required for:

CONTRACT NO. 1 **GENERAL CONSTRUCTION WORK**

Mayor's Office of Contract Services Renovation

LOCATION: **253 Broadway, 9th Floor**
BOROUGH: **Manhattan 10007**
CITY OF NEW YORK

Contractor

Dated _____ , 20 _____

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____ , 20 _____