



Department of
Design and
Construction

PROJECT ID: HH112BEES-G

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:

Bellevue Men's Shelter - Electrical Upgrade and Generator

LOCATION: 400 East 30th Street
BOROUGH: New York, 10016
CITY OF NEW YORK

CONTRACT NO. 1 GENERAL ELECTRICAL WORK

Department of Homeless Services

WSP



Date: January 11, 2018

8-095



December 14, 2018

CERTIFIED MAIL - RETURN RECEIPT REQUEST

ARK SYSTEMS ELECTRIC CORP.

27-08 42nd ROAD

LONG ISLAND CITY, NY 11101

**RE: FMS ID: HH112BEES-G
E-PIN: 85018B0101001
DDC PIN: 8502018HR0009C
BELLEVUE MEN'S SHELTER-
ELECTRICAL UPGRADE AND
GENERATOR-MANHATTAN
NOTICE OF AWARD**

Dear Contractor:

You are hereby awarded the above referenced contract based upon your bid in the amount of \$16,231,845.00 submitted at the bid opening on May 07, 2018. 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 two 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 two properly executed performance and payment bonds. If required for this contract, copies of performance and payment bonds are attached.
- (3) Submit to the Contracts Unit the following insurance documentation: (a) original certificate of insurance for general liability in the amount required by Schedule A, and (b) original certificates of insurance or other proof of coverage for workers' compensation and disability benefits, as required by New York State Law. The insurance documentation specified in this paragraph is required for registration of the contract with the Comptroller's Office.



**Department of
Design and
Construction**

Lorraine Grillo
Commissioner

Jamie Torres-Springer
First Deputy Commissioner

Justin Walter
Chief Administrative Officer
Administration

Nicholas Mendoza
Agency Chief Contracting Officer

Lorraine Holley
Deputy ACCO

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,

Lorraine Holley
DACCO

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.

PASSPort Disclosure Filing

All vendors that intend to do business with the City of New York must complete a disclosure process in order to be considered for a contract. This disclosure process was formerly completed using Vendor Information Exchange System (VENDEX) paper-based forms. The City of New York has moved collection of vendor disclosure information online. In early August 2017, the New York City Mayor's Office of Contract Services (MOCS) launched the **Procurement and Sourcing Solutions Portal (PASSPort)**, a new online procurement system that will replace the paper-VENDEX process. In anticipation of awards, all bidders must create online accounts in the new PASSPort system, and file all disclosure information when the system becomes available. **Paper submissions, including certifications of no changes to existing VENDEX packages will not be accepted in lieu of complete online filings.**

Vendors that fall into any of the following categories are required to enroll:

- Have a pending award with a City Agency; or
- Hold a current contract with a City Agency and have either an expiring VENDEX or expiring Certificate of No Change

The Department of Design and Construction (DDC) and MOCS hereby notifies all proposers that the PASSPort system is available, and that disclosure filing completion is required prior to any award through this competitive bid.

To enroll in PASSPort and to access the PASSPort website (including online training), please visit www.nyc.gov/passport. Contact MOCS at passport@mocs.nyc.gov for additional information and technical support.

PRE BID QUESTIONS (PBQs):

- **Please be advised that PBQs should be submitted to the Agency Contact Person at least five (5) business days (by 5:00 P.M. EST) prior to the bid opening date as indicated in ATTACHMENT 1 – BID INFORMATION, page 22, VOLUME 1 of 3 of this BID PACKAGE.**

**BID BOOKLET
PART A**

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PROJECT ID: HH112BEES-G

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

BID BOOKLET

TABLE OF CONTENTS

PART A		page
1.	Special Notice to Bidders.....	2
2.	M/WBE Program: M/WBE Utilization Plan.....	5
3.	Bid Form.....	10
4.	Affirmation.....	15
5.	Bidder's Identification of Subcontractors.....	16
6.	Bid Bond.....	18
7.	Contractor's Bid Breakdown	21
8.	Attachment 1 - Bid Information.....	22
 PART B		
9.	Safety Questionnaire.....	23
10.	Pre-Award Process	26
11.	Project Reference Form.....	28
12.	Contract Certificate.....	31
13.	Confirmation of Vendex Compliance.....	32
14.	Iran Divestment Act Compliance Report.....	33
15.	Construction Employment Report.....	35

**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 (718-391-2627).
 - (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 Notice to Bidders – Proprietary Items

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

CONTRACT NO. 1:

1. Proprietary Item:	<i>Fire Alarm System (Smoke Detection Sensors)</i>
Specification Section:	<i>26 40 00</i>
Manufacturer:	<i>Honeywell/Notifier</i>
Allowance Amount:	<i>Not to Exceed \$44,000.00</i>

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SPECIAL EXPERIENCE REQUIREMENTS

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

Electrical Construction Contractor X YES NO

- (A) **SPECIAL EXPERIENCE REQUIREMENTS FOR THE BIDDER IF APPLICABLE:** The Special Experience Requirements set forth below apply to the bidder only if indicated above. Compliance with such Special Experience Requirements will be determined solely by the City prior to an award of contract. Failure to comply with the Special Experience Requirements will result in rejection of the bid as non responsive.
- 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 demonstrate compliance with the special experience requirements, the bidder(s) indicated above must complete the Qualification Form included in the Bid Booklet. The City will only evaluate a project if the following criteria are met: (1) the project is described on the Qualification Form, and (2) all information on the Qualification Form is provided. The City will not evaluate any project which does not comply with the criteria set forth herein, including any project which is referred to only on the resume of an individual.
- (C) **CONDITIONS:** The City may, in determining compliance with the special experience requirements set forth above, consider prior projects completed by principal(s) or other employees of the bidder while affiliated with another entity, subject to the conditions set forth below.
- 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: HH112BEES-G

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: ARK Systems Electric Corp.

Name of Project: Riverside Health Center

Location of Project: New York, NY

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

Name: James R. Jones

Title: Construction Manager Phone Number: 212-279-1981

Brief description of work completed: Upgrade of Health Center - Including New Electrical Service New Rooftop Emergency Generator. New Emergency Infrastructure of 1000kw Roll-up Generator for Office of Emergency Management

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

Amount of Contract: Final Contract Amount: \$4,701,853.10

Date of Completion: 04/30/2014

Name of Contractor: ARK Systems Electric Corp.

Name of Project: Marshak Science Tower

Location of Project: New York, NY

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

Name: Chris Hollister

Title: Director of Operations Phone Number: 914-712-5840
Genesys Engineering

Brief description of work completed: Normal and Emergency Power as part of HVAC Upgrade to the Facility. Connection to Existing 1000kw Emergency Generator

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

Amount of Contract: \$3,600,000.00

Date of Completion: 03/15/2018

Qualification Form

Project ID: HH112BEES-G

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: ARK Systems Electric Corp.

Name of Project: PS 105Q - Sandy Restoration: Heating Plant Upgrade and Electrical Systems

Location of Project: Queens, NY

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

Name: Mohan Kumar

Title: Elec. Engineer Phone Number: 973-777-9696

Brief description of work completed: Replacement of Electrical Distribution submerged by Sandy New Feeders, and Installation of New Generator for School.

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

Amount of Contract: \$2,930,000

Date of Completion: 03/31/2018

Name of Contractor: ARK Systems Electric Corp.

Name of Project: Bellevue Hospital

Location of Project: New York, NY

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

Name: Thomas Tilleli

Title: Partner / CM Phone Number: 212-279-1981

Brief description of work completed: General Construction Contract for the installation of New 1500KW Generator including Electrical, Mechanical and GC Work

Was the work performed as a prime or a subcontractor: Prime as GC, and Electrical Self-Perform

Amount of Contract: \$5,292,000.00

Date of Completion: Electrical and Generator Work complete as of 04/30/18, Non- Electrical Changes to the prime GC contract pushed final completion to August 2018.

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 report periodically about the contracts awarded by its direct subcontractors to indirect subcontractors (as defined in Section 6-129(c)(22)). **PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or**

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

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

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

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

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

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

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

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

(d) Agency may grant a full or partial waiver of the Participation Goals to a bidder, proposer or contractor, as applicable, who demonstrates—before submission of the bid, proposal or Task Order, as applicable—that it has legitimate business reasons for proposing the level of subcontracting in its M/WBE Utilization Plan. In making its determination, Agency shall consider factors that shall include, but not be limited to, whether the bidder, proposer or contractor, as applicable, has the capacity and the bona fide intent 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 #: 11-3405991

APT E-
PIN#: 85018B0101

(3)

Contract # 1 - Electrical Work

SCHEDULE B - MWBE Utilization Plan

Part I: MWBE Participation Goals

Part I to be completed by contracting agency

Contract Overview

APT E-Pin # 85018B0101 FMS Project ID#: HH112BEES-G
 Project Title/Agency Bellevue Men's Shelter - Electrical Upgrade and Generator
 PIN # 8502018HR0009C
 Bid/Proposal
 Response Date: April 27, 2018
 Contracting Agency Department of Design and Construction
 Agency Address 30-30 Thomson Avenue City Long Island City State NY Zip Code 11101
 Contact Person Vernon Lewin Title MWBE Liaison & Compliance Analyst
 Telephone # (718) 391-2130 Email lewinve@ddc.nyc.gov

This Project consists of installation of a 480-277V, 750KW emergency generator on the roof bulkhead with modification to existing bulk head exterior louver and door. Provide structure support to new generator and provide fire protection to the room. Run new emergency feeder down to the basement level within existing shaft to be further modified to meet the new emergency feeder and fuel oil riser requirement. Install a new 4,000 gallon tank on the cellar floor for the generator fuel supply and provide fire protection to the fuel oil tank room. Replacing all existing emergency panels with new feeders. Upgrade normal electrical service switchgear and replace two existing normal electrical distribution switchboards and relocated to the basement and above the flood level. Replace all existing panelboard and electrical feeders.

Prime Contract Industry: Construction

Group	Percentage	
<u>Unspecified *</u>	<u>24</u>	<u>%</u>
<u>or</u>		
<u>Black American</u>	<u>UNSPECIFIED</u>	<u>%</u>
<u>Hispanic American</u>	<u>UNSPECIFIED</u>	<u>%</u>
<u>Asian American</u>	<u>UNSPECIFIED</u>	<u>%</u>
<u>Women</u>	<u>UNSPECIFIED</u>	<u>%</u>
<u>Total Participation Goals</u>	<u>24</u>	<u>%</u>

Line 1

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

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Tax ID #: 11-3405991

APT E-
PIN#: 85018B101

SCHEDULE B - Part II: M/WBE Participation Plan

Part II to be completed by the bidder/proposer:

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

Section I: Prime Contractor Contact Information

Tax ID #	<u>11-3405991</u>	FMS Vendor ID #	<u>0006296741</u>
Business Name	<u>ARK Systems Electric Corp.</u>	Contact Person	<u>Raj Lodaya</u>
Address	<u>27-08 42nd Road, Long Island City, NY 11101</u>		
Telephone #	<u>718-482-3922</u>	Email	<u>raj@arkelectric.com</u>

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

PRIME CONTRACTOR ADOPTING AGENCY M/WBE PARTICIPATION GOALS

<input checked="" type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Agency M/WBE Participation Goals.	Total Bid/Proposal Value	Agency Total Participation Goals (Line 1, Page 6)	Calculated M/WBE Participation Amount
<p>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.</p> <p>Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.</p>	<p>✓</p> <p>16,231,845.00</p> <p>\$</p>	<p>✓</p> <p>24%</p> <p>X</p>	<p>✓</p> <p>\$ 3,895,643.00</p> <p>Line 2</p>

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

<input type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Modified M/WBE Participation Goals.	Total Bid/Proposal Value	Adjusted Participation Goal (From Partial Waiver)	Calculated M/WBE Participation Amount
<p>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.</p> <p>Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.</p>	<p>\$</p> <p>X</p>	<p>=</p>	<p>\$</p> <p>Line 3</p>

Tax ID #: 11-3405991

APT E- PIN#: 85018B101

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

MWBE - ASIAN

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

MBE WBE

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

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

Section IV: General Contract Information

What is the expected percentage of the total contract dollar value that you expect to award in subcontracts for services, regardless of MWBE status? % 11

- TIME FRAME ?
- DOLLAR AMOUNT ?
- MWBE ?

✓ Scopes of Subcontract Work

Section V: Vendor Certification and Required Affirmations

I hereby
1) acknowledge my understanding of the MWBE participation requirements as set forth herein and the full and provisions of Section 6-123 of the Administrative Code of the City of New York (Sec. 6-123) and the rules promulgated thereunder;
2) affirm that the information supplied in support of this MWBE Utilization Plan is true and correct;
3) agree, if awarded this Contract, to comply with the MWBE participation requirements of this Code and the related provisions of Section 6-123 of the Administrative Code of the City of New York;
4) agree and affirm that it is a material part of this Contract that the Vendor will award the total dollar value of the MWBE Participation Goals to certified MBE and/or WBE; and that all subcontracts awarded or entered into by the Vendor will be awarded to certified MBE and/or WBE; and
5) agree and affirm that award of this Contract is subject to the Vendor's good faith efforts to meet the MWBE Participation Goals of all awarding agencies and that the Vendor will be required to submit to the Agency, and obtain the participation of certified MBE and WBE firms.

Signature [Signature]
Print Name Ralph Lodaya

Date 05/07/2018
Title Vice-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: _____ %

**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: HH112BEES-G

**Bellevue Men's Shelter - Electrical Upgrade and Generator
400 East 30th Street
New York, 10016**

Name of Bidder: ARK Systems Electric Corp.

Date of Bid Opening: 04/27/2018

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

Place of Business of Bidder: 27-08 42nd Road, Long Island City, NY 11101

Bidder's Telephone Number: 718-482-3922 Bidder's Fax Number: 718-482-3923

Bidder's Email Address: raj@arkelectric.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: Bhavanji Lodaya
18 De Chiaro Lane, Williston Park, NY 11596

Name and Home Address of Secretary: Anjana Woolsey
13 Barry Park Court, Searingtown, NY 11507

Name and Home Address of Treasurer: Anjana Woolsey
13 Barry Park Court, Searingtown, NY 11507

BID FORM

The above-named Bidder affirms and declares:

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

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

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

6. Compliance Report

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

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

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

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

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

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

Section V: Vendor Certification and Required Affirmations:

I hereby:

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

BID FORM

PROJECT ID: HH112BEES-G

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

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

Total Price For Labor	Total Price for Material Sold and Delivered	Total Price for Item A=
\$ <u>7,762,500.00</u> +	\$ <u>7,762,500.00</u>	\$ <u>15,525,000.00</u>

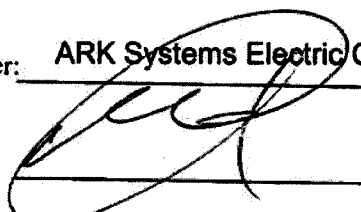
- B. **ALLOWANCE** for Incidental Asbestos Abatement (Section 028013 of the Specifications) \$50,000.00
- C. **AMOUNT** for Proprietary Items (pages 2a) \$44,000.00
- D. **Unit Price Schedule** \$ 612,845.00
- TOTAL BID PRICE (Add A + B + C and D)** \$16,231,845.00
(a/k/a BID PROPOSAL)

BB 5/7/18

BIDDER'S SIGNATURE AND AFFIDAVIT

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

Bidder: ARK Systems Electric Corp.

By: 
(Signature of Partner or corporate officer)

Attest: 
(Corporate Seal) Secretary of Corporate Bidder

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

Unit Price Schedule

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

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

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

CSI	Item#	Item Description	Quant.	Units	Unit Price	Total
024191	1	Selective removals				
	1.1	Remove ducts & accessories	100	SF	14	1,400.00
	1.2	brick & temp shoring	100	SF	288	28,800.00
072100	2	Insulation for service upgrade and generator				-
	2.1	Partitions - 2hr rated; Type 1	100	SF	2	200.00
	2.2	insulation	200	SF	26	5,200.00
	2.3	Fire rated ceiling	40	SF	30	1,200.00
051000	3	Bulkhead, etc.)				-
	3.1	Cellar and Basement Level	2200	LBS	15	33,000.00
	3.2	First - Roof Floor opening	650	LBS	15	9,750.00
	3.3	West Bulkhead	1300	LBS	15	19,500.00
	3.4	Generator room & roof & tank floor	1150	LBS	15	17,250.00
	3.5	Bulkhead Roof West	200	SF	240	48,000.00
	3.6	Installation of various steel, incl grind & paint extg.	6	TON	30000	180,000.00
260001	4	Reroute/Extend branch circuits.	6	EA	10000	60,000.00
262416	5	Installation of new panel board and accessory	3	EA	3500	10,500.00
260519	6	Installation of 600 volt wires and MI cable				-
	6.1	#2 Wire	300	LF	20	6,000.00
	6.2	#10 Wire	100	LF	5	500.00
	6.3	#12 Wire	300	LF	5	1,500.00
260533	7	Installation of raceways and conduits				-
	7.1	3 1/2" Conduit	100	LF	100	10,000.00
	7.2	1" Conduit	30	LF	20	600.00
	7.3	3/4" Conduit	100	LF	18	1,800.00
262726	8	Coordination i.e duplex,switch	6	EA	250	1,500.00
265100	9	Lighting	1	EA	250	250.00

283100	10	Installation of fire alarm devices	1	EA	250	250.00
230540	11	Insulation pipe for acoustic	60	LF	21	1,260.00
231113	12	Ductwork for the generator	275	LBS	19	5,225.00
235210	13	Piping and accessory for the service upgrade	50	LF	35	1,750.00
235210	14	Fuel oil piping for generator	75	LF	228	17,100.00
221316	15	Rerouting of sanitary waste piping	150	LF	120	18,000.00
221116	16	Domestic water piping and fitting material	221	LF	400	88,400.00
220719	17	material	292	LF	30	8,760.00
221316	18	Sanitary waste and vent piping & fitting material				-
	18.1	4" Dia pipe/fittings / supports	66	LF	110	7,260.00
	18.2	2" Dia pipe/fittings / supports	46	LF	95	4,370.00
	18.3	Tie-in to existing system	14	EA	1680	23,520.00
Total Amount of Unit Price Work						
* Insert Total amount of Unit Price Work on line D of Bid Form						612,845.00

Note: All quantities are approximate

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

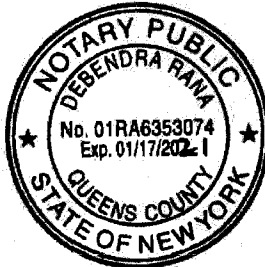
STATE OF NEW YORK, COUNTY OF Queens ss:
Rajiv Lodaya

_____ being duly sworn says:
I am the Vice-President of the above named corporation whose name is subscribed to and which executed
the foregoing bid. I reside at New Hyde Park, NY
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
7th day of May, 2018

[Signature]
Notary Public



AFFIRMATION

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

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

Full Name of Bidder: ARK Systems Electric Corp.
Address: 27-08 42nd Road
City: Long Island City State: NY Zip Code: 11101

CHECK ONE BOX AND INCLUDE APPROPRIATE NUMBER:

- A - Individual or Sole Proprietorship *
SOCIAL SECURITY NUMBER

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

- C - Corporation
EMPLOYER IDENTIFICATION NUMBER
11-3405991

By: 
Signature: _____

Title: Rajiv Lodaya, Vice-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

NOTICE TO BIDDERS

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

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

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

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

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

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

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

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

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

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

Project ID: HH112BEES-G

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

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

1. **PLUMBING CONTRACTOR:**

Description of Plumbing Work:

Varsity Plumbing & Heating Inc.
(Print Name)

Sanitary &
Domestic Water

Agreed amount to be paid Subcontractor: \$ 104,576.00

2. **HVAC CONTRACTOR:**

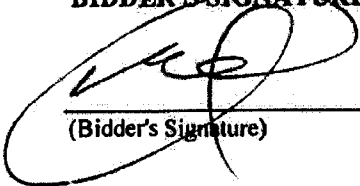
Description of HVAC Work:

A.K.S. International
(Print Name)

Fuel Oil Piping &
Mechanical Work

Agreed amount to be paid Subcontractor: \$ 988,400.00

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



Rajiv Lodaya, ARK Systems Electric Corp.

(Bidder's Signature)

(Print Name)

27-08 42nd Road, Long Island City, NY 11101

(Address)

Vice-President

718-482-3922

718-482-3923

05/07/2018

(Title)

(Phone #)

(Fax#)

(Date)

**BID BOND I
FORM OF BID BOND**

KNOW ALL MEN BY THESE PRESENTS. That we, ARK Systems Electric Corp.

27-01 Queens Plaza North, 13th Floor, Long Island City, NY 11101

hereinafter referred to as the "Principal", and Fidelity and Deposit Company of Maryland

300 Interpace Pkwy., Morris Corp. I, Bldg. B/C

Parsippany, NJ 07054

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

Ten Percent of Amount Bid

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

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

Bellevue Men's Shelter - Electrical Upgrade & Generator, New York, 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 fulfillment of such Contract, which bonds shall be satisfactory in all respects to the City and shall be executed by good and sufficient sureties, and
- (c) In all respects perform the agreement created by the acceptance of said Proposal as provided in the Information for Bidders, bound herewith and made a part hereof, or if the City shall reject the aforesaid Proposal, then this obligation shall be null and void; otherwise to remain in full force and effect.

BID BOND 2

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

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

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

The surety, for the value received, hereby stipulates and agrees that the obligations of the Surety and its bond shall in no way be impaired or affected by any postponements of the date upon which the City will receive or open bids, or by any extensions of the 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 12th day of April, 2018.

(Seal)

ARK Systems Electric Corp. (L.S.)
Principal

By:

Rajiv Lodaya, Vice-President

(Seal)

Fidelity and Deposit Company of Maryland
Surety

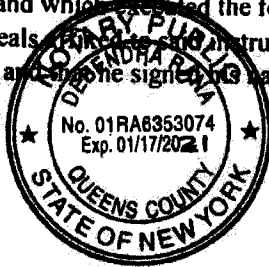
By:

Deborah L. Severin
Deborah L. Severin, Attorney-in-Fact

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:
On this 7th day of May, 2018, before me personally came Rajiv Lodaya to me known, who, being by me duly sworn, did depose and say that he resides at New Hyde Park, NY that he is the Vice-President of ARK Systems Electric Corp. 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 the instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.



[Signature]
Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF A PARTNERSHIP

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

Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL

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

Notary Public

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES

ACKNOWLEDGEMENT OF SURETY

STATE OF NEW YORK }
COUNTY OF NASSAU } ss:

On April 12, 2018 before me personally came Deborah L. Severin to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of Fidelity and Deposit Company of Maryland the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.

ROSANNE CALLAHAN
Notary Public, State of New York
No. 0104002444
Qualified in SUFFOLK County
Commission Expires May 10, 20 19

R. Callahan

Notary Public

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by **DAVID MCVICKER, Vice President**, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Peter HENRY, Rosanne CALLAHAN, Robert FINNELL, Janice R. FISCINA, Jennifer L. JOHNSTON, Deborah L. SEVERIN, Fern PERRY and David W. ROSEHILL**, all of Plainview, New York, EACH its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.


The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

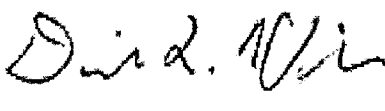
IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 20th day of April, A.D. 2017.

ATTEST:

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND**



By: 
Secretary
Michael McKibben


Vice President
David McVicker

State of Maryland
County of Baltimore

On this 20th day of April, A.D. 2017, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **DAVID MCVICKER, Vice President, and MICHAEL MCKIBBEN, Secretary**, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.





Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2019

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this _____ day of _____, 20

APR 12 2018



Michael Bond
Michael Bond, Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT ALL REQUIRED INFORMATION TO:

Zurich American Insurance Co.
Attn: Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056

THE FIDELITY AND DEPOSIT COMPANY

OF MARYLAND

600 Red Brook Blvd., Suite 600, Owings Mills, MD 21117

Statement of Financial Condition

As Of December 31, 2017

ASSETS

Bonds	\$ 131,463,323
Stocks	23,365,385
Cash and Short Term Investments	15,943,690
Reinsurance Recoverable	7,520,824
Federal Income Tax Recoverable	62,266
Other Accounts Receivable	35,672,323
TOTAL ADMITTED ASSETS	<u>\$ 214,027,811</u>

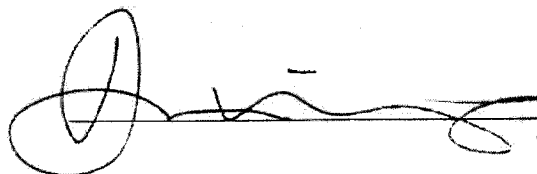
LIABILITIES, SURPLUS AND OTHER FUNDS

Reserve for Taxes and Expenses	\$ 580,990
Ceded Reinsurance Premiums Payable	42,235,595
Securities Lending Collateral Liability	0
TOTAL LIABILITIES	<u>\$ 42,816,584</u>
Capital Stock, Paid Up	\$ 5,000,000
Surplus	<u>166,211,227</u>
Surplus as regards Policyholders	171,211,226
TOTAL	<u>\$ 214,027,811</u>

Securities carried at \$62,198,396 in the above statement are deposited with various states as required by law.

Securities carried on the basis prescribed by the National Association of Insurance Commissioners. On the basis of market quotations for all bonds and stocks owned, the Company's total admitted assets at December 31, 2017 would be \$213,515,173 and surplus as regards policyholders \$170,698,588.

I, DENNIS F. KERRIGAN, Corporate Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company on the 31st day of December, 2017.


Corporate Secretary

State of Illinois }
City of Schaumburg } SS:

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 9th day of March, 2018.


Notary Public



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Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	CONTRACT 1 - GENERAL CONSTRUCTION WORK							
01 0000	GENERAL REQUIREMENTS							
01 0000	GENERAL REQUIREMENTS							
	Temporary Power/Lighting and General Requirements	1.00	LS	400,000.00	400,000.00	100,000.00	100,000.00	500,000
	Subtotal							500,000
02 0000	EXISTING CONDITIONS							
02 4119	SELECTIVE STRUCTURE DEMOLITION							
	Service Upgrade							
	Architectural							
	Electric Switch Gear Room							
	Temporary Protection, etc.	w/ 010000	ls					
	Housekeeping Pads	None Show	sf					
	Remove extg walls	19.00	lf	100.00	1,900.00	1,153.68	21,920.00	23,820
	Remove doors	2.00	ea	50.00	100.00	1,000.00	2,000.00	2,100
	Riser Works							
	Utilize extg risers		ea					
	Generator							
	Architectural							
	ATS / Transformer Room		sf					
	Remove extg walls	121.00	lf	20.00	2,420.00	300.00	36,300.00	38,720
	Remove doors	7.00	ea	50.00	350.00	700.00	4,900.00	5,250
	Remove lockers (20ea) & assorted mirrors, shelving, etc	1.00	ls	500.00	500.00	6,500.00	6,500.00	7,000
	Remove ceiling system	1,378.00	sf	2.00	2,756.00	10.00	13,780.00	16,536
	Temporary Protection, etc	w/ 010000	ls					
	Penthouse Works		sf					
	Remove ducts & accessories	1.00	sf	5,000.00	5,000.00	30,534.00	30,534.00	35,534



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEE5-G

Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
03 00 00	CONCRETE							
03 01 30	Concrete Repair							
	Concrete Repair	1,130.00	cy	15.00	16,950.00	30.00	33,900.00	50,850
03 30 00	CAST-IN-PLACE CONCRETE							
	<i>Cast-in-Place Concrete</i>							
	Fuel Oil Tank Room							
	Waterproof floor & walls	w/ 071326	sf					
	6" conc slab over extg and waterproofing; mesh	927.00	sf	10.00	9,270.00	30.00	27,810.00	37,080
	6" conc pad over new slab	175.00	sf	50.00	8,750.00	200.00	35,000.00	43,750
	4" conc flood wall, doweled into extg structure	21.20	cy	2,000.00	42,400.00	13,298.11	281,920.00	324,320
	Sub Total: Cast-in-Place Concrete							456,000
04 00 00	MASONRY							
04 21 13	BRICK MASONRY							
	Face Brick Replacement; Provision #4	71.00	sf	80.00	5,680.00	150.00	10,650.00	16,330
	Sub Total: Brick Masonry							16,330
04 22 00	Concrete Masonry Unit							
	Fuel Oil Tank Room	1,420.00		30.00	42,600.00	108.50	154,070.00	196,670
	Infill windows with CMU; 4' wide	3.00	loc	1,000.00	3,000.00	2,000.00	6,000.00	9,000
	Sub Total: Concrete Unit Masonry							205,670
05 0000	METALS							
05 1200	STRUCTURAL STEEL							
	<i>Service Upgrade</i>							
	Structural							
	Basement equipment dunnage							
	Steel	1,000.00	lb	5.00	5,000.00	8.00	8,000.00	13,000
	Clips, angles, etc	200.00	lb	5.00	1,000.00	8.00	1,600.00	2,600
	Notch into extg structure	7.00	loc	50.00	350.00	700.00	4,900.00	5,250

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Fire watch during welding	20.00	days	-	-	1,000.00	20,000.00	20,000.00
	Installation of various steel, incl grind & paint extg; Provision #5	0.50	ton	1,000.00	500.00	5,000.00	2,500.00	3,000.00
	Switchgear Room							
	Access Stairs; 2 step, to tank room	1.00	set	2,000.00	2,000.00	6,000.00	6,000.00	8,000.00
	Structural steel frame support to stair and grating (2/A-101)	300.00	lb	5.00	1,500.00	8.00	2,400.00	3,900.00
	Grating	226.00	sf	40.00	9,040.00	70.00	15,820.00	24,860.00
	Generator							
	Generator Dunnage & Roof, Bulkhead							
	New Steel	2,000.00	lb	5.00	10,000.00	8.00	16,000.00	26,000.00
	Clips, angles, etc	200.00	lb	5.00	1,000.00	8.00	1,600.00	2,600.00
	Bolt to extg conc floor		loc					
	Notch into extg structure	6.00	loc	50.00	300.00	700.00	4,200.00	4,500.00
	Concrete slab over metal deck	500.00	sf	20.00	10,000.00	80.00	40,000.00	50,000.00
	Conduit Slab Openings							
	New steel	1,000.00	lb	5.00	5,000.00	8.00	8,000.00	13,000.00
	Clips, angles, etc	200.00	lb	5.00	1,000.00	8.00	1,600.00	2,600.00
	New slab openings - 15" x 30"	8.00	ea	-	-	500.00	4,000.00	4,000.00
	Notch into extg structure	29.00	loc	50.00	1,450.00	700.00	20,300.00	21,750.00
	Concrete slab ove metal deck		sf					
	Fire watch, protection, etc	1.00	ls	-	-	35,000.00	35,000.00	35,000.00
	ATS / Transformer Room							
	Access Stairs; 2 step, to tank room	2.00	set	2,000.00	4,000.00	6,000.00	12,000.00	16,000.00
	Structural steel frame support to stair and grating (2/A-101)	20,000.00	lb	5.00	100,000.00	8.05	160,960.00	260,960.00
	Grating	518.00	sf	40.00	20,720.00	70.00	36,260.00	56,980.00
	Installation of various steel, Incl grind & paint extg; Provision # 6	1.00	ton	2,000.00	2,000.00	-	-	2,000.00



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Sub Total : Structural Steel - Electrical							576,000
05 5000	METAL FABRICATIONS							
05 51 00	Metal Stairs							
	Fuel Oil Tank Room							
	Access Stairs; 2 step, to tank room	1.00	set	3,000.00	3,000.00	9,500.00	9,500.00	12,500
	Structural steel frame Support to stair (2/A-101)	200.00	lb	20.00	4,000.00	30.00	6,000.00	10,000
	Wall mounted ladder; +/- 12' to access hatch	1.00	ea	2,500.00	2,500.00	5,000.00	5,000.00	7,500
	Sub Total : Metal Stairs							30,000
05 5213	PIPE AND TUBE RAILINGS							
	Pipe & Tube Railings	w/05 12 00	cy					
05 70 00	Ornamental Metals							
	Ornamental Metals	1.00	cy	6,000.00	6,000.00	12,000.00	12,000.00	18,000
								18,000
07 0000	THERMAL AND MOISTURE PROTECTION							
07 1326	Self-Adhering Waterproofing							
	Self-Adhering Waterproofing	2,226.00	cy	7.55	16,800.00	11.32	25,200.00	42,000
								42,000
07 21 00	Insulation							
	Service Upgrade							
	Electric Switch Gear Room							
	Partitions - Type 2 - 2hr rated - insulation only	170.00	sf	0.75	127.50	4.25	722.50	850
	Generator							
	Architecturals							
	ATS / Transformer Room							
	Partitions - 2hr rated; Type 1	790.00	sf	0.75	592.50	4.25	3,357.50	3,950
	Partitions - 2hr rated lined; rebar in extg CMU - no insulation							
	Penthouse Works	840.00	sf	0.75	630.00	4.25	3,570.00	4,200
	Partitions - 2hr rated; Type 1							



Department of Design and Construction

Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Fire rated ceiling	333.00	sf	0.75	249.75	4.25	1,415.25	1,665
	Conduit Shaft		lf					
	2hr shaft wall - Type 2	480.00	sf	0.75	360.00	4.25	2,040.00	2,400
	Fuel Oil pipe chase / shaft		lf					
	2hr shaft wall - Type 2	204.00	sf	0.75	153.00	4.25	867.00	1,020
	One hr rated walls at fire suppression rooms	170.00	sf	0.75	127.50	4.63	787.50	915
	Sub Total : Insulation							15,000
07 62 00	Sheet metal Flashing & Trim							
	Generator							
	Penthouse Works		sf					
	Roof penetrations, openings, flashings, patch, etc	1.00	loc	10,000.00	10,000.00	18,800.00	18,800.00	28,800
	Sub Total : Sheet Metal Flashing & Trim							28,800
#####	Sprayed Fire Resistive Materials							
	Sprayed Fire Resistive Materials	1.00	Ls	10,000.00	10,000.00	25,000.00	25,000.00	35,000
	Sub Total : Sprayed Fire Resistive Materials							35,000
07 84 13	Through Penetration Firestop Systems							
	Service upgrads							
	Through Penetration Firestop Systems	1.00	sf	20,000.00	20,000.00	64,000.00	64,000.00	84,000
	Generator							
	Fireproofing to fuel tank room	1.00	sf	20,000.00	20,000.00	40,000.00	40,000.00	60,000
	Sub Total : Through Penetration Firestop Systems							144,000
07 92 00	Joint Sealants							
	Generator							
	Joint Sealants	1.00	sf	2,000.00	2,000.00	4,000.00	4,000.00	6,000
								6,000
08 00 00	Openings							
08 11 13	Hollow Metal Doors & Frames							
	Service Upgrade	4.00		750.00	3,000.00	600.00	2,400.00	5,400
	Electric Switch Gear Room							
	Door - Dbl	1.00	pr	1,500.00	1,500.00	1,200.00	1,200.00	2,700



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM
CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	<i>Generator</i>							
	Architectural							
	ATS / Transformer Room		sf					
	Door - Dbl	1.00	ea	1,500.00	1,500.00	1,200.00	1,200.00	2,700
	Penthouse Works		sf					
	New double door; exterior	2.00	pr	4,300.00	8,600.00	1,800.00	3,600.00	12,200
	Fuel Oil Tank Room		sf					
	Door - Sgl	2.00	ea	750.00	1,500.00	600.00	1,200.00	2,700
	One hr rated dbl door at fire suppression Rooms	1.00	ea	1,500.00	1,500.00	1,200.00	1,200.00	2,700
	Fire Rated Access Doors	1.00	ea	300.00	300.00	100.00	100.00	400
	Sub Total : Hollow Metal Doors & Frames							28,800
08 31 13	Access Doors							
	Access Doors	1.00	ea	5,000.00	5,000.00	10,000.00	10,000.00	15,000
08 34 83	Floor Doors							
	<i>Generator</i>							
	30" x 30" Floor doors	1.00	ea	5,000.00	5,000.00	10,000.00	10,000.00	15,000
	Sub Total : Floor Doors							30,000
08 39 00	Flood Protection Doors							
	<i>Generator</i>							
	24" x 30' access doors	1.00	ea	2,000.00	2,000.00	3,000.00	3,000.00	5,000
	Sub Total : Flood Protection Doors							5,000
08 71 00	Door Hardware							
	<i>Service Upgrade</i>							
	Electric Switch Gear Room	4.00		350.00	1,400.00	350.00	1,400.00	2,800
	Door - Dbl	1.00	pr	700.00	700.00	700.00	700.00	1,400



Department of Design and Construction

Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HHI12BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	<i>Generator</i>							
	<i>Architectural</i>							
	ATS / Transformer Room	1.00	sf	700.00	700.00	700.00	700.00	1,400
	Door - Dbl		ea					
	<i>Penthouse Works</i>							
	New Double Door; Exterior	2.00	pr	1,300.00	2,600.00	1,300.00	2,600.00	5,200
	<i>Fuel Oil Tank Room</i>							
	Door - Sgl	1.00	ea	350.00	350.00	350.00	350.00	700
	One hr rated dbl door at fire suppression rooms	1.00	ea	250.00	250.00	250.00	250.00	500
	Sub Total : Door Hardware							12,000
08 91 19	Fixed Louvers							
	<i>Generator</i>							
	<i>Architectural</i>							
	<i>Penthouse Works</i>							
	Remove louver & copper panel; approx 6' x 13'	1.00	loc	20.00	20.00	1,500.00	1,500.00	1,520
	New louvers, incl surrounding repairs, etc	193.00	sf	30.00	5,790.00	91.66	17,690.00	23,480
	Sub Total : Fixed Louvers							25,000
09 0000	FINISHES							
09 22 16	Non Structural Metal Framing							
	<i>Service Upgrade</i>							
	Electric Switch Gear Room							
	Partitions - Type 2 - 2hr rated	170.00	sf	21.00	3,570.00	49.78	8,462.36	12,032
	<i>Generator</i>							
	<i>Architectural</i>							
	ATS / Transformer Room		sf					



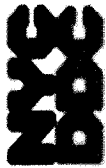
Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Partitions - 2hr rated; Type 1	790.00	sf	21.00	16,590.00	49.78	39,325.09	55,915
	Partitions - 2hr rated lined; rebar in extg CMU	247.00	sf	21.00	5,187.00	49.78	12,295.31	17,482
	Penthouse Works		sf					
	Partitions - 2hr rated; Type 1	340.00	sf	21.00	7,140.00	49.78	16,924.72	24,065
	Partitions - Furring; Type 1B	500.00	sf	21.00	10,500.00	49.78	24,889.30	35,389
	Partitions - 2hr rated; Type 2		sf					
	Fire rated Ceiling	333.00	sf	21.00	6,993.00	49.78	16,576.27	23,569
	Soffits	275.00	sf	21.00	5,775.00	49.78	13,689.12	19,464
	Conduit Shaft		lf					
	2hr Shaft	40.00	sf	21.00	840.00	49.78	1,991.14	2,831
	Fuel Oil pipe chase / shaft		lf					
	2hr Shaft	102.00	sf	21.00	2,142.00	49.78	5,077.42	7,219
	One hr Rate walls at Fire suppression rooms	170.00	sf	21.00	3,570.00	49.78	8,462.26	12,032
	Sub Total : Non Structural Metal Framing							210,000
09 29 00	Gypsum Broad							
	Service Upgrade							
	Electric Switch Gear Room							
	Partitions - Type 2 - 2hr rated - Drywall only	170.00	sf	21.00	3,570.00	49.78	8,462.36	12,032
	Generator							
	Architectural							
	ATS / Transformer room		sf					
	Partitions - 2hr rated; Type 1 - drywall only	790.00	sf	21.00	16,590.00	49.78	39,325.09	55,915
	Partitions - 2hr rated lined; rebar in extg CMU	247.00	sf	21.00	5,187.00	49.78	12,295.31	17,482
	Penthouse works		sf					
	Partitions - 2hr rated; Type 1 - drywall only	340.00	sf	21.00	7,140.00	49.78	16,924.72	24,065



Department of Design and Construction

Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Partitions - Furring; Type 1B - drywall only	500.00	sf	21.00	10,500.00	49.78	24,889.30	35,389
	Partitions - 2hr rated; Type 2 - drywall only		sf					
	Fire rated Ceiling - drywall only	333.00	sf	21.00	6,993.00	49.78	16,576.27	23,569
	Soffits	275.00	sf	21.00	5,775.00	49.78	13,689.12	19,464
	Conduit Shaft		lf					
	2hr Shaft wall - Type 2 - drywall only	40.00	sf	21.00	840.00	49.78	1,991.14	2,831
	Fuel Oil pipe chase / Shaft		lf					
	2hr Shaft wall - Type 2 - drywall only	102.00	sf	21.00	2,142.00	49.78	5,077.42	7,219
	One hr rated walls at fire suppression rooms	170.00	sf	21.00	3,570.00	49.78	8,462.26	12,032
	Sub Total : Gypsum Board							210,000
09 91 23	Interior Painting							
	Service Upgrade							
	Architectural							
	Electric Switch Gear Room							
	Finishes - None							
	Corridor repairs at Floor Distribution							
	Minor patch & paint at new panelboards, conduit etc mounted	9.00	floors		-		-	-
	Repair of deteriorated concrete surfaces; Provision # 1 (5/A - 101)		sf					
	Preparation & Painting; Provision #2	797.00	sf	0.50	257.50	2.00	1,030.00	1,288
	Painted Floor; Provision #3	776.00	sf	0.50	388.00	2.00	1,552.00	1,940
	Interior plaster repair; Provision #4	345.00	sf	10.00	3,450.00	15.00	5,175.00	8,625
	Generator							
	Architectural							
	ATS / Transformer Room		sf					



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Paint walls (not req)		sf					
	Paint new doors	4.00	ea	50.00	200.00	200.00	800.00	1,000
	Fluid applied flooring system	587.00	sf	5.00	2,935.00	20.00	11,740.00	14,675
	Conduit Chase / Shaft		lf					
	Paint, misc finish repairs	769.00	sf	0.50	384.50	2.00	1,538.00	1,923
	Fuel Oil pipe chase - Shaft		lf					
	Paint, misc finish repairs	inc above	sf					
	Fuel Oil Tank Room		sf					
	Remove windoos at basement level		ea					
	Seal opening w/CMU	9.00	loc	500.00	4,500.00	1,561.11	14,050.00	18,550
	New louvers - 2'x3'		ea					
	Repair of deteriorated concrete surfaces; Provision #1 95/A-101		sf					
	Preparation & Painting; Provision #2		sf					
	Painted Floor; Provision #3		sf					
	Interior plaster repair; Provision #4		sf					
	Sub Total : Interior Painting							48,000
09 96 56	Slip-Retardant Epoxy Floor Coating							
	<i>Service Upgrade</i>							
	Fluid applied flooring system		sf					
	Generator							
	Penthouse Works		sf					
	Fluid applied flooring system	361.00	sf	12.00	4,332.00	37.87	13,671.50	18,004
	Fuel Oil Tank Room		sf					
	Epoxy flooring system	845.00	sf	12.00	10,140.00	37.70	31,856.50	41,997
	Sub Total : Slip-Retardant Epoxy Floor Coating							60,000



**Department of
Design and
Construction**

Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
10 14 23	Room Identification Signage							
	Service Upgrade							
	Room Identification Signage		ea					
	Generator							
	Room Identification Signage	1.00	ea	2,000.00	2,000.00	4,000.00	4,000.00	6,000
								6,000
13 48 00	Sound, Vibration and Seismic Control							
	Service Upgrade							
	Sound, Vibration and Seismic Control		ea					
	Generator							
	Sound, Vibration and Seismic Control	w/23 32 13	ea					
21 00 00	FIRE SUPPRESSION							
21 00 03	Scope of Work							
	Scope of Work	1.00	ea	-	-	3,000.00	3,000.00	3,000
21 05 17	Sleeves & Sleeve Seals for Plumbing Piping							
	Sleeves & Sleeve Seals for Plumbing Piping	1.00	ea	500.00	500.00	1,500.00	1,500.00	2,000
21 05 18	Escutcheons for Fire Suppression Piping							
	Escutcheons for Fire Suppression Piping	1.00	ea	500.00	500.00	1,500.00	1,500.00	2,000
21 05 19	Meter & Gauges							
	Meters & Gauges	1.00	ea	300.00	300.00	700.00	700.00	1,000
21 05 20	Piping & Fitting Materials							
	6" Dia pipe/ fitting / supports	1.00	lf	5,000.00	5,000.00	15,000.00	15,000.00	20,000
	2" Dia pipe/ fittings / supports	inc	lf					
	1 1/2" Dia pipe/ fittings / supports	inc	lf					



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 DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	1 1/4" Dia pipe/ fitting / supports	inc	lf					
	1" Dia pipe/ fittings / supports	inc	lf					28,000
	Piping & Fitting Materials							
21 05 23	Fire Suppression Valves							
	Fire Suppression Valves	1.00	ea	5,000.00	5,000.00	10,000.00	10,000.00	15,000
								15,000
21 05 29	Hangars, Supports, Anchors, & Guides							
	Hangars, Supports, Anchors, & Guides	1.00	ea	1,500.00	1,500.00	3,500.00	3,500.00	5,000
								5,000
21 05 53	Identification of Fire Suppression Piping & Equipment							
	Identification of Fire Suppression Piping & Equipment	1.00	ea	300.00	300.00	700.00	700.00	1,000
								1,000
21 11 19	Fire Department Connections							
	Inspection test connection	1.00	ea	-	-	2,000.00	2,000.00	2,000
								2,000
	Fire Department Connections							
21 13 13	Wet pipe sprinkler system							
	Disconnect and remove existing sprinkler heads	26.00	ea	20.00	520.00	100.00	2,600.00	3,120
	Tie-out		ea					
	Disconnect and remove existing piping 6" dia	1.00	lf	20.00	20.00	500.00	500.00	520
	Disconnect and remove existing piping 2" dia and smaller	1.00	lf	20.00	20.00	500.00	500.00	520
	Cut and Cap piping	inc	ea					
	Cutting/patching		ls					
	Drip pan		ea					
	Sprinkler heads	13.00	ea	100.00	1,300.00	433.85	5,640.00	6,940
	Check valve 6" dia with 3/4" ABD	1.00	ea	500.00	500.00	1,000.00	1,000.00	1,500
	Miscellaneous specialties of piping		ls					
	Test System	1.00	system	-	-	500.00	500.00	500
	Temper switch	1.00	ea	100.00	100.00	300.00	300.00	400

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Drip pan		ea					
	Tie-in	3.00	ea	-	-	500.00	1,500.00	1,500
	Subtotal Wet pipe sprinkler system							15,000
21 13 39	Foam system 2" dia - fuel oil tank room & generator equipment							
	ICAF integrated compressed air foam system		ea					
	Foam tank concrete bladder tank 10 USG	1.00	ea	20,000.00	20,000.00	30,000.00	30,000.00	50,000
	ICAF integrated compressed air foam system	1.00	ea	120,000.00	120,000.00	60,000.00	60,000.00	180,000
	Foam tank concrete bladder tank 5 USG	1.00	ea	10,000.00	10,000.00	10,000.00	10,000.00	20,000
	Water tank 500 USG	1.00	ea	5,000.00	5,000.00	5,000.00	5,000.00	10,000
	Water tank 250 USG	1.00	ea	2,000.00	2,000.00	2,500.00	2,500.00	4,500
	2" Dia pipe/ fittings / supports	incl	If					
	1 1/2" Dia pipe/ fittings / supports	incl	If					
	1" Dia pipe/ fittings / supports	incl	If					
	Air supply system		If					
	Nozzles	14.00	ea	100.00	1,400.00	200.00	2,800.00	4,200
	2" dia alarm check valve	2.00	ea	100.00	200.00	200.00	400.00	600
	2" dia butterfly control valve	2.00	ea	100.00	200.00	200.00	400.00	600
	Temper switch	2.00	ea	100.00	200.00	200.00	400.00	600
	Controller		ea					
	Heat detector		ea					
	Misc valves and specialties		ls					
	Dry system (including compressor, valve and related piping) generator	1.00	ea	30,000.00	30,000.00	49,500.00	49,500.00	79,500
	Subtotal Foam Sytem							350,000
	Subtotal COMMON WORK RESULTS FOR FIRE SUPPRESSION=							416,000
22 0000	PLUMBING							
22 0503	COMMON WORK RESULTS FOR PLUMBING	1.00				5,000.00	5,000.00	5,000



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
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CONTRACTOR'S BID BREAKDOWN FROM
 CONTRACT 1 - GENERAL CONSTRUCTION
 DDC ID: HH112BEE5-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
22 05 17	Sleeve and sleeve seals for plumbing piping							
	Penetrations and Sleeves	1.00	ls	250.00	250.00	1,000.00	1,000.00	1,250
	Fire Stopping	1.00	ls	250.00	250.00	1,000.00	1,000.00	1,250
	Subtotal Sleeve and sleeve seals for plumbing piping							7,500
22 05 18	Escutcheons for plumbing piping	1.00		1,000.00	1,000.00	3,000.00	3,000.00	4,000
22 05 23	Valves for plumbing piping							
	Miscellaneous Valves, accessories and etc.. (domestic water)	1.00	ls	250.00	250.00	1,000.00	1,000.00	1,250
	Miscellaneous Valves, accessories and etc.. (sanitary system)	1.00	ls	1,000.00	1,000.00	2,750.00	2,750.00	3,750
	Subtotal Valves for plumbing piping							5,000
22 05 29	Hanger, anchors, support, guides & seismic restraint	1.00		3,000.00	3,000.00	5,000.00	5,000.00	8,000
22 05 30	Disinfection of Water Supply System							
		w/22 11 16						
22 05 53	Identification for plumbing piping & equipment							
	System ID	1.00	ls	500.00	500.00	2,000.00	2,000.00	2,500
	Subtotal Identification for plumbing piping & equipment							2,500
22 05 90	Testing							
	Clean Flush & Test	1.00	ls	-	-	2,500.00	2,500.00	2,500
	Subtotal testing							2,500
22 07 19	Insulation							
	Insulation of domestic water piping	180.00	lf	20.00	3,600.00	35.56	6,400.00	10,000
	Coat sanitary and strom piping		lf					
	Subtotal Insulation							10,000
22 11 16	Domestic water piping & fitting material							
	Generator							

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CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G
Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Demolition	1.00		1,000.00	1,000.00	4,800.00	4,800.00	5,800
	Disconnect and remove existing storm piping 8" dia	inc	lf					
	Disconnect and remove existing drain piping 8" dia (tank drain)	inc	lf					
	Disconnect and remove existing drain piping 4" dia (tank drain)	inc	lf					
	Disconnect and remove existing domestic water piping 6" dia (tank drain)	inc	lf					
	Disconnect and remove existing domestic water piping 4" dia (tank drain)	inc	lf					
	Disconnect and remove existing domestic water piping 4" dia (tank drain)	inc	lf					
	Disconnect and remove existing sanitary piping	inc	lf					
	Disconnect and remove existing domestic water piping	inc	lf					
	Disconnect and remove existing domestic water risers piping 4" dia and 6" dia	inc	ea					
	Tie-out	inc	ea					
	Cut and cap piping	inc	ea					
	Miscellaneous demolition plumbing requirements	inc	ls					
	Domestic water piping							
	6" Dia pipe/ fittings / supports	50.00	lf	500.00	25,000.00	189.00	9,450.00	34,450
	4" Dia pipe/ fittings / supports	40.00	lf	146.00	5,840.00	157.50	6,300.00	12,140
	1 1/4" Dia pipe/ fittings / supports	20.00	lf	10.00	200.00	68.00	1,360.00	1,560
	1" Dia pipe/ fittings / supports	50.00	lf	8.00	400.00	60.00	3,000.00	3,400
	3/4" Dia pipe/ fittings / supports	20.00	lf	7.50	150.00	55.00	1,100.00	1,250
	Tie-in to existing system		ea					
	Drip pan		ea					
	Coordination with other trades	2.00	hrs	-	-	400.00	800.00	800
	Distribution (Fixtures & Pipe)	1.00	ls	-	-	500.00	500.00	500
	Miscellaneous Plumbing Requirements (Included Plumbing job expenses)	1.00	ls	-	-	100.00	100.00	100
	Subtotal Domestic water piping & fitting material							60,000



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CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEE5-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
22 13 16	Sanitary waste and vent piping & fitting material							
	4" Dia pipe/ fittings / supports	130.00	If	16.00	2,080.00	94.00	12,220.00	14,300
	2" Dia pipe/ fittings / supports	50.00	If	11.00	550.00	84.00	4,200.00	4,750
	Tie-in to existing system	1.00	ea	-	-	950.00	950.00	950
	Subtotal Sanitary waste and vent piping & fitting material							20,000
22 13 19	Sanitary waste piping specialties							
	Cleanout deck plate	1.00	ea	-	-	5,000.00	5,000.00	5,000
	Subtotal Sanitary waste piping specialties							5,000
22 14 13	Strom piping & Fitting material							
	8" Dia pipe/ fittings / supports	40.00	If	32.00	1,280.00	93.00	3,720.00	5,000
	Strom piping & Fitting material							5,000
22 14 23	Strom piping specialties							
		1.00		-	-	5,000.00	5,000.00	5,000
	Subtotal PLUMBING							134,500
23 0000	HEATING, VENTILATING AND AIR-CONDITIONING (HVAC)							
23 02 00	Firestopping							
	Service Upgrade							
	Sleeves/firestopping	1.00	ls	1,200.00	1,200.00	2,000.00	2,000.00	3,200
	Generator							
	Sleeves/firestopping	1.00	ls	2,000.00	2,000.00	4,000.00	4,000.00	6,000
	Subtotal Firestopping							9,200
23 05 13	Electric motors							
		w/23 52 10						

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
23 05 16	Expansion Compressors							
	<i>Generator</i>							
	Expansion joints 3" dia (Fuel oil)	1.00	ea	4,000.00	4,000.00	8,000.00	8,000.00	12,000
	Expansion joints 4" dia (Fuel oil)	1.00	ea	4,000.00	4,000.00	8,000.00	8,000.00	12,000
	Subtotal Expansion Compressors							24,000
23 05 23	Valves							
	<i>Service Upgrade</i>							
	Thermostatic expansion valve 3/4" dia (refrigerant)	N/A	ea					
	Mis. Valves, fittings and specialties (refrigerant)	N/A	ls					
	<i>Generator</i>							
	3" Dia gate valve (fuel oil)	N/A	ea					
	3" Dia flow setter valve (fuel oil)	N/A	ea					
	Misc. Valves and specialties	1.00	system	5,000.00	5,000.00	30,000.00	30,000.00	35,000
	Misc. fittings, gauges and specialties	1.00	ls	4,300.00	4,300.00	30,000.00	30,000.00	34,300
	Subtotal Valves							69,300
23 05 29	Hangers, anchors and support							
		w/23 52 10						
23 05 40	Acoustics							
	<i>Service Upgrade</i>							
	Insulation piping	N/A	lf					
	<i>Generator</i>							
	Soud attenuator (intake) 6'x6'x3'	1.00	ea	3,000.00	3,000.00	3,000.00	3,000.00	6,000
	Soud attenuator (exhaust) 5'x5'x7'	1.00	ea	3,500.00	3,500.00	3,500.00	3,500.00	7,000
	Soud attenuator (exhaust) 1.5'x1'x7'	1.00	ea	2,000.00	2,000.00	2,000.00	2,000.00	4,000
	Acoustical lining 2" thk	1.00	sf	4,000.00	4,000.00	8,000.00	8,000.00	12,000
	Insulation ductwork	1.00	sf	2,000.00	2,000.00	2,700.00	2,700.00	4,700
	Insulation piping	N/A	lf					
	Subtotal Acoustics							33,700



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CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G

Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
23 05 48	Vibration Isolators <i>Service Upgrade</i>	1.00	units	4,300.00	4,300.00	7,000.00	7,000.00	11,300
	<i>Generator</i>							
	Vibration Isolators	w/ gen	units					11,300
	Subtotal Vibration Isolators							
23 05 53	System Identification <i>Service Upgrade</i>	1.00	ls	1,200.00	1,200.00	4,000.00	4,000.00	5,200
	System ID							
	<i>Generator</i>							
	System ID	w/ gen	ls					5,200
	Subtotal System Identification							
23 05 93	Testing, adjusting and balancing <i>Service Upgrade</i>	1.00	ls	-	-	15,400.00	15,400.00	15,400
	Testing, balance adjustments and reports							
	<i>Generator</i>							
	Air test and balance adjustments and reports	w/ gen	ls					
	Pressure tests of piping and water side equipment	w/ gen	ls					
	Subtotal Testing, adjusting and balancing							15,400
23 09 00	Instruments <i>Service Upgrade</i>							
	AC units (included controller, (2) control points)	N/A	ea					



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CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Refrigerant leak detector	N/A	ea					
	Thermostat	N/A	ea					
	Low pressure and high pressure switch	N/A	ea					
	EUH	3.00	ea	30,000.00	90,000.00	18,890.00	56,670.00	146,670
	Audible alarm	N/A	ea					
	Calibration, Testing sequence & Training Temperature control system	N/A	ls					
	L.V and 120V ATC / BMS requirements	N/A	ls					
	Disconnect and remove existing steam radiators with related piping and valves	1.00	ea	400.00	400.00	3,000.00	3,000.00	3,400
	Cap piping	1.00	ea	300.00	300.00	400.00	400.00	700
	Disconnect and remove existing ductwork and related air devices	1.00	ls	400.00	400.00	3,000.00	3,000.00	3,400
	Cutting and patching		ls					
	Coordination, as built drawings requirements	1.00	hrs	3,000.00	3,000.00	15,000.00	15,000.00	18,000
	Hoisting/ Distribution	1.00	hrs	3,000.00	3,000.00	15,000.00	15,000.00	18,000
	Start-up and commissioning	1.00	job			15,000.00	15,000.00	15,000
	Generator							
	BMCS fuel oil system	1.00	ea	20,000.00	20,000.00	15,000.00	15,000.00	35,000
	Oil leak detection system (including monitoring system)	w/ 235300	ea					
	Controller	w/ 235300	ea					
	Leak sensor	w/ 235300	ea					
	Break glass (furnish only)	w/ 235300	ea					
	Level sensor	w/ 235300	ea					
	Remote annunciator	w/ 235300	ea					
	Low level switch	w/ 235300	ea					
	Duplex fuel oil pump	w/ 235300	ea					
	Thermostat	N/A	ea					
	L.V. and 120V ATC/BMS requirements	1.00	sys	5,000.00	5,000.00	7,000.00	7,000.00	12,000
	EUH	N/A	ea					



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CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Fan(including wall mounted thermostat)		ea					
	Calibration, Testing, sequence & Training Temperature control system	1.00	ls	500.00	500.00	1,000.00	1,000.00	1,500
	Misc. L.V. and 120V ATC/BMS requirements		sys					-
	Disconnect and remove existing AHU with related duct and piping	1.00	ea	200.00	200.00	200.00	200.00	400
	Disconnect and remove existing steam radiator with related piping and valves		ea					-
	Disconnect and remove existing exhaust fan	1.00	ea	100.00	100.00	100.00	100.00	200
	Cap existing piping		ea					included
	Disconnect and remove existing ductwork		lbs					included
	Misc. HVAC demolition requirements (based on the verification on the field and existing service for new shaft)		ls					included
	Fire rated secondary containment shaft		ea					included
	Coordination, as built drawings requirements		hrs					included
	Subtotal Instruments							254,270
23 11 13	Sheet metal, Ductwork and accessories							
	Service Upgrade							
	Generator							
	Ductwork (Fuel oil room)	1.00	lbs	4,000.00	4,000.00	6,000.00	6,000.00	10,000
	Ductwork (generator room)	1.00	lbs	40,000.00	40,000.00	140,500.00	140,500.00	180,500
	Louver (intake 46sf)	1.00	ea	6,000.00	6,000.00	8,000.00	8,000.00	14,000
	Louver exhaust 27 sf total)	1.00	ea	3,500.00	3,500.00	4,000.00	4,000.00	7,500
	Louver 3 sf	1.00	ea	600.00	600.00	1,400.00	1,400.00	2,000
	Louver 5 sf	1.00	ea	1,000.00	1,000.00	1,000.00	1,000.00	2,000
	Insulation and blank (3) existing louvers	3.00	sf	500.00	1,500.00	1,000.00	3,000.00	4,500
	Flue exhaust muffler by generator manufacturer - install only	1.00	ea	500.00	500.00	6,500.00	6,500.00	7,000
	Access door		ea					included
	Grille	1.00	ea	200.00	200.00	300.00	300.00	500
	Louver 3 sf		ea					



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CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HHI12BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	WMS wire mesh screen	1.00	sf	300.00	300.00	1,700.00	1,700.00	2,000
	Misc. ductwork requirements	1.00	ls	2,000.00	2,000.00	3,000.00	3,000.00	5,000
	Subtotal Sheet metal, Ductwork and accessories							235,000
23 21 23	Pumps							
	<i>Generator</i>							included
23 25 00	Pipe cleaning and chemical water treatment							
	<i>Generator</i>							
	Cleaning and flashing piping	1.00	ls	1,000.00	1,000.00	8,000.00	8,000.00	9,000
	Subtotal Pipe cleaning and chemical water treatment							9,000
23 26 00	Water specialties	w/23 62 10						
23 33 13	Dampers							
	<i>Service Upgrade</i>							
	<i>Generator</i>							
	FSD-C-1 Fire smoke damper 16"x16" (fuel oil rm.)	1.00	ea	1000.00	1,000.00	2,000.00	2,000.00	3,000
	FSD-C-2 Fire smoke damper 16"x16" (fuel oil rm.)	1.00	ea	1000.00	1,000.00	2,000.00	2,000.00	3,000
	FSD-B-1 Fire smoke damper 16"x16" (basement)	1.00	ea	1000.00	1,000.00	2,000.00	2,000.00	3,000
	FSD-B-2 Fire smoke damper 16"x16" (basement)	1.00	ea	1000.00	1,000.00	2,000.00	2,000.00	3,000
	FSD-R-1 Fire smoke damper - ventilation 5 sf	1.00	ea	1200.00	1,200.00	2,000.00	2,000.00	3,200
	FSD-R-2 Fire smoke damper 41 sf	1.00	ea	15,000.00	15,000.00	5,000.00	5,000.00	20,000
	FSD-R-3 Fire smoke damper 27 sf	1.00	ea	5,000.00	5,000.00	3,100.00	3,100.00	8,100
	FSD-R-4 Fire smoke damper 16"x12"	1.00	ea	1000.00	1,000.00	2,000.00	2,000.00	3,000
	Gravity damper	1.00	ea	400.00	400.00	1,200.00	1,200.00	1,600
	Subtotal Dampers							47,900
23 51 00	Vent, stack and breaching							
	<i>Generator</i>							



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM
 CONTRACT 1 - GENERAL CONSTRUCTION
 DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	8" Dia pipe/fittings/supports - vent FO tank	20.00	lf	30.00	600.00	100.00	2,000.00	2,600
	4"-2" Dia pipe/fittings/supports- vent	10.00	lf	15.00	150.00	100.00	1,000.00	1,150
	1.2" Dia pipe/fittings/supports generator flue	1.00	lf	2,000.00	2,000.00	3,000.00	3,000.00	5,000
	Cap 12" dia	1.00	ea	500.00	500.00	1,500.00	1,500.00	2,000
	Generator exhaust stack with relief valve	1.00	ea	28,250.00	28,250.00	40,000.00	40,000.00	68,250
	Subtotal Vent,stack and breaching							79,000
23 52 10	Piping and accessories							
	<i>Service Upgrade</i>							
	Refrigerant piping							
	5/8" Dia pipe/fittings/supports		lf					N/A
	3/8" Dia pipe/fittings/supports		lf					N/A
	3/4" Dia pipe/fittings/supports		lf					N/A
	3/4" Dia pipe/fittings/supports - drain		lf					N/A
	1 1/8" Dia pipe/fittings/supports		lf					N/A
	1/2" Dia pipe/fittings/supports		lf					N/A
	Subtotal Piping and accessories							
23 53 00	Fuel handling systems							
	Generator							
	Equipment							
	DT-1 Generator oil day tank 275 gal manufactured and install by generator manufacturer	1.00	ea	40,000.00	40,000.00	32,600.00	32,600.00	72,600
	PRV -- Note 2 from CD revisions DWG M*310	1.00	ea	8,000.00	8,000.00	10,000.00	10,000.00	18,000
	Boulder energy system-equipment by manufacturer - install only - DWG M-310							
	10 gal surge tank	1.00	ea	8,000.00	8,000.00	10,000.00	10,000.00	18,000
	JW PHE Plate heat exchanger 1224000 btuh,180 gpm heating,	1.00	ea	10,000.00	10,000.00	10,000.00	10,000.00	20,000
	CAC duplex auxiliary pump 75 gpm5hp	1.00	ea	5,000.00	5,000.00	3,000.00	3,000.00	8,000
	Horizontal remote radiator 28800 btu/min , 75 gpm,(9) motors 3hp/each,VFD	1.00	ea	3,000.00	3,000.00	3,000.00	3,000.00	6,000
	CAC heat exchanger 2034 scfm. 75 gpm	1.00	ea	3,000.00	3,000.00	4,500.00	4,500.00	7,500
	Expansion tank 58 gal	1.00	ea	3,000.00	3,000.00	3,000.00	3,000.00	6,000
	Leak drum 55 gal with leak detection	1.00	ea	4,000.00	4,000.00	8,000.00	8,000.00	12,000
	FOT-1 fuel oil tank 4000 gall (Fiel fabricated)	1.00	ls	30,000.00	30,000.00	60,000.00	60,000.00	90,000

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	FOP-1 Duplex fuel oil pump 80 gph, 1/2 hp	1.00	ea	14,000.00	14,000.00	12,000.00	12,000.00	26,000
	Fuel oil fill box	1.00	ea	3,000.00	3,000.00	2,000.00	2,000.00	5,000
	Fuel oil piping							
	Mechanical fuel oil							
	1.25" - 1" Dia pipe / fittings / supports	300.00	lf	10.00	3,000.00	40.00	12,000.00	15,000
	2" Dia pipe / fittings / supports	60.00	lf	15.00	900.00	50.00	3,000.00	3,900
	1" Dia pipe / fittings / supports - drain	300.00	lf	10.00	3,000.00	40.00	12,000.00	15,000
	6" Dia fire rated containment pipe enclosure	300.00	lf	50.00	15,000.00	200.00	60,000.00	75,000
	Fuel oil fill box		ea					inc
	Generator room							
	4" Dia pipe / fittings / supports		lf					N/A
	3" Dia pipe / fittings / supports		lf					N/A
	2" Dia pipe / fittings / supports		lf					N/A
	3" Dia stainer		ea					N/A
	Glycol system for remote radiator	1.00	system	1,000.00	1,000.00	1,000.00	1,000.00	2,000
	Subtotal fuel handling systems							400,000
23 62 10	Air cooled air conditioning units							
	Service upgrade							
	Air cooled split air conditioning systems	1.00		40,000.00	40,000.00	30,000.00	30,000.00	70,000
	AC-1,2,3,4 ductless air conditioning units 23.2 mbh including filter, disconnect switch		ea					N/A
	ACCU-1 condensing unit 9182 cfm, (2) fans, (2) compressor 4 ton/ea		ea					N/A
	Branch selector		ea					N/A
	Condensate pump (installation only)		ea					N/A
	Condensate drain pan		ea					N/A
	7 Year warranty compressor		ea					N/A
	5 year warranty on part		ea					N/A
	Subtotal Air cooled air conditioning units							70,000
23 84 40	FANS							
	Generator							



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G

Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	EF-1 - exhaust fan 1600 cfm, 1hp (Fuel oil rm.)	1.00	ea	2,000.00	2,000.00	1,500.00	1,500.00	3,500
	SF-1 - supply fan 1500 cfm, 1hp (Fuel oil rm.)	1.00	ea	2,000.00	2,000.00	1,500.00	1,500.00	3,500
	EF-2 - exhaust fan 1000 cfm, 1/4 hp - Allow	1.00	ea	1,500.00	1,500.00	1,500.00	1,500.00	3,000
	EF-3 - exhaust (mixed flow) fan 23500 cfm, 7 1/2 hp	1.00	ea	15,000.00	15,000.00	3,500.00	3,500.00	18,500
	Subtotal Fans							28,500
23 84 40	Space heating units							
	Service upgrade							
	Electric unit heater							
	EUH - 1,2,3 400 cfm, 17.1 mbh, 5KW		ea					N/A
	Generator							
	Electric unit heater							
	EUH-1 Electric unit heater 575 cfm, 34 mh, 10 KW - note 1 from CD revisions DWG M-300	1.00	ea	3,000.00	3,000.00	1,000.00	1,000.00	4,000
	EUH-2 Electric unit heater 575 cfm, 34 mh, 10 KW - note 1 from CD revisions DWG M-300	1.00	ea	3,000.00	3,000.00	1,000.00	1,000.00	4,000
	EDH-B-1 1500 cfm, 72.9 mbh 21.3 kw (basement - duct mounted)	1.00	ea	3,000.00	3,000.00	2,600.00	2,600.00	5,600
	Subtotal Space heating units							13,600
23 85 00	Variable frequency controllers							
		w/23 62 10						
23 86 00	Electric motor controller							
		w/23 62 10						
26 00 00	ELECTRICAL							
26 02 50	System identifications				108,155.00		108,155.00	216,310
	Service upgrade	1.00	LS	3,750.00	3,750.00	3,750.00	3,750.00	7,500
	Generator	w/Div 26						
	Sub Total: Systems Identifications							
26 02 65	Testing, Adjusting and balancing							
	Service upgrade							
	Vibration isolation/seismic restraint	1.00	ls	2,500.00	2,500.00	3,750.00	3,750.00	6,250
	Testing	1.00	ls	2,500.00	2,500.00	3,750.00	3,750.00	6,250
								-

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	<i>Generator</i>							
	Vibration isolation/seismic restraint	1.00	ls	2,500.00	2,500.00	3,750.00	3,750.00	6,250
	Testing	1.00	ls	2,500.00	2,500.00	3,750.00	3,750.00	6,250
	Sub Total: Testing, Adjusting and Balancing							25,000
26 02 80	Equipment connection and coordination							
	<i>Service Upgrade</i>							
	Lighting fixtures type "A"		ea					
	<i>Generator</i>							
	Lighting fixtures		ea					
	Lighting fixtures type "A"	11.00	ea	300.00	3,300.00	300.00	3,300.00	6,600
	Lighting fixture type A, em	11.00	ea	300.00	3,300.00	300.00	3,300.00	6,600
	Lighting fixtures type "A" EXP	3.00	ea	600.00	1,800.00	300.00	900.00	2,700
	Emergency battery pack type B	2.00	ea	500.00	1,000.00	300.00	600.00	1,600
	Lighting fixture, wall mounted		ea					
	<i>Service upgrade</i>							
	Reconnect new equipment to switchboards							
	AC unit	1.00	ls			7,500.00	7,500.00	7,500
	Power solenoid valve (F.B.O)	2.00	ea			2,500.00	5,000.00	5,000
	Leak detector (F.B.O)	2.00	ea			1,000.00	2,000.00	2,000
	Condensing unit	1.00	ea			1,000.00	1,000.00	1,000
	Condensate pump (as per HVAC estimate)	2.00	ea			2,500.00	5,000.00	5,000
	Electric unit heater		ea					
	Disconnect electrical panel from switchboard	3.00	ea			750.00	2,250.00	2,250
	Remove existing 1600Amp switchboard A-SWBD and B-SWBD	1.00	ls			15,000.00	15,000.00	15,000
	Remove existing 4000Amp switchboard "SS-C-1"	2.00	ea			7,500.00	15,000.00	15,000
	Remove existing switchboard	1.00	ea			15,000.00	15,000.00	15,000
	Remove existing panels	2.00	ea			5,000.00	10,000.00	10,000
	Remove existing ATS	110.00	ea			400.00	44,000.00	44,000
	Remove existing 400 Amp switch		ea					
	Remove existing 200 Amp switch		ea					
	Remove existing 30 Amp switch	2.00	ea			250.00	500.00	500
	Remove existing pull box	1.00	ea			250.00	250.00	250
		1.00	ls			7,500.00	7,500.00	7,500



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM
 CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Remove existing feeder	1.00	ls		-	15,000.00	15,000.00	15,000
	Shutdown / switchover	1.00	ls		-	25,000.00	25,000.00	25,000
	Material equipment hoisting and handling	1.00	ls		-	15,000.00	15,000.00	15,000
	Housekeeping concrete pad (IN CONCRETE)	1.00	ea		-	-	-	-
	Work in new electrical room	1.00	ls		-	15,000.00	15,000.00	15,000
	Difficulty of work / coordination w/other trade	1.00	ls		-	25,000.00	25,000.00	25,000
	<i>Generator</i>				-	-	-	-
	Electric unit heater	3.00	ea		-	750.00	2,250.00	2,250
	Duplex fuel oil pump	1.00	ea		-	2,500.00	2,500.00	2,500
	Exhaust fan	3.00	ea		-	1,500.00	4,500.00	4,500
	Auxiliary pump	1.00	ea		-	750.00	750.00	750
	Fan	1.00	ea		-	1,500.00	1,500.00	1,500
	Refrigerator pump	1.00	ea		-	750.00	750.00	750
	Electric unit heater		ea		-	-	-	-
	VFD (F.B.O.)	1.00	ls		-	5,000.00	5,000.00	5,000



**Department of
Design and
Construction**

Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Fuel oil management system panel (F.B.O.)	1.00	ls	-	-	5,000.00	5,000.00	5,000
	Disconnect power to mechanical equipment	1.00	ls	-	-	10,000.00	10,000.00	10,000
	Disconnection & removal of existing feeders	1.00	ls	-	-	25,000.00	25,000.00	25,000
	Re-route/extend branch circuits from existing panels	1.00	ls	-	-	57,600.00	57,600.00	57,600
	Coordination, phasing & downtime	1.00	ls	-	-	25,000.00	25,000.00	25,000
	Housekeeping concrete pad (IN CONCRETE)	1.00	ea	-	-	-	-	-
	Difficulty of work/coordination w/other trades	1.00	ls	-	-	17,650.00	17,650.00	17,650
	Sub Total : Equipment Connections And Coordination							400,000
26 02 90	Ceiling, Floor And Wall Electrical Penetration Fire Seals							
	<i>Service Upgrade</i>							
	Make/seal off all wall openings	1.00	ls	5,000.00	5,000.00	15,000.00	15,000.00	20,000
	Sleeves/firestopping	1.00	ls	5,000.00	5,000.00	15,000.00	15,000.00	20,000
	Cutting/patching	1.00	ls	2,500.00	2,500.00	17,500.00	17,500.00	20,000
	Generator							
	Sleeves/firestopping	1.00	ls	5,000.00	5,000.00	15,000.00	15,000.00	20,000
	Cutting/patching	1.00	ls	2,500.00	2,500.00	17,500.00	17,500.00	20,000
	Sub Total : Ceiling, Floor And Wall Electrical Penetration Fire							100,000
26 05 19	600 Volt Wire And Cable							
	<i>Service Upgrade</i>							
	600 MCM	540.00	lf	12.00	6,480.00	8.00	4,320.00	10,800
	500 MCM	3,540.00	lf	10.00	35,400.00	7.50	26,550.00	61,950
	500 MCM (temporary connection between new and existing switchboards	1,000.00	lf	10.00	10,000.00	7.50	7,500.00	17,500
	400 MCM	2,000.00	lf	9.00	18,000.00	7.00	14,000.00	32,000
	350 MCM		lf					
	250 MCM	37,780.00	lf	5.00	188,900.00	5.75	217,235.00	406,135
	# 4/0 wire	10,520.00	lf	4.50	47,340.00	4.75	49,970.00	97,310
	# 3/0 wire	5,440.00	lf	3.91	21,248.50	4.50	24,480.00	45,728



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEEES-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	#1/0 wire	500.00	If	2.50	1,250.00	3.50	1,750.00	3,000
	#1 wire	11,640.00	If	2.00	23,280.00	3.00	34,920.00	58,200
	#2 wire	710.00	If	1.50	1,065.00	2.75	1,952.50	3,018
	#6 wire	13,125.00	If	0.75	9,843.75	2.00	26,250.00	36,094
	#8 wire	3,273.00	If	0.50	1,636.50	1.50	4,909.50	6,546
	#8 wire(mechanical) included in #8 above		If		-		-	-
	#10 wire (mechanical)	64,335.00	If	0.30	19,300.50	1.25	80,418.75	99,719
	#12 wire(mechanical) included as #10		If		-		-	-
					-		-	-
	Generator				-		-	-
	#250 MCM MI wire	6,500.00	If	40.00	260,000.00	28.60	185,931.30	445,931
	#4/0 MI wire	6,000.00	If	36.00	216,000.00	21.00	126,000.00	342,000
	#3/0 MI wire	5,000.00	If	31.00	155,000.00	20.00	100,000.00	255,000
	#2/0 MI wire	7,000.00	If	26.00	182,000.00	19.00	133,000.00	315,000
	#1 MI wire	1,650.00	If	21.00	34,650.00	18.00	29,700.00	64,350
	#2 MI wire	4,150.00	If	15.00	62,250.00	16.00	66,400.00	128,650
	#8 MI wire	1,850.00	If	6.50	12,025.00	5.00	9,250.00	21,275
	#10 MI wire (MULTICONDUCTOR)	1,050.00	If	13.00	13,650.00	10.00	10,500.00	24,150
					-		-	-
	#500 MCM wire	2,100.00	If	10.00	21,000.00	7.50	15,750.00	36,750
	#400 MCM wire	1,000.00	If	9.00	9,000.00	7.00	7,000.00	16,000
	#300 MCM	4,400.00	If	8.00	35,200.00	6.50	28,600.00	63,800
	#250 MCM wire	800.00	If	5.00	4,000.00	5.75	4,600.00	8,600
	#4/0 wire	300.00	If	4.50	1,350.00	4.75	1,425.00	2,775
	#3/0 wire	200.00	If	3.90	780.00	4.50	900.00	1,680
	#1/0 wire	200.00	If	2.50	500.00	3.50	700.00	1,200
	#1 wire	350.00	If	2.00	700.00	3.00	1,050.00	1,750
	#2 wire	2,200.00	If	1.50	3,300.00	2.75	6,050.00	9,350
	#6 wire	1,450.00	If	0.75	1,087.50	2.00	2,900.00	3,988

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	# 8 wire(mechanical)	3,100.00	If	0.50	1,550.00	1.50	4,650.00	6,200
	# 10 wire	33,000.00	If	0.30	9,900.00	1.25	41,250.00	51,150
	#12 wire	12,000.00	If	0.25	3,000.00	1.20	14,400.00	17,400
	Sub Total : 600 Volt Wire and Cable				-		-	2,694,999
26 05 26	Grounding System							
	Generator							
	Grounding & bonding	1.00	ls	25,000.00	25,000.00	25,000.00	25,000.00	50,000
	Sub Total : Grounding System				-		-	50,000
26 05 33	Raceways And Boxes							
	Service Upgrade							
	4" conduit	1,500.00	If	40.00	60,000.00	125.00	187,500.00	247,500
	3 1/2" conduit	400.00	If	30.00	12,000.00	100.00	40,000.00	52,000
	2 1/2" conduit	7,000.00	If	25.00	175,000.00	55.00	385,000.00	560,000
	2" conduit	7,000.00	If	15.00	105,000.00	30.00	210,000.00	315,000
	1 1/2" conduit	4,000.00	If	10.00	40,000.00	25.00	100,000.00	140,000
	1 1/4" conduit	100.00	If	8.00	800.00	22.50	2,250.00	3,050
	1" conduit(mechanical)	6,100.00	If	6.00	36,600.00	20.00	122,000.00	158,600
	3/4" conduit(mechanical)	500.00	If	5.00	2,500.00	17.50	8,750.00	11,250
	3/4" conduit (mechanical)		If		-		-	-
	Concrete encasement(20")	1.00	ls	25,000.00	25,000.00	50,000.00	50,000.00	75,000
	Maintain existing service end box	1.00	ls		-	50,000.00	50,000.00	50,000
	New cable end box	1.00	ls	27,600.00	27,600.00	60,000.00	60,000.00	87,600
	Generator							
	4" conduit	500.00	If	40.00	20,000.00	125.00	62,500.00	82,500
	3 1/2" conduit	1,000.00	If	35.00	35,000.00	100.00	100,000.00	135,000
	3" conduit	2,000.00	If	30.00	60,000.00	90.00	180,000.00	240,000
	2 1/2" conduit	1,000.00	If	25.00	25,000.00	55.00	55,000.00	80,000
	1 1/2" conduit	500.00	If	10.00	5,000.00	25.00	12,500.00	17,500
	1 1/4" conduit	1,500.00	If	8.00	12,000.00	22.50	33,750.00	45,750
	1" conduit(mechanical)	100.00	If	6.00	600.00	20.00	2,000.00	2,600
	1"conduit(grounding)	100.00	If	6.00	600.00	20.00	2,000.00	2,600



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEE5-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	1" conduit	100.00	If	6.00	600.00	20.00	2,000.00	2,600
	3/4" conduit	6,000.00	If	5.00	30,000.00	17.50	105,000.00	135,000
	3/4" conduit(mechanical)	100.00	If	5.00	500.00	17.50	1,750.00	2,250
	3/4" RGS(mechanical)	100.00	If	6.00	600.00	20.00	2,000.00	2,600
	3/4" RGS(branch)	100.00	If	6.00	600.00	20.00	2,000.00	2,600
	3/4" conduit(branch circuitry)	1,000.00	If	5.00	5,000.00	17.50	17,500.00	22,500
	3/4" conduit(lighting)	1,000.00	If	5.00	5,000.00	17.50	17,500.00	22,500
	Pull box (MI Cable Changeover w/brass plate)	24.00	ea	3,500.00	84,000.00	5,000.00	120,000.00	204,000
	Sub Total :Raceways and Boxes				-		-	2,700,000
26 05 73	Overcurrent Protective Devices Coordination Study							
	Service Upgrade	1.00	LS	3,750.00	3,750.00	3,750.00	3,750.00	7,500
	Generator	1.00	LS	3,750.00	3,750.00	3,750.00	3,750.00	7,500
								15,000
26 22 00	Low-Voltage Distribution Transformers							
	Generator							
	300kva, 200/277-400v step transformer, for elevator	-	ea					
	15kVA, 480-208/120V transformers, for Fire Alarm	1.00	ea	12,500.00	12,500.00	12,500.00	12,500.00	25,000
	Sub Total : Low-Voltage Distribution Transformers							25,000
26 24 16	Panel boards							
	Service Upgrade							
	200 Amp panel	17.00	ea	5,000.00	85,000.00	6,500.00	110,500.00	195,500

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	100 Amp panel	64.00	ea	3,500.00	224,000.00	5,000.00	320,000.00	544,000
	Panel mounting assembly	81.00	ea	1,000.00	81,000.00	1,500.00	121,500.00	202,500
	<i>Generator</i>							
	Panelboard		ea					
	400 Amp panel "EDP-B2"	1.00	ea	10,000.00	10,000.00	7,500.00	17,500.00	17,500
	100 Amp panel	3.00	ea	3,500.00	10,500.00	5,000.00	15,000.00	25,500
	60 Amp panel	5.00	ea	2,500.00	12,500.00	3,500.00	17,500.00	30,000
	50 Amp panel	16.00	ea	2,500.00	40,000.00	3,500.00	56,000.00	96,000
	1.5KVA UPS	1.00	ea	5,000.00	5,000.00	5,000.00	10,000.00	10,000
	125 Amp 3-pole circuit breaker	1.00	ea	1,500.00	1,500.00	1,500.00	3,000.00	3,000
	30 Amp 3-pole circuit breaker	1.00	ea	1,500.00	1,500.00	1,500.00	3,000.00	3,000
	Panel mounting assembly	25.00	ea	1,000.00	25,000.00	1,500.00	37,500.00	62,500
	Relocate existing panels(roof)	1.00	ls	12,500.00	12,500.00	48,000.00	60,500.00	60,500
	60 Amp panelboard		ea					
	Sub Total : Panelboards							1,250,000
26 27 26	Wiring Devices							
	<i>Service Upgrade</i>							
	Duplex receptacle	8.00	ea	100.00	800.00	500.00	4,000.00	4,800
	<i>Generator</i>							
	Duplex receptacles	6.00	ea	100.00	600.00	500.00	3,000.00	3,600
	Duplex receptacles,EXP	2.00	ea	900.00	1,800.00	500.00	1,000.00	2,800
	GFI duplex receptacle,WP	7.00	ea	100.00	700.00	500.00	3,500.00	4,200
	Break glass station(F.B.O.)	1.00	ea	100.00	100.00	500.00	500.00	600
	Manual push button	1.00	ea	100.00	100.00	500.00	500.00	600
	Power supply for transformer	1.00	ea	100.00	100.00	500.00	500.00	600
	Single pole lighting switch	9.00	ea	100.00	900.00	500.00	4,500.00	5,400
	3-way switch	4.00	ea	100.00	400.00	500.00	2,000.00	2,400
	Sub Total: Wiring Devices							25,000



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM

CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEE5-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
26 28 13	Fuses(600V and Less)							
	<i>Service Upgrade</i>	w/26 24 16						
	<i>Generator</i>	1.00	LS	7,500.00	7,500.00	7,500.00	7,500.00	15,000
26 28 16	Disconnect Switches							
	<i>Service Upgrade</i>							
	60 Amp NEMA 1 disconnect switch	1.00	ea	100.00	100.00	500.00	500.00	600
	60 Amp NEMA 3R disconnect switch	1.00	ea	125.00	125.00	700.00	700.00	825
	30 Amp NEMA 1 disconnect switch	1.00	ea	75.00	75.00	500.00	500.00	575
	<i>Generator</i>							
	30 Amp NEMA 3R disconnect switch	1.00	ea	125.00	125.00	500.00	500.00	625
	30 Amp NEMA 3R motor starter/disconnect switch(size0)	1.00	ea	125.00	125.00	500.00	500.00	625
	30 Amp NEMA 1 disconnect switch	4.00	ea	75.00	300.00	500.00	2,000.00	2,300
	30 Amp NEMA 1 disconnect switch,EXP	3.00	ea	2,000.00	6,000.00	750.00	2,250.00	8,250
	60 Amp NEMA 1 disconnect switch	2.00	ea	100.00	200.00	500.00	1,000.00	1,200
	Sub Total : Disconnect Switches							15,000
26 29 13	Installation of Individual Motor Controllers							
	<i>Service Upgrade</i>							
	<i>Generator</i>	1.00		3,750.00	3,750.00	3,750.00	3,750.00	7,500
26 29 19	Switchboards							
	<i>Service Upgrade</i>							
	New 6000 Amp switchboards - field assembled(typical)	1.00	ea	50,000.00	50,000.00	75,000.00	75,000.00	125,000
	New 2000 Amp switchboard	1.00	ea	35,000.00	35,000.00	50,000.00	50,000.00	85,000
	New 2000 Amp switchboard	1.00	ea	35,000.00	35,000.00	50,000.00	50,000.00	85,000
	Meter and CT cabinet	1.00	ea	15,000.00	15,000.00	15,000.00	15,000.00	30,000
	Reconnect existing electrical panels to new switchboards	1.00	ls	37,500.00	37,500.00	50,000.00	50,000.00	87,500

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Intercept existing electrical riser conduits	1.00	ls	37,500.00	37,500.00	100,000.00	100,000.00	137,500
	Replace existing switches/electrical equipment	1.00	ls	25,000.00	25,000.00	25,000.00	25,000.00	50,000
	Generator							
	1600 Amp switchboard(generator)	1.00	ea	25,000.00	25,000.00	10,000.00	10,000.00	35,000
	1600Amp switchboard "EDP-B1"(field assembled)	1.00	ea	25,000.00	25,000.00	35,000.00	35,000.00	60,000
	1600 Amp switchboards "EDP-B-Main"(field assembled)	1.00	ea	25,000.00	25,000.00	35,000.00	35,000.00	60,000
	800 Amp switchboard (field assembled)	2.00	ea	15,000.00	30,000.00	17,500.00	35,000.00	65,000
	Reconnect existing electrical panels to new switchboards	1.00	ls	15,000.00	15,000.00	15,000.00	15,000.00	30,000
	Intercept existing electrical riser conduits	1.00	ls	15,000.00	15,000.00	20,000.00	20,000.00	35,000
	Relocate section of horizontal wiring trough(roof)	1.00	ls	10,000.00	10,000.00	15,000.00	15,000.00	25,000
	Shutdown/switchover	1.00	ls		-	40,000.00	40,000.00	40,000
	Sub Total : Switchboards				-		-	950,000
	Engine Generator and Accessories							
	Generator							
	750 KW emergency generator(120/208V) - field assembled	1.00	ea	700,000.00	700,000.00	125,000.00	125,000.00	825,000
	Load bank				-		-	-
	Factory testing				-		-	-
	Unload/unpack/set in place generator and accessories				-		-	-
	Rigging and material/equipment hoisting and handling				-		-	-
	Sub Total : Engine Generator and Accessories				54,000.00	150,000.00	150,000.00	204,000
	Automatic Transfer Switches							1,029,000
	Generator							
	800 Amp ATS	2.00	ea	55,000.00	110,000.00	40,000.00	80,000.00	190,000
	600 Amp ATS	1.00	ea	35,000.00	35,000.00	25,000.00	25,000.00	60,000
	400 Amp ATS	1.00	ea	15,000.00	15,000.00	17,500.00	17,500.00	32,500
	60 Amp ATS	1.00	ea	7,500.00	7,500.00	10,000.00	10,000.00	17,500
	ATS mounting assembly	5.00	ea	5,000.00	25,000.00	5,000.00	25,000.00	50,000
	Sub Total : Automatic Transfer Switches				-		-	350,000



Project: Bellevue Men's Shelter - Electric Service Upgrade Study
 Location: 400 East 30th Street, NYC NY 10016
 Bidder: ARK Systems Electric Corp.

CONTRACTOR'S BID BREAKDOWN FROM
 CONTRACT 1 - GENERAL CONSTRUCTION

DDC ID: HH112BEE5-G
 Sponsor Agency: DHS

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
26 40 00	Fire Alarm Life Safety Systems							
	Service Upgrade							
	Generator							
	Material cost for Proprietary System - Honeywell/Notifier	1.00	ls	35,000.00	35,000.00	-	-	35,000
	Foam protection control panel (F.B.O)	2.00	ea	350.00	700.00	500.00	1,000.00	1,700
	Heat detector	2.00	ea	350.00	700.00	500.00	1,000.00	1,700
	Fire smoke damper	2.00	ea	350.00	700.00	500.00	1,000.00	1,700
	CO detector		ea					
	Smoke detector	61.00	ea	350.00	21,350.00	500.00	30,500.00	51,850
	Combination speaker/strobe	2.00	ea	350.00	700.00	500.00	1,000.00	1,700
	Control module	7.00	ea	350.00	2,450.00	500.00	3,500.00	5,950
	Relay	1.00	ea	350.00	350.00	500.00	500.00	850
	3/4" conduit	5,000.00	lf	5.00	25,000.00	15.00	75,000.00	100,000
	#12 wire	15,000.00	lf	2.00	30,000.00	3.00	45,000.00	75,000
	Tie-in to existing system/reprogramming/testing/fees	1.00	ls	15,000.00	15,000.00	59,550.00	59,550.00	74,550
	Sub Total : Fire Alarm Life Safety Systems							350,000
26 43 13	Surge Protection Device							
	Service Upgrade							
	Generator							
		1.00		12,501.19	12,501.19	12,500.00	12,500.00	25,001
		1.00		12,500.00	12,500.00	12,500.00	12,500.00	25,000
	TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK							15,525,000



**ATTACHMENT 1 - BID INFORMATION
PROJECT ID: HH112BEES-G**

DESCRIPTION AND LOCATION OF WORK:

**Bellevue Men's Shelter – Electrical Upgrade and Generator
400 East 30th Street
New York, NY 10016
E-PIN: 85018B0101 / DDC PIN: 8502018HR0009C**

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, April 27, 2018**

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

PRE BID QUESTIONS (PBQs):

Please be advised that PBQs must be submitted to the Agency Contact Person at least five (5) business days (by 5:00 P.M. EST) prior to the bid opening date.

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, April 27, 2018 AT 2:00 PM
	LATE BIDS WILL NOT BE ACCEPTED

PRE-BID WALK-THRU AND CONFERENCE:

PLACE	Bellevue Men's Shelter 400 East 30th Street New York, NY 10016
DATE AND HOUR	WEDNESDAY, APRIL 11, 2018 AT 10:00 AM
MANDATORY OR OPTIONAL	OPTIONAL

BID SECURITY:

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

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

PERFORMANCE AND PAYMENT SECURITY:

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

AGENCY CONTACT PERSON:

Lorraine Holley, 30-30 Thomson Avenue - First Floor, Long Island City, Queens, NY 11101
Telephone (718) 391-1041 Email: CSB_ProjectInquiries@ddc.nyc.gov

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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: ARK Systems Electric Corp.

DDC Project Number: HH112BEES-G

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

Company has previously worked for DDC X YES NO

2. Type(s) of Construction Work

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

3. Experience Modification Rate:

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

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

YEAR	<u>INTRASTATE RATE</u>	<u>INTERSTATE RATE</u>
2017	1	1
2016	1	1
2015	1	1

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

4. OSHA Information:

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

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

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

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

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

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

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

YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
<u>2017</u>	<u>89,785</u>	<u>8.91</u>
<u>2016</u>	<u>81,232</u>	<u>7.39</u>
<u>2015</u>	<u>75,126</u>	<u>5.32</u>

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

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

5. Safety Performance on Previous DDC Project(s)

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

YES NO Accident on previous DDC Project(s).
 DDC Project Number(s): _____

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

DDC Project Number(s): _____

Date: 05/07/2018

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

Title: Vice-President

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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) 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 -- CONTRACTS COMPLETED BY THE BIDDER

List all contracts substantially completed within the last 4 years, 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
see attached					

Qualification Form

Project ID: PO79GENER

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: ARK Systems Electric Corp.

Name of Project: Electrical upgrade and emergency generator

Location of Project: 80 Centre Street, New York, NY

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

Name: John Miranda

Title: PO Phone Number: 212-669-7548

Brief description of work completed: Electrical upgrade and emergency generator installation

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

Amount of Contract: \$13,666,968.00

Date of Completion: 07/31/2016

Name of Contractor: ARK Systems Electric Corp.

Name of Project: Lehman College Central plant upgrade

Location of Project: 50 Bedford Park Blvd West, Bronx, NY

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

Name: Marin Jukic

Title: PM Phone Number: 718-267-6800

Brief description of work completed: Electrical upgrade for energy plant.

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

Amount of Contract: \$5,418,316.00

Date of Completion: 12/31/2016

Qualification Form

Project ID: PO79GENER

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: ARK Systems Electric Corp.

Name of Project: Queens College Remsen Hall Electric Service Upgrade

Location of Project: 65-30 Kissena Blvd, Flushing, NY

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

Name: Shawn Taylor

Title: PM Phone Number: 718-997-4972

Brief description of work completed: Electrical upgrade of Remsen Hall

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

Amount of Contract: \$1,281,000.00

Date of Completion: 10/01/2014

.....

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: _____

ARK SYSTEMS ELECTRIC CORP.
Work Completed

Name & Address of Owner	Contact Person & Telephone Number	Project	Contract No.	Bond Req'd	Prime/Sub	Contract Amt.	Date Started	Completion Date	Work Done w/ Own Forces	Address	Description
NYC Dept. of Design and Construction 30-30 Thomson Ave. Long Island City, NY 11101	James Jones Jr. 212-273-1981	Riverside Health Center	HLB2RVREX	Yes	Prime	\$ 3,645,000.00	06/23/2009	4/30/2014	100%	160 W 100th Street New York, NY 10026	Building Renovation
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Mikhail Furman, Project Officer 718-472-8000	Byrant HS	C000013085	Yes	Prime	\$ 3,480,015.00	7/9/2013	11/30/2014	100%	48-10 31st Ave. Queens, NY	Low Voltage FA / PA Systems
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Alwyn Nicholas, Project Officer 718-472-8000	IS 211 - Lighting Replacement	SCA15-161400D-1	Yes	Prime	\$ 1,295,179.00	12/11/2014	8/17/2015	100%	1001 East 100th Street, Brooklyn, NY 11238	Lighting Fixtures Replacement
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Mikhail Tenushkin, Project Officer 718-472-8000	PS 156 - Lighting Replacement	SCA15-16282D-1	Yes	Prime	\$ 1,260,000.00	4/29/2015	12/31/2015	100%	750 Concourse Village West, Bronx, NY 10451	Lighting Fixtures Replacement
New York City Housing Authority 80 Church Street New York, NY	Jacobs Engineering 212-760-8898	Sandy Renovation Various Developments	EL1514238	No	Prime	\$ 7,837,645.00	9/21/2015	3/1/2016	100%	Various Developments - NYC	Sandy Renovation
NY Power Authority 123 Main Street White Plains, NY 10601	Jessica Black, CM 914-208-0803	Brooklyn College Lighting and Sensors	ES-GSN-0706	Yes	Prime	\$ 1,748,787.00	6/10/2015	7/31/2016	100%	2900 Bedford Ave., Brooklyn, NY 11210	Lighting
NYC Dept. of Design & Cons. 1 Centre Street New York, NY 10007	John Miranda 212-669-7548	80 Centre St. - Electrical Upgrade and Emergency Generator	85611B0027	Yes	Prime	\$ 13,668,968.00	3/29/2012	7/31/2016	100%	80 Centre Street New York, NY 10007	Electrical Upgrade and Emergency Generator
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Rhonda Campbell, Project Officer 718- 472-8000	JFK HS	SCA15-15665D-2	Yes	Prime	\$ 1,953,000.00	7/2/2015	8/17/2016	100%	99 Terrace View Ave Bronx, NY	Auditorium Stage Lighting
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Constantin Dumitrescu 718-472-8000	3 Schools @ JHS 25M	SCA16-17068D-1	Yes	Prime	\$ 1,620,000.00	2/4/2016	10/9/2016	100%	145 Santon Street New York, NY	Lighting
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Arthur Umebuan, Project Officer 718-472-8000	PS 3K - Low Voltage/Fire Alarm/PA Systems Upgrade	SCA 14-15367D-1	Yes	Prime	\$ 1,710,000.00	8/11/2014	11/1/2016	100%	50 Jefferson Ave., Brooklyn, NY 11216	Low Voltage FA & PA Systems

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
see attached							

ARK SYSTEMS ELECTRIC CORP. - WORK IN PROGRESS

Agency	Contact Person & Telephone Number	Nature of Project - Project Title and Location	Contract No.	Bond	Prime/Sub	Contract Amount	Date of Award	% Complete	\$ Amount of Work Completed	Balance to be Completed	Est. Completion Date
Dormitory Authority State of NY 1 Penn Plaza New York, NY	AKS International Inc, M.Juic 718-267-6900	Lehman College - Central Plant Upgrade	#2623809999	No	Sub	\$ 5,418,316.04	11/5/2014	99%	\$ 5,364,132.88	\$ 54,183.16	12/31/2016
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	BNG National Plumbing & Heating	PS 105 - Sandy Heating Plant Upgrade Flood Elimination	SCA15-16076D-1	Yes	Sub	\$ 2,930,000.00	3/17/2015	95%	\$ 2,783,500.00	\$ 146,500.00	12/31/2017
Dormitory Authority State of NY 1 Penn Plaza New York, NY	AKS International Inc, M.Juic 718-267-6900	LaGuardia CC	3200409999	No	Sub	\$ 2,015,000.00	8/24/2015	99%	\$ 1,994,850.00	\$ 20,150.00	6/30/2017
Dormitory Authority State of NY 1 Penn Plaza New York, NY	AKS International Inc, M.Juic 718-267-6900	Marshak Science Tower	252709999	No	Sub	\$ 3,600,000.00	10/27/2015	90%	\$ 3,240,000.00	\$ 360,000.00	12/31/2017
Dormitory Authority State of NY 1 Penn Plaza New York, NY	CDE Air Conditioning 718-788-1040	Baruch College	3048509999	No	Sub	\$ 1,700,000.00	11/23/2015	95%	\$ 1,615,000.00	\$ 85,000.00	6/30/2017
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Neelam Construction 201-768-2213	Bard Early HS	C000013986	Yes	Sub	\$ 801,000.00	12/1/2015	80%	\$ 640,800.00	\$ 160,200.00	12/31/2017
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Arthur Umebuzani, Project Officer 718-472-8000	Brooklyn HS of Fine Arts	SCA16-15368D-1	Yes	Prime	\$ 5,292,000.00	9/25/2015	90%	\$ 4,782,800.00	\$ 529,200.00	12/31/2017
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Ashnu International - 718-267-7590	New Pre-K 972Q	SCA12-00049R	No	Sub	\$ 1,360,000.00	12/1/2016	99%	\$ 1,346,400.00	\$ 13,600.00	6/30/2017
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Moinuddin Ahmed, Project Officer 718-472-8000	Chelsea Vocational HS	C000014506	Yes	Prime	\$ 2,655,000.00	1/24/2017	95%	\$ 2,522,250.00	\$ 132,750.00	3/7/2018
The Port Authority of NY & NJ 4 World Trade Center 150 Greenwich Street New York, NY 10007	Skanska Walsh 917-438-4500	LaGuardia Airport	1213126J-000	No	Sub	\$ 7,839,000.00	12/9/2016	60%	\$ 4,703,400.00	\$ 3,135,600.00	8/1/2018
NYC EDC 110 William Street New York, NY 10036	TDX Construction Corp. 212-279-1981	Bellevue Hospital	62510001	No	Sub	\$ 5,292,000.00	3/22/2017	85%	\$ 4,498,200.00	\$ 793,800.00	12/31/2017
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Turner Construction	PS 101K	161248	No	Sub	\$ 6,420,000.00	2/10/2017	15%	\$ 963,000.00	\$ 5,457,000.00	7/1/2019
NYC Dept. of Design & Cons. 30-30 Thomson Ave. Long Island City, NY 11101	CDE Air Conditioning 718-788-1040	Bronx Family & Criminal Court	E14-0003	No	Sub	\$ 3,960,000.00	2/1/2017	85%	\$ 3,386,000.00	\$ 594,000.00	3/31/2018
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	Ashnu International - 718-267-7590	Pre-K 422	C000013961	No	Sub	\$ 750,000.00	2/23/2018	20%	\$ 150,000.00	\$ 600,000.00	7/1/2019
Dormitory Authority State of NY 1 Penn Plaza New York, NY	Peter Jackson, PO	Borough of Manhattan Community College Emergency Generator	198867	Yes	Prime	\$ 4,500,000.00	6/30/2017	5%	\$ 225,000.00	\$ 4,275,000.00	11/16/2018
Dormitory Authority State of NY 1 Penn Plaza New York, NY	Fresh Meadow Mechanical - Tom Pellegrino - 718-961-6634	Queens College Chiller Plant	2855609999	No	Sub	\$ 1,800,000.00	9/18/2017	5%	\$ 90,000.00	\$ 1,710,000.00	12/31/2018

ARK SYSTEMS ELECTRIC CORP. - WORK IN PROGRESS

Agency	Contact Person & Telephone Number	Nature of Project - Project Title and Location	Contract No.	Bond	Prime/Sub	Contract Amount	Date of Award	% Completed	\$ Amount of Work Completed	Balance to be Completed	Est. Completion Date
Dormitory Authority State of NY 1 Penn Plaza New York, NY	Infinity Contracting - 718-762-3200	John Jay College	3045709999	No	Sub	\$ 990,000.00	9/19/2017	5%	\$ 49,500.00	\$ 940,500.00	12/31/2018
Dormitory Authority State of NY 1 Penn Plaza New York, NY	Infinity Contracting - 718-762-3200	City College NAC Bldg	309050	No	Sub	\$ 891,000.00	12/1/2017	5%	\$ 44,550.00	\$ 846,450.00	12/31/2018
New York City Housing Authority 90 Church Street New York, NY	Navillus Contracting - 212-750-1808	LaGuardia Houses	GR1429248	No	Sub	\$ 7,662,000.00	2/26/2018	1%	\$ 76,620.00	\$ 7,585,380.00	12/31/2019
NYC School Construction Authority 30-30 Thomson Ave. Long Island City, NY 11101	ABC Construction - 718-729-2501	Pre-K 471	C000014916	No	Sub	\$ 2,145,000.00	5/2/2018	0%	\$ -	\$ 2,145,000.00	12/31/2019

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
none					

**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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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: Queens, New York
7th of May, 2018



SIGNATURE

Rajiv Lodaya

PRINTED NAME

Vice-President

TITLE

Sworn to before me this
7th day of May 2018


Notary Public



Dated: 05/07/2018

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
 Disadvantaged Business Enterprise
- 2a. If you are certified as an **MBE, WBE, LBE, EBE** or **DBE**, what city/state agency are you certified with? NYC Dept. of Small Business Services Are you DBE certified? Yes No
Empire State Development
3. Please indicate if you would like assistance from SBS in identifying certified M/WBEs for contracting opportunities: Yes No
4. Is this project subject to a project labor agreement? Yes No
5. Are you a Union contractor? Yes No If yes, please list which local(s) you affiliated with IBEW Local # 3
6. Are you a Veteran owned company? Yes No

PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION

7. 11-3405991 raj@arkelectric.com
Employer Identification Number or Federal Tax I.D. Email Address
8. ARK Systems Electric Corp.
Company Name
9. 27-08 42nd Road, Long Island City, NY 11101
Company Address and Zip Code
10. Raj Lodaya 718-482-3922
Chief Operating Officer Telephone Number
11. same
Designated Equal Opportunity Compliance Officer Telephone Number
(If same as Item #10, write "same")
12. same
Name of Prime Contractor and Contact Person
(If same as Item #8, write "same")

13. Number of employees in your company: 60

14. Contract information:

(a) NYC DDC (b) 16,231,845.00
Contracting Agency (City Agency) Contract Amount

(c) 8502018HR0009C (d) _____
Procurement Identification Number (PIN) Contract Registration Number (CT#)

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

(g) Description and location of proposed contract:

Bellevue Men's Shelter - Electrical Upgrade & Generator

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

If yes, attach a copy of certificate.

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

If yes, attach a copy of certificate.

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

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

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

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

If yes,

(a) Name and address of OFCCP office.

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

If yes, attach a copy of such certificate.

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

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

(d) Were any deficiencies found? Yes___ No___

If yes, attach a copy of such findings.

19. Is your company or its affiliates a member or members of an employers' trade association which is responsible for negotiating collective bargaining agreements (CBA) which affect construction site hiring? Yes X No___ IBEW Local 3

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

PART II: DOCUMENTS REQUIRED

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

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

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

X (c) Employee Policy/Handbook

X (d) Personnel Policy/Manual

X (e) Supervisor's Policy/Manual

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

X (g) Collective bargaining agreement(s).

___ (h) Employment Application(s)

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

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

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

- | | | |
|--|---|--|
| (a) Prior to job offer | Yes | No <input checked="" type="checkbox"/> |
| (b) After a conditional job offer | Yes <input checked="" type="checkbox"/> | No |
| (c) After a job offer | Yes <input checked="" type="checkbox"/> | No |
| (d) Within the first three days on the job | Yes <input checked="" type="checkbox"/> | No |
| (e) To some applicants | Yes | No <input checked="" type="checkbox"/> |
| (f) To all applicants | Yes <input checked="" type="checkbox"/> | No |
| (g) To some employees | Yes <input checked="" type="checkbox"/> | No |
| (h) To all employees | Yes <input checked="" type="checkbox"/> | No |

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

In individual employee folders at our office

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

If yes, is the medical examination given:

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

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

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

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

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

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

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

If yes, please attach a copy of this policy.

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

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

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

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

If yes, attach a log. See instructions.

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

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

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

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

SIGNATURE PAGE

I, (print name of authorized official signing) Rajiv Lodaya 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.

ARK Systems Electric Corp.

Contractor's Name

Rajiv Lodaya, Vice-President

Name of person who prepared this Employment Report

Title

Rajiv Lodaya, Vice-President

Name of official authorized to sign on behalf of the contractor

Title

718-482-3922

Telephone Number

05/07/2018

Signature of authorized official

Date

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

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

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

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

Only original signatures accepted.

Sworn before me this 7th day of May 20 18



[Signature]

Authorized Signature

05/07/2018

Date

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

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

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

SUBCONTRACTOR'S NAME*	OWNERSHIP (ENTER APPROPRIATE CODE LETTERS BELOW)	WORK TO BE PERFORMED BY SUBCONTRACTOR	TRADE PROJECTED FOR USE BY SUBCONTRACTOR	PROJECTED DOLLAR VALUE OF SUBCONTRACT
Metals				300,000
Concrete				250,000
Carpentry				150,000
AKS International	W	HVAC	Steamfitter	988,400
Varsity Plumbing	W	Plumbing	Plumber	104,576

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

OWNERSHIP CODES

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

FORM B: PROJECTED WORKFORCE

TRADE CLASSIFICATION CODES

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

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

Trade:	MALES						FEMALES															
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)			
	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.		
Electrical																						
Union Affiliation, if applicable																						
IBEW # 3																						
Total (Col. #1-10):	1	1						1														
Total Minority, Male & Female (Col. #2,3,4,5,7,8,9, & 10):																						
Total Female (Col. #6 - 10):																						
TOT	2	1						1														

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

Unions

FORM C: CURRENT WORKFORCE

TRADE CLASSIFICATION CODES

(J) Journeylevel Workers
 (H) Helper
 (TOT) Total by Column

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

Trade: _____
 Electrical _____
 Union Affiliation, if applicable
 IBEW Local # 3 _____

Total (Col. #1-10):
 51

Total Minority, Male & Female
 (Col. #2,3,4,5,7,8,9, & 10):
 29

Total Female
 (Col. #6 - 10):
 3

	MALES					FEMALES				
	(1) White Non Hisp.	(2) Black Non Hisp.	(3) Hisp.	(4) Asian	(5) Native Amer.	(6) White Non Hisp.	(7) Black Non Hisp.	(8) Hisp.	(9) Asian	(10) Native Amer.
J	18	6	4	12			3			
H										
A	4	1	3							
TRN										
TOT	22	7	7	12			3			

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

Unions _____





FMS ID: HH112BEES-G



Department of
Design and
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 ELECTRICAL WORK

Bellevue Men's Shelter - Electrical Upgrade and Generator

LOCATION: 400 East 30th Street
BOROUGH: New York, 10016
CITY OF NEW YORK

Contractor _____

Dated _____, 20____

Entered in the Comptroller's Office

First Assistant Bookkeeper _____

Dated _____, 20____





Department of Design and Construction

PROJECT ID: HH112BEES-G

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

Bellevue Men's Shelter - Electrical
Upgrade and Generator

LOCATION: 400 East 30th Street
BOROUGH: New York, 10016
CITY OF NEW YORK
CONTRACT NO. 1 GENERAL ELECTRICAL WORK

Department of Homeless Services

WSP

Date: January 11, 2018



18-095



Department of
Design and
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

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2015 Project Labor Agreement

NOTICE: THIS CONTRACT IS SUBJECT TO A NEW PROJECT LABOR AGREEMENT EXECUTED IN 2015

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.

In addition, please note that there are significant revisions between the 2015 PLA attached to this bid and the prior Citywide Renovation PLA. The Contractor is urged to review the entire PLA. Significant changes include:

- **Micro Work Orders:** For JOCS and Requirements contracts, Task Orders or Work Orders that do not exceed \$10,000 are not subject to the PLA. See PLA Article 3, Section 1.
- **On Call Contracts:** Provisions have been added regarding the referral of workers for on call contracts where Contractors are required to respond on an expedited basis. See PLA Article 4, Section 8.
- **Grievances:** The grievance procedure governing disputes under the PLA has been clarified. See PLA Article 9, Section 1.
- **Delinquent Contractors:** Contractors and Subcontractors who do not make required payments to union funds on a timely basis are subject to requirements to submit cancelled checks or another form of proof of payment in addition to certified payroll reports when requesting payment. See PLA Article 11, Section 2.
- **Payment to Union Funds for Non-Union Workers:** Non-union Contractors with bona fide private benefit plans that satisfy the requirements of Labor Law 220 will not be required to pay into union benefit funds for “core” non-union employees (working pursuant to Article 4, Section 2 of the PLA) who are already covered under such bona fide private benefit plans. See PLA Article 11, Section 2.
- **Veterans Day:** Veterans Day has been added to the list of standard holidays. See Article 12, Section 4.
- **Reporting Pay for Weather Events:** The usual reporting pay requirement of two hours for employees who report to their work location pursuant to their regular schedule does not apply when the National Weather Service issues a Weather Advisory and the Contractor speaks to the employee at least four hours before their shift starting time. See Article 12, Section 6.

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 week, 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 implemented pursuant to New York City Administrative Code §6-129, 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 certified M/WBE firms may be obtained from the Department of Small Business Services (DSBS) website at www.nyc.gov/getcertified, by emailing DSBS at MWBE@sbs.nyc.gov, by calling the DSBS certification hotline at (212) 513-6311, or by visiting or writing DSBS at 110 William St., 7th floor, New York, New York, 10038.

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

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

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

1. **Q.** 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.
2. **Q.** 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.
3. **Q.** Do the provisions of the PLA apply equally to subcontractors as well as contractors and how does the PLA affect the subcontractors that a bidder may utilize on the project?
A. Yes, the PLA applies to subcontractors and all subcontractors must agree to become party to the PLA. See PLA Art. 2, Sec. 8. 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.
4. **Q.** 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.
5. **Q.** 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 M/WBEs 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 M/WBEs 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 M/WBEs, 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.
6. **Q.** Must the City set M/WBE participation goals for the particular project or contract in order for a certified M/WBE to utilize the provisions of PLA Article 4, Section 2C?
A. No. PLA Article 4, Section 2(C) specifies what categories of M/WBEs are eligible to take advantage of this provision (i.e., those M/WBEs 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.

7. **Q.** 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.
8. **Q.** Does a non-union employee working under the PLA automatically become a union member?
- A.** No, the non-union employee does not automatically become a union member by working on a project covered by the PLA. Non-union employees working under the PLA are subject to the union security provisions (i.e., union dues/agency shop fees) of the local CBAs while on the project. These employees will be enrolled in the appropriate benefit plans and earn credit toward various union benefit programs except in certain circumstances as set forth in the PLA. See PLA Article 4, Section 6 and Article 11.
9. **Q.** When will the agency shop dues payer affiliate workers become eligible for union benefits?
- A.** Union benefit plans have their own plan documents that determine eligibility and workers will become eligible for certain benefits at different points in time. Contractors who will have agency shop dues payer affiliate workers should speak with the respective union(s) as to benefit eligibility thresholds.
10. **Q.** 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.** Except in certain circumstances, as described in the following paragraph, Contractors and subcontractors working under the PLA will be required to contribute on behalf of all employees covered by the PLA to established jointly trustee employee benefit funds designated in the Schedule A CBAs and required to be paid on public works under any applicable prevailing wage law. See PLA Article 11, Section 2. The Agency may withhold from amounts due the Contractor any amounts required to be paid, but not actually paid into any such fund by the Contractor or a subcontractor. See PLA Article 11, Section 2 D.

Non-union Contractors with bona fide private benefit plans that satisfy the requirements of Labor Law 220 will not be required to pay into union benefit funds for their employees working pursuant to Article 4, Section 2 (B) and (C) ("core" employees) who are already covered under their bona fide private benefit plans. Supplemental benefit funds in excess

of the annualized value of the private benefit plans will be paid to workers as additional wages in compliance with Labor Law 220. At the time of contract award, the Contractor shall make available to the contracting Agency a complete set of plan documents for each private benefit plan into which contributions will be made and/or coverage provided. The Contractor shall also provide certification from a certified public accountant as to the annualized hourly value of such benefits consistent with the requirements of Section 220. See PLA Article 11, Section 2.

11. Q. 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.

Upon notification by a union or fringe benefit fund that a Contractor is delinquent in its payment of benefits and a determination by the Agency that the union or fund has submitted appropriate documentation of such delinquency, the Agency will thereafter require the Contractor to submit cancelled checks or other equivalent proof of payment of benefit contributions with certified payroll reports for work covered by this PLA on which the Contractor is engaged.

The City strongly advises Contractors to read these provisions carefully and to include appropriate provisions in subcontracts addressing these possibilities.

12. Q. 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.

13. Q. Who decides on the number of workers needed?

A. Except as expressly limited by a specific provision of the PLA, a Contractor retains full and exclusive authority for the management of their operations, including the determination as to the number of employees to be hired and the qualifications therefore and the promotion, transfer, and layoff of its employees. See PLA Article 6, Section 1.

14. Q. May a contractor discharge a union referral for lack of productivity?

A. Again, except as expressly limited by a specific provision of the PLA, a Contractor retains full and exclusive authority for the management of their operations, including the right to discipline or discharge for just cause its employees. See PLA Article 6, Section 1.

15. Q. May a contractor assign a management person to site?

- A. Yes. Managers are not subject to the provisions of the PLA, so there is no restriction on management and/or other non-trade personnel, as long as such personnel do not perform trade functions. See Article 3, Section 1.
16. Q. 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). The standard work week may be reduced to 35 or 37 ½ hours of work in those limited circumstances where the City states in the bid documents that the Contractor will not be given access to the site to accommodate an 8 hour day. The 8 hour, 7 ½ hour or 7 hour work day must be established at the commencement of the project and may not be altered by the Contractor.
17. Q. Does the PLA create a common holiday schedule for all the signatory trades?
A. Yes, the PLA recognizes nine (9) common holidays, including Veterans Day. See PLA Article 12, Section 4.
18. Q. 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.
19. Q. 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 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.
20. Q. 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 trade's CBA.
21. Q. 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.
22. Q. 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.

23. Q. 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. The usual reporting pay requirement of two hours for employees who report to their work location pursuant to their regular schedule does not apply when the National Weather Service issues a Weather Advisory and the Contractor speaks to the employee at least four hours before their shift starting time. See PLA Article 12, Section 6.

24. Q. Should a local collective bargaining agreement of a signatory union 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.

25. Q. 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.

26. Q. 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.

27. Q. 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.

28. Q. 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.

29. **Q.** Does the 2015 Renovation PLA contain special provisions for JOCS or task order based Contracts?

A. The PLA does not apply to Task Orders or Work Orders that do not exceed \$10,000 issued under JOCS or Requirements Contracts otherwise subject to the PLA. See PLA Article 3, Section 1.

NYC Project Labor Agreements

CONTACT INFORMATION FOR LOCAL UNIONS (Updated May 2016)

BOILER MAKERS LOCAL NO. 5

24 Van Siclen Avenue
Floral Park, NY 11001
Phone: (516) 326-2500
Fax: (516) 326-3435
Business Manager: Steve Ludwigson

BLASTERS, DRILLRUNNERS & MINERS LOCAL NO. 29

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

BRICKLAYERS LOCAL NO. 1

4 Court Square #1
Long Island City, NY 11101
Phone: (718) 392-0525
Business Manager: Jeramiah Sullivan

CARPENTERS DISTRICT COUNCIL

395 Hudson Street, 9th Fl
New York, New York 10014
Phone: (212) 366-7500
Fax: (212) 675-3140
Business Manager: Joe Geiger
John Sheehy, D.C. Rep.

CEMENT MASONS NO. 780

150-50 14th Rd Suite 4
Whitestone, NY 11357
Phone: (718) 357-3750
Fax: (718) 357-2057
Business Manager: Gino Castingnoli

CONCRETE WORKERS DISTRICT COUNCIL NO. 16

29-18 35th Avenue
Long Island City, NY 11106
Phone: (718) 392-5077
Fax: (718) 392-5087
Business Manager: Alex Castaldi

DERRICKMEN & RIGGERS LOCAL 197

35-53 24th Street
Long Island City, NY 11101
Phone: (718) 361-6534
Fax: (718) 361-6584
Business Manager: William Hayes
Billhayes197@yahoo.com

DRYWALL TAPERS 1974

265 West 14th Street
New York, NY 10011
Phone: (212) 242-8500
Fax: (212) 242-2356
Business Manager: Sal Marsala

ELECTRICAL LOCAL NO. 3

158-11 Harry Van Arsdale, Jr. Avenue
Flushing, NY 11365
Phone: (718) 591-4000
Fax: (718) 380-8998
Business Manager: Chris Erickson
Raymond Melville, Asst. Bus. Mgr.
Construction

ELEVATOR CONSTRUCTORS NO. 1

47-24 27th Avenue
Long Island City, NY 11101
Phone: (718) 767-7004
Fax: (718) 767-6730
Business Manager: Lenny Legotte
llegotte@localoneiuec.com

ENGINEERS LOCAL NO. 14

141-57 Northern Boulevard
Flushing, NY 11354
Phone: (718) 939-0600
Fax: (718) 939-3131
Business Manager: Edwin Christian

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

44-40 11th Street
Long Island City, NY 11101
Phone: (212) 929-5327
Business Manager: Tom Callahan

ENGINEERS NO. 30

16-16 Whitestone Expressway
Whitestone, NY 11357
Phone: (718) 847-8484
Fax: (718) 850-0524
Business Manager: William Lynn

ENGINEERS No. 94

331-337 West 44th Street
New York, NY 10036
Phone: (212) 245-7040
Fax: (212) 245-7886
Business Manager: Kuba Brown
kubabrown@local94.com

GLAZIERS NO. 1087

45 West 14th Street
New York, NY 10011
Phone: (212) 924-5200
Fax: (212) 255-1151
Business Manager: Steve Birmingham

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

35-53 24th Street
Long Island City, NY 11101
Phone: (718) 784-3456
Fax: (718) 784-8357
Business Manager: Matty Aracich
matty@insulatorslocal12.com

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

1536 127th Street
College Point, NY 11356
Phone: (718) 886-7226
Business Manager: Jaime Soto

IRON WORKERS DISTRICT COUNCIL

22 West 46th Street
New York, NY 10036
Phone: (212) 302-1868
Business Manager: James Mahoney
jmahoney@iwintl.org

IRON WORKERS NO. 40 (Manhattan, The Bronx & Staten Island)

451 Park Avenue South
New York, NY 10016
Phone: (212) 889-1320
Fax: (212) 779-3267
Business Manager: Bob Walsh

IRON WORKERS NO. 361 (Brooklyn & Queens)

89-19 97th Avenue
Ozone Park, NY 11416
Phone: (718) 322-1016/17
Fax: (718) 322-1053
Business Manager: Matthew Chartrand

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

30 Cliff Street
New York, New York 10038
Phone: (212) 227-4803
Fax: (212) 406-1800
Business Manager: Edison Severino

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

520 8th Avenue
New York, NY 10018
Phone: (212) 465-7900
Fax: (212) 465-7903
Business Manager: Michael Prohaska

LABORERS NO. 731

34-11 35th Avenue
Astoria, NY 11106
(718) 706-0720
Business Manager: Joseph D'Amato

**LATHERS METAL
LOCAL NO. 46**

1322 Third Avenue
New York, NY 10021
Phone: (212) 737-0500
Fax: (212) 249-1226
Business Manager: Terrance Moore

MASON TENDERS DIST. COUNCIL

520 8th Avenue
New York, NY 10018
Phone: (212) 452-9400
Fax: (212) 452-9499
Business Manager: Robert Bonanza

METAL POLISHERS

LOCAL UNION NO. 8A-28A

36-18 33rd Street 2nd Fl.
Long Island City, NY 11106
Phone: (718) 361-1770
Fax: (718) 361-1934
Business Manager: Hector Lopez

MILLWRIGHT AND MACHINERY

ERECTORS LOCAL NO. 740

89-07 Atlantic Avenue
Woodhaven, NY 11412
Phone: (718) 849-3636
Fax: (718) 849-0070
Business Manager: Joseph Geiger

ORNAMENTAL IRON WORKERS

NO. 580

501 West 42nd Street
New York, NY 10036
Phone: (212) 594-1662
Fax: (212) 564-2748
Business Manager: Pete Myers

PAINTERS DISTRICT

COUNCIL NO. 9

45 West 14th Street
New York, NY 10011
Phone: (212) 255-2950
Fax: (212) 255-1151
Business Manager: Joseph Azzopardi

PAINTERS STRUCTURAL STEEL

NO. 806

40 West 27th Street
New York, New York 10001
Phone: (212) 447-1838/0149
Fax: (212) 545-8386
Business Manager: Angelo Serse

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

136-25 37th Avenue, Suite 502
Flushing, NY 11354
Phone: (718) 886-3310
Business Manager: Keith Lozcalzo

PLASTERS LOCAL UNION NO. 262

2241 Conner Street
Bronx, NY 10466
Phone: (718) 547-5440
Fax: (718) 547-5435
Business Manager: Michael Hubler

PLUMBERS NO. 1

158-29 Cross Bay Boulevard
Howard Beach, NY 11414
Phone: (718) 738-7500
Fax: (718) 835-0896
Business Manager: John Murphy

**PRIVATE SANITATION
LOCAL NO. 813**

45-18 Court Square, Suite 600
Long Island City, NY 11101
Phone: (718) 937-7010 ext. 244
Fax: (718) 937-7003
Business Manager: Sean Campbell

ROOFERS & WATERPROOFERS NO. 8

12-11 43rd Avenue
Long Island City, NY 11101
Phone: (718) 361-1169
Fax (718) 361-8330
Business Manager: Nick Siciliano

**SHEET METAL WORKERS
LOCAL NO. 28**

MANHATTAN OFFICE
500 Greenwich Street
New York, NY 10013
Phone: (212) 941-7700
Fax: (212) 226-0304
Business Manager: Kevin Connors

SHEET METAL WORKERS

LOCAL 137

21-42 44th Drive

Long Island City, NY 11101

Phone: (718) 937-4514

Fax: (718) 937-4113

Business Manager: Dante Dano

STEAMFITTERS LOCAL UNION

NO. 638

32-32 48th Avenue

Long Island City, NY 11101

Phone: (718) 392-3420

Fax: (718) 784-7285

Business Manager: Bob Bartels

TEAMSTERS LOCAL UNION 282

2500 Marcus Avenue

Lake Success, NY 11042

Phone: (516) 488-2822

Fax: (516) 488-4895

Business Manager: Tom Gesauldi

TEAMSTERS LOCAL UNION 814

21-42 44th Drive

Long Island City, NY 11101

Phone: (718) 609-6407

Fax: (718) 361-9610

Business Manager: Jason Ide

TILE, MARBLE & TERRAZO B.A.C.

LOCAL UNION 7

45-34 Court Square

Long Island City, NY 11101

Phone: (718) 786-7648

Fax: (718) 472-2370

Business Manager: Tom Lane

TIMBERMEN & DOCKBUILDERS LOCAL 1556

395 Hudson Street

New York, NY 10014

Phone: (212) 242-1320

Business Manager: Joseph Geiger

NYC AGENCY RENOVATION & REHAB OF CITY OWNED BUILDINGS/STRUCTURES
PLA

PROJECT LABOR AGREEMENT

COVERING SPECIFIED

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

2015 - 2018

NYC AGENCY RENOVATION & REHAB OF CITY OWNED BUILDINGS/STRUCTURES
PLA

TABLE OF CONTENTS

	<u>Page</u>
ARTICLE 1 - PREAMBLE	1
SECTION 1. PARTIES TO THE AGREEMENT	2
ARTICLE 2 - GENERAL CONDITIONS	3
SECTION 1. DEFINITIONS.....	3
SECTION 2. CONDITIONS FOR AGREEMENT TO BECOME EFFECTIVE.....	4
SECTION 3. ENTITIES BOUND & ADMINISTRATION OF AGREEMENT	4
SECTION 4. SUPREMACY CLAUSE	4
SECTION 5. LIABILITY	5
SECTION 6. THE AGENCY	6
SECTION 7. AVAILABILITY AND APPLICABILITY TO ALL SUCCESSFUL BIDDERS	6
SECTION 8. SUBCONTRACTING	7
ARTICLE 3-SCOPE OF THE AGREEMENT	7
SECTION 1. WORK COVERED	7
SECTION 2. TIME LIMITATIONS	9
SECTION 3. EXCLUDED EMPLOYEES.....	9
SECTION 4. NON-APPLICATION TO CERTAIN ENTITIES	11
ARTICLE 4- UNION RECOGNITION AND EMPLOYMENT	12
SECTION 1. PRE-HIRE RECOGNITION.....	12

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES PLA

SECTION 2. UNION REFERRAL 12

SECTION 3. NON-DISCRIMINATION IN REFERRALS 14

SECTION 4: MINORITY AND FEMALE REFERRALS 14

SECTION 5. CROSS AND QUALIFIED REFERRALS 16

SECTION 6. UNION DUES 16

SECTION 7. CRAFT FOREPERSONS AND GENERAL FOREPERSONS 16

SECTION 8. ON CALL REPAIR REFERRALS 17

ARTICLE 5- UNION REPRESENTATION 18

SECTION 1. LOCAL UNION REPRESENTATIVE 18

SECTION 2. STEWARDS 19

SECTION 3. LAYOFF OF A STEWARD 19

ARTICLE 6- MANAGEMENT’S RIGHTS 20

SECTION 1. RESERVATION OF RIGHTS 20

SECTION 2. MATERIALS, METHODS & EQUIPMENT 20

ARTICLE 7- WORK STOPPAGES AND LOCKOUTS 21

SECTION 1. NO STRIKES-NO LOCK OUT 21

SECTION 2. DISCHARGE FOR VIOLATION 22

SECTION 3. NOTIFICATION 22

SECTION 4. EXPEDITED ARBITRATION 23

SECTION 5. ARBITRATION OF DISCHARGES FOR VIOLATION 25

ARTICLE 8 - LABOR MANAGEMENT COMMITTEE 25

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES PLA

SECTION 1. SUBJECTS..... 25

SECTION 2. COMPOSITION 25

ARTICLE 9- GRIEVANCE & ARBITRATION PROCEDURE..... 26

SECTION 1. PROCEDURE FOR RESOLUTION OF GRIEVANCES..... 26

SECTION 2. LIMITATION AS TO RETROACTIVITY 29

SECTION 3. PARTICIPATION BY AGENCY AND/OR CONSTRUCTION
MANAGER 29

ARTICLE 10 - JURISDICTIONAL DISPUTES 30

SECTION 1. NO DISRUPTIONS..... 30

SECTION 2. ASSIGNMENT 30

SECTION 3. NO INTERFERENCE WITH WORK..... 30

ARTICLE 11 - WAGES AND BENEFITS 31

SECTION 1. CLASSIFICATION AND BASE HOURLY RATE 31

SECTION 2. EMPLOYEE BENEFITS 31

ARTICLE 12- HOURS OF WORK, PREMIUM PAYMENTS,..... 37
SHIFTS AND HOLIDAYS..... 37

SECTION 1. WORK WEEK AND WORK DAY 37

SECTION 2. OVERTIME 38

SECTION 3. SHIFTS 39

SECTION 4. HOLIDAYS..... 40

SECTION 5. SATURDAY MAKE-UP DAYS..... 40

SECTION 6. REPORTING PAY..... 41

SECTION 7. PAYMENT OF WAGES..... 42

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES PLA

SECTION 8. EMERGENCY WORK SUSPENSION 43

SECTION 9. INJURY/DISABILITY 43

SECTION 10. TIME KEEPING 43

SECTION 11. MEAL PERIOD 43

SECTION 12. BREAK PERIODS 44

ARTICLE 13 - APPRENTICES 44

SECTION 1. RATIOS 44

ARTICLE 14-SAFETY PROTECTION OF PERSON AND PROPERTY 45

SECTION 1. SAFETY REQUIREMENTS 45

SECTION 2. CONTRACTOR RULES..... 45

SECTION 3. INSPECTIONS 46

ARTICLE 15 - TEMPORARY SERVICES 46

ARTICLE 16 - NO DISCRIMINATION 46

SECTION 1. COOPERATIVE EFFORTS 46

SECTION 2. LANGUAGE OF AGREEMENT 47

ARTICLE 17- GENERAL TERMS 47

SECTION 1. PROJECT RULES..... 47

SECTION 2. TOOLS OF THE TRADE 47

SECTION 3. SUPERVISION..... 48

SECTION 4. TRAVEL ALLOWANCES 48

SECTION 5. FULL WORK DAY..... 48

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES PLA

SECTION 6. COOPERATION AND WAIVER..... 48

ARTICLE 18. SAVINGS AND SEPARABILITY 49

SECTION 1. THIS AGREEMENT 49

SECTION 2. THE BID SPECIFICATIONS..... 49

SECTION 3. NON-LIABILITY 50

SECTION 4. NON-WAIVER..... 50

ARTICLE 19 - FUTURE CHANGES IN SCHEDULE A AREA
CONTRACTS 51

SECTION 1. CHANGES TO AREA CONTRACTS..... 51

SECTION 2. LABOR DISPUTES DURING AREA CONTRACT
NEGOTIATIONS 51

ARTICLE 20 - WORKERS' COMPENSATION ADR 52

SECTION 1..... 52

ARTICLE 21 - HELMETS TO HARDHATS 52

SECTION 1..... 52

SECTION 2..... 52

Project Labor Agreement - - Letter of Assent 96

New York City Building And Construction Trades Council Standards of
Excellence..... 98

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

**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) 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 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;

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

- (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.

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BUILDINGS/STRUCTURES PLA

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 Correction (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 ["BCTC" or "Council"]; and the work covered by this Agreement (as defined in Article 3) is referred to as "Program Work."

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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

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BUILDINGS/STRUCTURES PLA

Engineers Locals 14 and 15 will be performed under the terms and conditions set out in the Schedule A agreements of Operating Engineers Locals 14 and 15. The Collective Bargaining Agreements of the affiliated local unions that cover the particular type of construction work to be performed by the contractor, and as set forth in the Schedule A list of Agreements, shall be deemed the Schedule A Collective Bargaining Agreements ("Schedule A CBA") under this Agreement. Where association and independent Collective Bargaining Agreements for a particular type of construction work are both set forth in Schedule A, association members shall treat the applicable association agreement as the Schedule A CBA and independent contractors shall treat the applicable independent agreement as the Schedule A CBA. Subject to the foregoing, where a subject covered by the provisions of this Agreement is also covered by a Schedule A Collective Bargaining Agreement, 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

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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.

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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 December 31, 2018. 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, except where the City specifically applies this Project Labor Agreement to such work in its bid documents, Program Work does not include, and this Project Labor Agreement shall not apply to, any other work, including:

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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 December 31, 2018;
2. Contracts procured on an emergency basis;
3. Contracts that do not exceed \$250,000;
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;
8. Contracts for installation of information technology that are not otherwise Program Work;
9. Task Orders or Work Orders issued under JOCS or Requirements Contracts that do not exceed \$10,000, and JOCS or Requirements Contracts where the monetary value of such contracts predominantly involves such Task Orders or Work

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

Orders; and

10. Contracts that do not exceed \$1 Million that are awarded pursuant to prequalified lists (PQLs) established by City agencies where entry on to the PQL is restricted to MWBEs, or a combination of MWBEs together with joint ventures which include at least one MWBE, or contractors who agree to subcontract at least 50% of the contract to MWBEs.

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 December 31, 2018, 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,

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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.

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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.

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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 forth in 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.

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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, FEMALE, LOCAL AND SECTION 3 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

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

specifications, within 48 hours of the request for same, the Contractor may employ qualified minority or female applicants from any other available source.

In the event that the City or a City agency determines to adopt local workforce participation goals to be set forth in an Agency's (or, if applicable Construction Manager's) bid specifications, the City and BCTC will work together to seek agreement on appropriate goals to be set forth in applicable bid documents and to be subject to the provisions of this section.

For any Program Work that may become subject to requirements under Section 3 of the Housing and Urban Development Act of 1968, as amended by the Housing and Community Development Act of 1992, and any rules, including new or revised rules, that may be published thereunder, the Local Unions will acknowledge the Section 3 obligations of the Construction Manager or Contractor, as applicable, and agree to negotiate a method to implement this Article in a manner that would allow the Construction Manager or Contractor to meet its Section 3 obligations to the greatest extent feasible, and to post any required notices in the manner required by Section 3. The parties also acknowledge that the Construction Manager and Contractor may also fulfill its Section 3 requirements on Program Work by promoting opportunities for excluded employees, as defined by Article 3, Section 3 of this Agreement, on Program Work and, to the extent permitted by Section 3, by promoting opportunities for craft and other employees on non-Program Work.

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

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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.

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

SECTION 8. ON CALL REPAIR REFERRALS

A. When an Agency awards a contract that requires the Contractor to have employees available on short notice to make time sensitive repairs with such contract requiring the Contractor to respond within as little as two hours from the time the Contractor is contacted by the Agency (“On Call, Repair Contract”), the Contractor will, within ten (10) days of being awarded an On Call, Repair Contract subject to this Agreement, notify the appropriate affiliated Union that it has been awarded such a contract and immediately enter into good faith negotiations with such relevant affiliated Union to establish a procedure to receive time sensitive referrals from such affiliated Union(s).

B. In the event the Contractor and the relevant affiliated Union(s) are unable to negotiate a specific, mutually agreeable procedure for on call repair referral procedure within twenty (20) days of commencement of negotiations or prior to commencement of performance of the contract, whichever is earlier, the Contractor and the relevant affiliated Unions will follow the following procedure:

1. Upon notification by a Contractor that it has been awarded an On Call Repair Contract pursuant to paragraph A above, each relevant affiliate Union shall provide the Contractor with the name and twenty four (24) hour contact information of an On Call, Repair Contract contact person for urgent on call repair referrals.

2. The relevant affiliated Unions shall prepare a list of individuals eligible and prepared for referral on an immediate basis to respond to the on call repair contractor. Such list shall be provided to and in the possession of the designated on call repair contact person for the affiliated Union and available for immediate reference.

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

3. Individuals on such list must be able to comply with the Contractor's response time pursuant to contract requirements.

4. The Union's On Call, Repair Contract contact person shall respond to a contractor's request for referrals within a reasonable time of the request so that compliance with the contract shall be possible.

C. In the event that the Contractor makes a request for an on call referral that is compliant with this procedure and a Union is not able to respond to the request, that Union will be deemed to have waived the forty-eight (48) hour referral rule contained in Section 2 above and the Contractor may employ qualified applicants from any other available source that can meet contract requirements for that time sensitive on call repair work only; provided, however, that any work related to the repair work that is not of a time sensitive nature under the contract shall comply with Section 2. If a Union fails to timely refer a worker and the Contractor employs other workers, the Contractor will e-mail the agency within 72 hours and the agency will forward that e-mail to the designated Labor Management Committee contacts.

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 during such time as bargaining unit work is occurring and subject to otherwise applicable policies pertaining to visitors to the site.

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

SECTION 2. STEWARDS

A. Each Affiliated Union shall have the sole discretion to designate any journey person as a Steward and an alternate Steward. The Union shall notify the Owner and/or Construction Manager as well as the Contractor 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.

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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 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,

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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

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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

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BUILDINGS/STRUCTURES PLA

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

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to present their case, and conduct their cross examination) unless otherwise agreed. A failure of any Union or Contractor to attend the hearing shall not delay the hearing of evidence by those present or the issuance of an award by the Arbitrator.

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

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

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

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

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

SECTION 5. ARBITRATION OF DISCHARGES FOR VIOLATION

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

ARTICLE 8 - LABOR MANAGEMENT COMMITTEE

SECTION 1. SUBJECTS

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

SECTION 2. COMPOSITION

The Committee shall be jointly chaired by a designee of the Agency and the President of the Council. It may include representatives of the Local Unions and Contractors involved in the issues being discussed. The parties may mutually designate an

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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. Grievances shall include the City contract number and the Program Work address; such information is posted at the Program Work Site if already commenced, and is available in the City Record and Notice to Proceed for projects not already commenced.

Grievances as to whether a scope of work is included or excluded from this Agreement shall be submitted to the Labor Management Committee (LMC) in the first instance rather than Step 1 below. To be timely, such notice must be given no later than ten days prior to a bid opening if the grievance is challenging a determination by an Agency that the contract is not subject to this Agreement. For other grievances as to contractor scope of work issues, notice of such challenges shall be submitted to the LMC within 7 calendar days after the act, occurrence or event giving rise to the grievance. If the scope of work grievance is not resolved within 21 days of its submission to the LMC, then the grievance may proceed directly to Step 3 below.

Step 1:

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(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:

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A Step 2 grievance shall be filed with the Agency, the BCTC, the Contractor, and, if the grievance is against a subcontractor, the subcontractor. The Business Manager or designee of the involved Local Union, together with representatives of the involved Contractor, Council, the Construction Manager (or designee), and, if the grievance is against a subcontractor, the subcontractor, shall meet in Step 2 within 7 calendar days of service of the written grievance to arrive at a satisfactory settlement. The BCTC shall schedule the Step 2 meeting.

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 the BCTC. In the event the matter is not resolved at Step 2, either J.J. Pierson or Richard Adelman, who shall act, alternately (beginning with Arbitrator J.J. Pierson), as the Arbitrator under this procedure, shall be designated at the Step 2 hearing and the BCTC will notify the arbitrator of his designation. After such notification by the BCTC, the local demanding arbitration shall within a reasonable time request the arbitrator to schedule the matter for an arbitration hearing date. 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.

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(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, with the exception of those related to compliance with requirements to pay prevailing wages and supplements in accordance with federal or State law, 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.

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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.

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ARTICLE 11 - WAGES AND BENEFITS

SECTION 1. CLASSIFICATION AND BASE HOURLY RATE

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

SECTION 2. EMPLOYEE BENEFITS

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

B. 1. Notwithstanding Section 2 (A) above, and subject to 2 (B)(2) below, Contractors who designate employees pursuant to Article 4, Section 2 (B) and (C) ("core" employees) that are not signatory to a Schedule A Agreement and who maintain bona fide private benefit plans that satisfy the requirements of Section 220 of the Labor Law, may

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satisfy the above benefit obligation with respect to those employees by providing those employees with coverage under their private benefit plans (to the extent consistent with Section 220). The total benefit payments to be made on behalf of each such employee must be equal to the total Section 220 supplement amount and any shortfall must be paid by cash supplement to the employee.

2. A contractor that will satisfy its Section 220 obligations in accordance with subsection 2(B)(1) above shall make available to the Agency at the time of contract award a complete set of plan documents for each non-Schedule A benefit plan into which contributions will be made and/or coverage provided pursuant to the provisions of Section 2(B)(1) above. The Contractor shall also provide certification from a certified public accountant as to the annualized hourly value of such benefits consistent with the requirements of Section 220.

3. The City shall verify that the alternate benefit plan(s), together with any cash supplement to the employee, is compliant with Section 220 prior to awarding the Contractor a contract covered by this Agreement. In the event the Contractor's alternate benefit plan(s), together with any cash supplement to the employee, is determined to be compliant with Section 220 and will be utilized by the Contractor on behalf of Article 4, Section 2(B) and (C) core employees, the Local Unions have no duty to enforce the Contractor's obligations on the alternate benefit plan(s) as they are not party to the alternate plan(s) or privy to the terms and conditions of the plan obligations. In the event the City determines the alternate benefit plan(s), together with any cash supplement to the employee, is not compliant with Section 220, the Contractor may, upon executing a Letter

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

of Assent, satisfy its obligations for all employees, including core employees, by contributing to the Schedule A benefit plans in accordance with the terms of the Schedule A Agreements.

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

D. 1. 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

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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.

2. In addition, where a union or employee benefit fund gives notice to the City that a Contractor is Delinquent as defined in subsection 2(D)(1) above and the City determines that the notice includes appropriate back-up documentation that the Contractor is delinquent, the City will promptly, but not later than twenty (20) days after receipt of the notice, provide a copy of said notice to City Agencies. In the event the City determines there is insufficient back-up documentation, it will notify the appropriate union and/or fringe benefit fund promptly, but not later than twenty (20) days after receipt of the Delinquency Notice, and shall include notice of what additional documentation is requested. Any determination by the City that there is insufficient back-up must be reasonable. This provision is intended to enhance compliance with the prevailing wage

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

law and the PLA with respect to the payment of fringe benefits, and is not intended as a substitute for the resolution of a disputed claim pursuant to any applicable law or agreement.

The City and the relevant Agency(s) will thereafter require the Delinquent Contractor to provide cancelled checks or other equivalent proof of payment of benefit contributions that have come due, to be submitted with certified payroll reports for all Program Work covered by this Agreement on which the Delinquent Contractor is engaged, for at least a one-year period or such earlier period if the Contractor is ultimately determined not be a Delinquent Contractor. Such proof of payment when required is a condition of payment of the Delinquent Contractor's invoices by any entity, including, but not limited to, the City, the relevant Agency(s), Construction Manager, General Contractor, the prime or higher level subcontractor, as is appropriate under the Delinquent Contractor's engagement. The union and the funds shall upon request receive copies of the certified payrolls, cancelled checks, or other proof of payment from the City and/or the relevant Agency(s).

E. 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 that the union and/or fringe benefit fund claims to be due it, pending resolution of the dispute pursuant to the union's Schedule A agreement, and the amount shall be paid to the party or parties ultimately determined to be entitled thereto, or held until the

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

Delinquent Contractor and union or employee 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.

F. 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.

NYC AGENCY RENOVATION & REHAB CITY OWNED
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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. The standard work week may be reduced to 35 or 37 ½ hours of work at straight time rates, Monday to Friday, 7 or 7 ½ hours per day, plus ½ hour unpaid lunch period in those limited circumstances where the City states in the bid documents that the Contractor will not be given access to the site to accommodate an 8 hour day. The 8 hour, 7 ½ hour or 7 hour work day must be established at the commencement of the project and may not be altered by the Contractor.

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.

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C. Scheduling — Except as provided above, 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 (i) over an employee's regularly scheduled work day, i.e., work over eight (8) hours in a day where 5/8s is scheduled, work over ten (10) hours in a day where 4/10s is scheduled, or work over seven (7) or seven and one half (7 ½) hours where such hours are scheduled pursuant to Article 12, section 1(A) and (ii) over forty (40) hours in a week, or over thirty five (35) or thirty seven and one-half (37 ½) where such hours are scheduled pursuant to Article 12, section 1(A). Overtime shall be paid 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

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

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 the employee's regularly scheduled work week, i.e., 40 hours in the week or thirty five (35) or thirty seven and one half (37 ½) pursuant to Article 12, section 1(A). 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.

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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 nine (9) recognized holidays on the Project:

New Year's Day

Martin Luther King Day President's Day

Memorial Day Veteran's Day

Labor 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

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BUILDINGS/STRUCTURES PLA

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 or for similar circumstances beyond the Contractor's control, shall receive pay only for such time as is actually worked. In other instances in which an employee's work is terminated early (unless provided otherwise elsewhere in this Agreement), the employee shall be paid for his full shift. Contractors shall not be permitted to call, text or email or voicemail employees in advance of their regularly scheduled shift starting time to avoid reporting pay. Notwithstanding the above, in the event that the National Weather Service issues a weather advisory for the area in which the work location is situated, and the entire project is shut down as a result of the Weather Advisory, the contractor shall be permitted to speak to employees no less than four (4) hours in advance of their shift starting time, unless the Local Union consents to a shorter notice in writing, to advise them not to report to work due to the National Weather Service advisory, and employees who are so notified shall not receive two (2) hours reporting pay if they report to the work location. The contractor shall make every effort to

NYC AGENCY RENOVATION & REHAB CITY OWNED
BUILDINGS/STRUCTURES PLA

notify each employee directly and confirm that notification has been received. Voice, text, and email messages left for employees without confirmation of delivery and receipt by employee do not constitute sufficient notice under this provision.

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.

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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 a full day's pay in accordance with the employee's regularly scheduled work day under Article 12, section (1)(A). 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

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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.

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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.

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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, climate control, water, power and light, shall only be required upon the determination of the Agency or Construction Manager, and when used shall be staffed and assigned to the appropriate trade(s) with jurisdiction. Temporary services 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 services requirements during non-working hours, and when used shall be staffed and assigned to the appropriate trades(s). There shall be no stacking of trades on temporary services, provided this does not constitute a waiver of primary trade jurisdiction. In the event a temporary system component 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.

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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.

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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,

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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

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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.

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BUILDINGS/STRUCTURES PLA

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 that are the basis for the Schedule A notify the Agency and Construction Manager in writing of the 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

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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 New York City 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 Program to create and maintain an integrated database of veterans interested in working on this Project and of

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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.

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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:
Anthony Shorris
First Deputy Mayor

APPROVED AS TO FORM:

ACTING CORPORATION COUNSEL
NEW YORK CITY

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LIST OF SIGNATORY UNIONS
Boiler Makers Local No. 5
Carpenters District Council
Cement Masons No. 780
Concrete Workers, District Council No. 16
Derrickmen and Riggers, Local Union No. 197
Drywall Tapers 1974, District Council 9
Electrical Workers Local No. 3
Glaziers Local Union No. 1087 District Council 9
Heat & Frost Insulators, Local Union No. 12A
Heat & Frost Insulators, Local Union No. 12
Iron Workers District Council
Iron Workers Local Union No. 40
Iron Workers Local No. 361
Laborers Local No. 78, Asbestos & Lead Abatement
Laborers Local 1010 Pavers and Road Builders District Council
Laborers 79 Construction and General Building Laborers
Laborers Local No. 731 Excavators
Mason Tenders District Council
Metal Lathers Local No. 46
Metal Polishers District Council 9
Ornamental Iron Workers Local No. 580
Painters District Council 9
Plumbers Local No. 1
Painters, Decorators & Wallcoverers District Council 9
Painters Structural Steel No. 806
Plasterers Local Union No. 262
Roofers & Waterproofers Local 8
Steamfitters Local Union No. 638
Sheet Metal Workers Local No. 28
Sheet Metal Workers Local No. 137
Teamsters Local Union No. 282
Teamsters Local Union 814
Teamsters Local No. 813 Private Sanitation
Tile, Marble & Terrazzo B.A.C. Local Union No. 7
Elevator Constructors Union Local No. 1

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SCHEDULE "A"

Union	Current Agreement w/
Architectural and Ornamental Iron Workers Local Union 580, AFL-CIO	Allied Building Metal Industries, Inc.
Building, Concrete, Excavating & Common Laborers Local 731	Independent
Building, Concrete, Excavating & Common Laborers Local 731	Members of the General Contractors Association of New York, Inc.
District Council No. 9, I.U.P.A.T Glaziers Local 1087	Window and Plate Glass Dealers Association
Drywall Tapers and Pointers Local 1974, affiliated with International Union of Painters & Allied Trades and Drywall Taping Contractor's Association & Association of Wall-Ceiling & Carpentry Industries NY, Inc.	Independent
Enterprise Association of Steamfitters and Apprentices Local 638	Mechanical Contractors Association of NY, Inc.
Enterprise Association of Steamfitters and Apprentices Local 638	Independent
Highway Road and Street Laborers Local Union 1010 of the District Council of Pavers and Road Builders of the Laborers' International Union of North America AFL-CIO	Independent
Highway Road and Street Laborers Local Union 1010 of the District Council of Pavers and Road Builders of the Laborers' International Union of North America AFL-CIO	Member of the General Contractors Association of New York, Inc.
International Association of Heat and Frost Insulators and Allied Workers Local No. 12 of New York City	Independent
International Association of Heat and Frost Insulators and Allied Workers Local No. 12 of New York City	The Insulation Contractors Association of New York City, Inc.
International Association of Heat and Frost Insulators and Allied Workers Local No. 12A of New York City	Independent

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International Association of Heat and Frost Insulators and Allied Workers Local No. 12A of New York City	Environmental Contractors Association, Inc.
International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers, AFL-CIO, Local Lodge No. 5	Boilermakers Association of Greater New York
Local Union No. 3 International Brotherhood of Electrical Workers, AFL-CIO	New York Electrical Contractors Association
International Brotherhood of Teamsters, Local 282, High Rise contract	Building Contractors Association & Independents
Local 46 Metallic Lathers Union and Reinforcing Iron Workers of NY and Vicinity of the International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers	Cement League
Local 46 Metallic Lathers Union and Reinforcing Iron Workers of NY and Vicinity of the International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers	Independent
Local 8 Roofers, Waterproofers & Allied Workers	Roofing and Waterproofing Contractors Association of New York and Vicinity
Local Union 1 of the United Association of Journeymen and Apprentices of the Pipe Fitting Industry of the United States and Canada	Association of Contracting Plumbers of the City of New York
Local Union Number 40 & 361 of Bridge, Structural Ornamental and Reinforcing Iron Workers AFL-CIO	Independent
Operative Plasterers' and Cement Masons' International Association Local No. 262	Independent
Painters and Allied Trades AFL-CIO, District Council No. 9 (Painting and Protective Coatings CBA)	Independent

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Painters and Allied Trades AFL-CIO, District Council No. 9 (Painting and Protective Coatings CBA)	The Association of Master Painters & Decorators of NY, Inc. and The Association of Wall, Ceiling & Carpentry Industries of NY, Inc. and The Window and Plate Glass Dealers Association
Sheet Metal Workers' International Association, Local 28	Sheet Metal & Air Conditioning Contractors Association of New York City, Inc.
Sheet Metal Workers' International Association, Local 137	The Greater New York Sign Association
Structural Steel and Bridge Painters Local 806, DC 9 International Union of Painters and Allied Trades, AFL-CIO	New York Structural Steel Painting Contractors Association
Teamsters Local 813	Independent
Teamsters Local 813	IBSI NY Corporation
Teamsters Local 814	Greater New York Movers and Warehousemen's Bargaining Group
The Cement Masons' Union, Local 780	Cement League
The District Council of Cement and Concrete Workers (comprised of Local 6A, Local 18A and Local 20)	Cement League
The District Council of Cement and Concrete Workers (comprised of Local 6A, Local 18A and Local 20)	Independent

NYC AGENCY RENOVATION & REHAB CITY OWNED
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The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Heavy Carpenters	GCA
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Dockbuilders Local No. 1556	Concrete Contractors of NY
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Dockbuilders Local 1556	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Millwright Local 740	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Timbermen Local 1556	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Timbermen Local 1556	GCA
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Heavy Carpenters	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Carpenters	Manufacturing Woodworkers Association of Greater New York Incorporated
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America	The Hoisting Trade Association of New York, Inc.
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America	The Test Boring Association

NYC AGENCY RENOVATION & REHAB CITY OWNED
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The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America	Building Contractors Association
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America	The Association of Wall-Ceiling & Carpentry Industries of New York, Incorporated
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners	The Cement League
The District Council of NYC and Vicinity of the United Brotherhood of Carpenters and Joiners of America	New York City Millwright Association
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners	Greater New York Floor Covering Association
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Carpenters	Association of Architectural Metal & Glass
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Carpenters	Concrete Contractors of NY
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Building Construction Carpenters	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Local 2287	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Shop Carpenters	Independent
The Tile Setters and Tile Finishers Union of New York and New Jersey, Local 7 of the International Bricklayers and Allied Craftworkers	The Greater New York and New Jersey Contractors Association

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United Derrickmen & Riggers Association, Local 197 of NY, LI, Westchester & Vicinity	Contracting Stonesetters Association Inc.
United Derrickmen & Riggers Association L 197 of NY, LI, Westchester and Vicinity	Building Stone and Pre-cast Contractors Association
International Union of Operating Engineers Local 14-14B	Building Contractors Association
International Union of Operating Engineers Local 14-14B	Contractors Association of Greater NY
International Union of Operating Engineers Local 14-14B	GCA
International Union of Operating Engineers Local 14-14B	The Cement League
International Union of Operating Engineers Local 14-14B	Allied Building Metal Industries, Inc.
International Union of Operating Engineers Local 14-14B	Brick Association
International Union of Operating Engineers Local 14-14B	Independent
International Union of Operating Engineers Local 15	Allied Building Metal Industries, Inc.
International Union of Operating Engineers Local 15-15A	General Contractors Association
International Union of Operating Engineers Local 15D	General Contractors Association
International Union of Operating Engineers Local 15D	Structural Steel Erectors

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International Union of Operating Engineers Local 15-15A	Building Contractors Association
International Union of Operating Engineers Local 15D	Building Contractors Association
International Union of Operating Engineers Local 15-15A	Contractors Association of Greater NY
International Union of Operating Engineers Local 15D	Contractors Association of Greater NY
International Union of Operating Engineers Local 15-15A	The Cement League
International Union of Operating Engineers Local 15D	The Cement League

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ADDITIONAL PARTICIPATING UNIONS

Local No. 1 New York of the International Union of Bricklayers and Allied Craft Workers

ADDITIONAL PARTICIPATING UNION SCHEDULE A

Union	Current Agreement with:
Local No. 1 New York of the International Union of Bricklayers and Allied Craft Workers	Independent
Local No. 1 New York of the International Union of Bricklayers and Allied Craft Workers	Associated Brick Masons Contractors
Local No. 1 New York of the International Union of Bricklayers and Allied Craft Workers	Building Restoration Contractors Association
Local No. 1 New York of the International Union of Bricklayers and Allied Craft Workers	Building Contractors Association
The Stone Setters of Local No. 1 New York of the International Union of Bricklayers and Allied Craft Workers	Independent
The Plasterers of Local No. 1 New York of the International Union of Bricklayers and Allied Craft Workers	Independent

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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 ARK Systems Electric Corp. and located at Bellevue Men's Shelter (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; local trust agreements for employee benefit funds; and trust documents for joint apprentice programs as well as apprentice program rules and procedures 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.

Provide description of the Work, identify craft jurisdiction(s) and all contract numbers below:

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Dated: 12/19/2018

ARK Systems Electric Corp.

(Name of Contractor or subcontractor)

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

Anjana Woolsey, Corp. Sec./Treasurer
(Authorized Officer & Title)

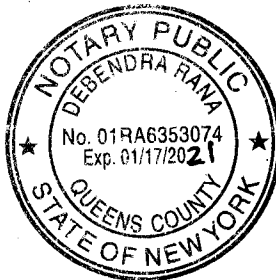
27-08 42nd Road, Long Island City, NY 11101
(Address)

Phone 718-482-3922, Fax 718-482-3923
(Phone) (Fax)

Contractor's State License
M10427

Sworn to before me this
19th day of December, 2018

[Signature]
Notary Public



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NEW YORK CITY BUILDING AND CONSTRUCTION TRADES COUNCIL
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.

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES PLA



BUILDSAFENYC

Codes of Conduct

BuildSafeNYC establishes that all BTEA member companies and BCTC member unions establish minimum safety standards on all building construction projects in NYC as follows:

1. The workforce shall adhere to the minimum personal protective equipment (PPE) usage to include:
 - a. ANSI compliant Hard Hats (with ratchet suspension) at all times (supplied by employer)
 - b. Construction-type Work Boots at all times
 - c. Long Pants and shirts with at least short sleeves at all times (no shorts or tank tops)
 - d. ANSI compliant Eye Protection in their possession and used as needed (supplied by employer)
 - e. Adequate Hearing Protection in their possession and used as needed (supplied by employer)
 - f. High-vis traffic vests at street level and when around heavy equipment (supplied by employer)
2. CM and Subcontractor management shall implement a fair and consistent disciplinary policy for all site personnel regarding the adherence to site safety rules and requirements. Likewise, a joint labor / management team will periodically assess project wide implementation of these Codes.
3. CM firms shall maintain minimum standards for workforce restroom, hygiene facilities and housekeeping, initially and throughout the duration of the project.
4. All personnel shall adhere to a strict policy against drug and alcohol possession and use on sites and during hours of work.
5. All personnel shall attend a site safety orientation prior to beginning work. Worker certifications of safety training for specific tasks such as fire watch, flagman, and safety attendant must be verified.
6. No cell phones, portable media devices, radios or other devices that limit hearing and attention shall be used while working on sites.
7. Ground Fault Circuit Interrupters (GFCI) will be used on all power tools and extension cords.
8. Union trade representatives shall participate in a regularly scheduled site safety meeting on all projects regardless of size.
9. Extreme effort shall be made to isolate the public from all construction activity. Specifically, systems shall be put in place to control falling materials and pedestrian exposure. This should be a top priority for the entire project workforce.
10. Workers shall honor security access control systems to establish entry to sites by authorized personnel only, where applicable.
11. Fall protection management shall be a top project priority. Workers shall maintain and use necessary fall protection systems and procedures where appropriate. Engineering controls and work methods which eliminate, guard, or otherwise control fall hazards shall take priority over personal fall arrest system usage.
12. Where hazardous materials are present, projects shall implement efforts to communicate and control potential exposure to the workforce.

With Full Support and Endorsement of:

Joseph Colletti
 Joseph J. Colletti, President & CEO
 Building Trades Employers' Association
BTEANYC The Voice of
 Building Trades Employer Association

Edward J. Malloy
 Edward J. Malloy, President
 Building and Construction Trades Council



Construction Management Firms			
<p><i>James Abadio</i> Board of Directors Board of Directors</p> <p><i>John J. M... Board of Directors Board of Directors</i></p> <p><i>John J. M... Board of Directors Board of Directors</i></p>	<p><i>Paul J. ... Board of Directors Board of Directors</i></p> <p><i>John E. ... Board of Directors Board of Directors</i></p> <p><i>John E. ... Board of Directors Board of Directors</i></p>	<p><i>Mark ... Board of Directors Board of Directors</i></p> <p><i>John ... Board of Directors Board of Directors</i></p> <p><i>John ... Board of Directors Board of Directors</i></p>	<p><i>David ... Board of Directors Board of Directors</i></p> <p><i>David ... Board of Directors Board of Directors</i></p> <p><i>David ... Board of Directors Board of Directors</i></p>
Trade Unions:			
<p><i>Michael W. Connelly Local 6 Local 6</i></p> <p><i>John E. ... Local 6 Local 6</i></p> <p><i>John E. ... Local 6 Local 6</i></p>	<p><i>John ... Local 6 Local 6</i></p> <p><i>John ... Local 6 Local 6</i></p> <p><i>John ... Local 6 Local 6</i></p>	<p><i>John ... Local 6 Local 6</i></p> <p><i>John ... Local 6 Local 6</i></p> <p><i>John ... Local 6 Local 6</i></p>	<p><i>John ... Local 6 Local 6</i></p> <p><i>John ... Local 6 Local 6</i></p> <p><i>John ... Local 6 Local 6</i></p>

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

INFORMATION FOR BIDDERS

December 2013

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INFORMATION FOR BIDDERS

1. Description and Location of Work

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

2. Time and Place for Receipt of Bids

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

3. Definitions

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

4. Invitation For Bids and Contract Documents

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

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

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

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

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

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

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

5. Pre-Bid Conference

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

6. Agency Contact

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

7. Bidder's Oath

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

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

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

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

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

9. Examination of Proposed Contract

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

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

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

10. Form of Bid

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

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

11. Irrevocability of Bid

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

12. Acknowledgment of Amendments

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

13. Bid Samples and Descriptive Literature

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

14. Proprietary Information/Trade Secrets

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

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

15. Pre-Opening Modification or Withdrawal of Bids

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

16. Bid Evaluation and Award

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

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

17. Late Bids, Late Withdrawals and Late Modifications

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

18. Withdrawal of Bids.

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

19. Mistake in Bids

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

(B) Mistakes Discovered Before Award

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

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

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

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

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

20. Low Tie Bids

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

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

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

21. Rejection of Bids

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

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

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

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

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

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

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

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

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

23. Affirmative Action and Equal Employment Opportunity

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

24. VENDEX Questionnaires

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

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

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

25. Complaints About the Bid Process

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

26. Bid, Performance and Payment Security

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

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

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

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

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

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

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

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

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

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

27. Failure to Execute Contract

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

28. Bidder Responsibilities and Qualifications

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

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

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

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

29. Employment Report

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

30. Labor Law Requirements

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

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

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

31. Insurance

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

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

32. Lump Sum Contracts

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

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

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

33. Unit Price Contracts

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

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

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

34. Excise Tax

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

35. Licenses and Permits

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

36. Multiple Prime Contractors

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

37. Locally Based Enterprise Requirements (LBE)

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

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

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

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

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

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

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

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

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

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

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

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

38. Bid Submission Requirements

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

39. Comptroller's Certificate

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

40. Procurement Policy Board Rules

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

41. DDC Safety Requirements

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

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
SAFETY REQUIREMENTS

June 2015

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); 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 16 NYCRR Part 753
- Title 15 of the Rules of the City of New York, Chapter 13 Citywide Construction Dust Mitigation
- Manual on Uniform Traffic Control Devices (MUTCD)
- Title 15 of the Rules of the City of New York, Chapter 28 Citywide Construction Noise Mitigation

II. 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 QA&CS 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 QA&CS within the Division of Program Management/ Safety & Site 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").

Daily Safety Job Briefing: Daily jobsite safety meetings, giving to all jobsite personnel by contractor, with the purpose of discussing project specific safety procedures for the scheduled construction work.

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

Job Hazard Analysis (JHA): A process of identifying the major job steps and any potential site-specific hazards that may be present during construction and establishing the means and methods to eliminate or control those hazards.

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.

Project Site: Those areas indicated in the Contract Documents where the Work is to be performed.

Project Safety Representative: The designated project safety representative shall have completed an authorized 30 hour OSHA Construction Safety Course and other safety training applicable to Contractor's/subcontractor's project work. Except in instances where a dedicated Project Safety Manager is required, a Project Safety Representative may also function as a superintendent, foreman or crew leader on the Project, but must have sufficient experience and authority to undertake corrective actions and must qualify to be a competent person. No work is to be performed on site when a Project Safety Representative is not present.

Project Safety Manager: A dedicated, full-time project safety manager may be a contractual requirement on large projects or projects deemed by DDC to be particularly high risk. This would be in addition or in lieu of a Contractor's Project Safety Representative. This individual shall not have any other assigned duties. This individual shall have received, at a minimum an authorized 30 hour OSHA Construction Safety Course. Other examples of acceptable training are OSHA Safety and Health Standards for the Construction Industry training program (OSHA 510), Certified Safety Professional (CSP), Certified Industrial Hygienist (CIH) or a degree/certificate in a safety and health from a college-level curriculum.

A Project Safety Manager shall possess the additional training, years of experience, and skills necessary to thoroughly understand the health and safety hazards and controls for large construction projects, including the full scope of the specific Work.

QA&CS – Quality Assurance and Construction Safety of the New York City Department of Design and Construction.

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 Construction Management firm, 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 Manager: For certain projects, as defined in NYC Construction Codes – Title 28, the Contractor shall provide a Site Safety Manager with a Site Safety Manager License issued by the NYC Department of Building.

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 procedures and training appropriate and

City of New York Department of Design and Construction: Safety Requirements
Safety and Site Support– Quality Assurance and Construction Safety

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.

Work: The construction required by the Contract Documents whether completed or partially completed, performed by the Contractor/ subcontractors. Work refers to the furnishing of labor, furnishing and incorporating materials and equipment into the construction and providing any service required by the Contract Documents to fulfill the Contractor's obligation to complete the Project.

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. DDC or CM Resident Engineer / Construction Project 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 meetings and daily safety job briefings.
- 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 and Accident Notification and Response Protocol.
- Gathers facts related to all accidents and prepares DDC Construction Accident Report.
- Notifies the Construction Safety Unit within two (2) hours of the start of an inspection by any outside regulatory agency personnel, including OSHA, NYC DOB or others and forwards a copy of the inspection report within three days of its receipt.
- Monitors the conditions at the site for conformance with the contractor's 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 contractor's 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 unsafe or unhealthy condition and directs the contractor to provide such labor, materials, equipment and supervision to abate such conditions.
- Escort and assist QA&CS Construction Safety Auditors during the field and record inspections.
- Reports emergency conditions to the Construction Safety Unit immediately.

B. Contractors

- Submit a completed Safety Questionnaire and other safety performance related documentation with its bid or as part of a pre-qualification package.
- Complete a written Job Hazard Analysis (JHA) that identifies safety hazards for project specific work tasks and hazard control methods. A written JHA shall be available at the site for reference and included in the Site Safety Plan submitted by the contractor.
- Submit a Site Safety Plan and Safety Program within 30 days from the Award Date 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.

City of New York Department of Design and Construction: Safety Requirements
Safety and Site Support– Quality Assurance and Construction Safety

- Develop project specific safety procedures to protect general public during all construction activities for the duration of the project.
- Ensure that all employees are aware of the hazards associated with the project through documented formal and informal training and/or other communications. Conduct and document weekly safety meetings and daily job briefing sessions for the duration of the project. Documentation to be provided to the RE/CPM on a monthly basis.
- Name the Project Safety Representative and Project Safety Manager, if required. The Contractor will be required to identify the Project Safety Representative and Project Safety Manager in the Site Safety Plan. Resumes, outlining the qualification and experience for the Project Safety Representative and Project Safety Manager, shall be available upon request. DDC reserves the right to request that the Contractor replace any Project Safety Representative or Project Safety Manager for any reason at any time during the project.
- Name a Competent Person(s). The Contractor will be required to identify a Competent Person(s) 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.
- Conduct applicable safety training prior to the commencement of work at the site. All training records (OSHA 10-hour, flagger, scaffold, fall protection, confined space entry, etc.) shall be provided to the RE/CPM prior to mobilization, included in the Site Safety Plan, kept current during the course of the project, and available for review. Prior to performing any work on DDC project all employees shall have successfully completed, within the previous five calendar years, a 10 Hour OSHA construction safety course.
- As part of the Site Safety Plan, prepare a site specific programs and plans, such as MPT plan, steel erection plan, confined space program, fall protection plan, demolition plan, etc. (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 Project Safety Representative and/or Project Safety Manager will conduct this training prior to mobilization and provide documentation to the RE/CPM.
- 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 or unhealthy conditions to the RE/CPM as soon as practical, but no more than 24 hours after discovery, and take prompt actions to remove or abate such conditions.
- Report any accidents involving injuries to workers or the general public, as well as property damage, to the RE/CPM within one (1) hour.
- Following an accident, the Contractor shall not remove or alter any equipment, structure, material, or evidence related to the accident. Exception: Immediate emergency procedures taken to secure structures, temporary construction, operations, or equipment that pose a continued imminent danger or facilitate assistance for persons who are trapped or who have sustained bodily injury.
- Notify the RE/CPM within one (1) hour of the start of an inspection by any outside regulatory agency personnel, including OSHA, NYC DOB or others.
- Maintain all records pertaining to all required compliance documents and accident and injury reports.
- Address 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 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 company workers' compensation experience modification rating and OSHA Incident 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 information within 15 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:

City of New York Department of Design and Construction: Safety Requirements
Safety and Site Support– Quality Assurance and Construction Safety

- 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 (3) years; and
- Criteria 4: A fatality (worker or member of public) and injuries, requiring OSHA notification, experienced on or near Contractor's worksite within the last three (3) years; and
- Criteria 5: Past safety performance on DDC projects (accidents; status of safety program and site safety plan submittals; etc.)
- Criteria 6: OSHA violation history for the last three (3) years;
- Criteria 7: Contractor shall provide OSHA Injury and Illness Records (currently OSHA 300 and 300A Logs) 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 details concerning the Contractor's safety experience. DDC may request the Contractor to provide copies of, among other things, accident investigation reports, OSHA records, OSHA and NYC DOB citations, EPA citations and written corrective action plan.

VI. SAFETY PROGRAM AND SITE SAFETY PLAN

Within thirty (30) days from the Award Date, 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 standards. The Site Safety Plan shall identify project work scope, safety hazards associated with the project tasks, and include specific safety procedures 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.

Safety Program: Corporate Safety Program established by the Contractor that includes the Contractor's overall safety policy, regulatory compliance plan and basic safety procedures covering all aspects of construction operations, performed by the Contractor. The Safety Program shall be a written document with a separate section describing each element of the Safety Program. The Safety Program shall have at minimum the following elements applicable to the Contractor's operations:

- Responsibility and Organization – Contractor's company organization chart, including titles, names, contact information, roles and responsibilities for key personnel, etc.
- Safety Training Program – Contractor's corporate training program.
- Hazard Corrective Actions – Criteria for safety inspections, identification of safety non-compliances, implementation and verification of corrective actions, forms to document safety inspections results, etc.
- Accident/Exposure Investigation
- Recordkeeping and Reporting Injuries – Responsible staff; reporting and recording criteria; OSHA 300 and 300A form completion, etc.
- Fire Protection and Prevention Program
- Housekeeping
- Illumination
- Sanitation
- Personal Protective Equipment (PPE) – Company policy for the use of head protection, foot protection, hearing protection, eye and face protection, protective clothing, and any additional protective equipment based on work tasks; PPE inspection and replacement policy.
- Hazard Communication Program
- Employee Emergency Action Plan
- Protection of Underground Facilities and Utilities
- Ionizing/Nonionizing Radiation
- Material Handling, Storage, Use and Disposal
- Tools – Hand and Power
- Signs, Signals, and Barricades

City of New York Department of Design and Construction: Safety Requirements
Safety and Site Support– Quality Assurance and Construction Safety

- Scaffold – Local Law 52 requirements, installation, use, inspection, dismantling, training and general safety requirements.
- Welding and Cutting
- Electrical Safety
- Fall Protection
- Cranes, Derrick, Hoists, Elevators, Conveyors
- Excavation Safety
- Concrete and Masonry Construction
- Maintenance and Protection of Traffic
- Steel Erection
- Demolition
- Blasting and the Use of Explosives
- Stairways and Ladders
- Toxic and Hazardous Substances
- Alcohol and Drug Abuse Policy
- Rodents and Vermin
- Occupational Noise Exposure
- Confined Space Program – General confined Space Program: training requirements, confined space hazard evaluation procedure, atmospheric testing procedure, confined space classification, permit-required procedure, communication procedure, rescue procedure, forms, etc.
- Construction Vehicles/Heavy Equipment
- Dust Control Procedures

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

- Project Work Scope – Detailed information regarding work tasks that will be performed by contractor and subcontractors under the project.
- Responsibility and Organization – Contractor’s organization chart with responsible staff for the project, including titles, names, contact information, roles and responsibilities.
- Safety Training and Education – OSHA 10 Hours training, requirements for daily safety briefings and weekly safety meetings, any work task specific training, responsible staff for implementation of training program for the project.
- Job Hazard Analysis (JHA) – Project specific Job Hazard Analysis including work tasks, identified hazards, hazard control methods (administrative, engineering, PPE), contractor’s name, project id, location, name and signature of a certifying person, hazard assessment date.
- Protection of Public
- Hazard Corrective Actions – Responsible staff, forms, frequency of safety inspections and implementation of corrective actions.
- Accident/Exposure Investigation – Accident/incident notification procedure of DDC project staff. Project specific procedures for accident investigation and implementation of corrective actions.
- First Aid and Medical Attention – Responsible staff, location and inspection of First Aid kit, directions to local hospitals; emergency telephone numbers.
- Project Specific Fire Protection and Prevention Program.
- Project Specific Illumination Procedure.
- Project Specific Sanitation Procedure.
- Personal Protective Equipment (PPE)
- Hazard Communication Program – Responsible staff; training; SDS records, project specific list of chemical; location of the program and SDS records.
- Means of Egress – Information regarding free and unobstructed egress from all parts of the building or structure; exit marking; maintenance of means of egress, etc.
- Employee Emergency Action Plan – Project specific: responsible staff, emergency alarm system, evacuation procedure, procedure to account for employees after evacuation, etc.
- Evacuation Plan – Project specific evacuation plan (drawing/scheme) with exists and evacuation routes.

City of New York Department of Design and Construction: Safety Requirements
Safety and Site Support– Quality Assurance and Construction Safety

- Protection of Underground Facilities and Utilities, including responsible staff.
- Ionizing/Nonionizing Radiation – Competent person, license and qualification requirements, type of radiation, employees exposure and protection, etc.
- Material Handling, Storage, Use and Disposal – Project specific information regarding material storage and disposal.
- Signs, Signals, and Barricades – Use of danger/warning signs, sidewalk closure, safety instruction signs, pedestrian fencing and barricades, etc.
- Scaffold – Project specific scaffold types, training, scaffold drawings, competent person, criteria for project specific scaffold, falling object protection.
- Welding and Cutting – project specific procedure for welding and cutting, including all necessary safety requirements such as fire prevention, personal protective equipment, hot work permits, FDNY certificate requirements.
- Fall Protection – Project specific information regarding selected fall protection systems, fall protection plan.
- Cranes, Derrick, Hoists, Elevators, Conveyors – project specific equipment information including type, rated load capacity, manufacture specification requirements, competent person, exposure to falling load, inspection, recordkeeping, clearance requirements, communication procedure, ground lines, permits.
- Excavation Safety – Competent person, project specific protective system.
- Maintenance and Protection of Traffic Plan – Project specific MPT plan, flagmen training.
- Steel Erection – Site specific erection plan, requirements for applicable written notifications, competent person.
- Demolition – Engineering survey, including written evidence, disconnection of all effected utilities, identification of all hazardous chemicals, materials, gases, etc., floor openings, chutes, inspection and maintenance of all stairs/passageways, removal of materials/debris/structural elements, lock out/tag out, competent person.
- Blasting and the Use of Explosives – Project specific safety procedures, warning signs, training/qualification, transportation, storage and use of explosives, inspection.
- Toxic and Hazardous Substances – Safety procedures for substances to be used on project.
- Noise Mitigation Plan – Completed project specific Noise Mitigation Plan.
- Confined Space Program – Project specific Confined Space Program, responsible staff, training records, equipment information, rescue procedure, list of project specific confined spaces, forms.
- Construction Vehicles/Heavy Equipment – Type of construction vehicles/heavy equipment to be used on site.
- Dust Mitigation Plan – Completed project specific Dust Mitigation Plan.

The most critical component of the Site Safety Plan is the Job Hazard Analysis (JHA) section. The JHA form is a written document prepared by the contractor. The contractor must conduct a site and task assessment JHA to identify the major job steps and any potential safety or environmental hazards related to performance of the work, eliminate or implement controls for the potential hazards, and identify proper personal protective equipment for the task. The JHA shall be communicated to all contractor/subcontractor personnel on site.

The initial Job Hazard Assessment form shall be included in the contractor's Site Safety Plan and the current form shall be available at the construction site for reference.

Certain DDC programs, such as Job Order Contracting System (JOCS), may not necessarily require Site Safety Plans. The JOCS contractor shall submit a Safety Program. The Site Safety Plan requirement for the JOCS contractor will be determined by QA&CS based on a project work scope, construction activities and project location. In addition, certain DDC Operating Units may establish client-specific program or safety requirements. The contractor's Site Safety Plan must address such client-specific program or safety requirements.

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

RE/CPM shall invite QA&CS Construction Safety Unit to the construction kick-off meeting. A QA&CS representative will participate in this meeting with the Contractor and RE/CPM prior to the start of the project for the purpose of:

City of New York Department of Design and Construction: Safety Requirements
Safety and Site Support- Quality Assurance and Construction Safety

- 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 QA&CS 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 Project 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 have these records available upon request. Any critical deficiencies shall be immediately reported to QA&CS 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 - QA&CS, or his/her designee will meet with the Contractor's Project Safety Representative and or Project Safety Manager, the DDC Project Manager, the RE/CPM, and 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 within 1 hour inform the RE/CPM/CM of all accidents/incidents including all fatalities, any injuries to employees or members of the general public, and property damage (e.g., structural damage, equipment rollovers, utility damage, loads dropped from crane). The RE/CPM shall notify the Construction Safety Unit as per DDC's Construction Safety Emergency and Accident Notification and Response Protocol and shall maintain a record of all contractor accidents/incidents for the project.
- F. The Construction Safety Unit shall be notified within two (2) hours of the start of any NYS-DOL/ NYC-COSH/ OSHA/ EPA inspections.

IX. SAFETY PERFORMANCE EVALUATION

The contractor's safety record, including accident/incident history and DDC safety 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 may 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.

CITY OF NEW YORK
STANDARD CONSTRUCTION CONTRACT

March 2017

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CITY OF NEW YORK
STANDARD CONSTRUCTION CONTRACT

TABLE OF CONTENTS

CHAPTER I: THE CONTRACT AND DEFINITIONS	1
ARTICLE 1. THE CONTRACT	1
ARTICLE 2. DEFINITIONS	1
CHAPTER II: THE WORK AND ITS PERFORMANCE.....	4
ARTICLE 3. CHARACTER OF THE WORK	4
ARTICLE 4. MEANS AND METHODS OF CONSTRUCTION	4
ARTICLE 5. COMPLIANCE WITH LAWS	5
ARTICLE 6. INSPECTION	10
ARTICLE 7. PROTECTION OF WORK AND OF PERSONS AND PROPERTY; NOTICES AND INDEMNIFICATION	11
CHAPTER III: TIME PROVISIONS	12
ARTICLE 8. COMMENCEMENT AND PROSECUTION OF THE WORK	12
ARTICLE 9. PROGRESS SCHEDULES	13
ARTICLE 10. REQUESTS FOR INFORMATION OR APPROVAL	13
ARTICLE 11. NOTICE OF CONDITIONS CAUSING DELAY AND DOCUMENTATION OF DAMAGES CAUSED BY DELAY	14
ARTICLE 12. COORDINATION WITH OTHER CONTRACTORS	18
ARTICLE 13. EXTENSION OF TIME FOR PERFORMANCE	19
ARTICLE 14. COMPLETION AND FINAL ACCEPTANCE OF THE WORK	21
ARTICLE 15. LIQUIDATED DAMAGES	23
ARTICLE 16. OCCUPATION OR USE PRIOR TO COMPLETION	23
CHAPTER IV: SUBCONTRACTS AND ASSIGNMENTS	24
ARTICLE 17. SUBCONTRACTS	24
ARTICLE 18. ASSIGNMENTS	26
CHAPTER V: CONTRACTOR'S SECURITY AND GUARANTEE	26
ARTICLE 19. SECURITY DEPOSIT	26
ARTICLE 20. PAYMENT GUARANTEE	27
ARTICLE 21. RETAINED PERCENTAGE	29
ARTICLE 22. INSURANCE	30
ARTICLE 23. MONEY RETAINED AGAINST CLAIMS	36
ARTICLE 24. MAINTENANCE AND GUARANTY	37
CHAPTER VI: CHANGES, EXTRA WORK, AND DOCUMENTATION OF CLAIM	38
ARTICLE 25. CHANGES	38
ARTICLE 26. METHODS OF PAYMENT FOR OVERRUNS AND EXTRA WORK	38
ARTICLE 27. RESOLUTION OF DISPUTES	41
ARTICLE 28. RECORD KEEPING FOR EXTRA OR DISPUTED WORK OR WORK ON A TIME & MATERIALS BASIS	45
ARTICLE 29. OMITTED WORK	46
ARTICLE 30. NOTICE AND DOCUMENTATION OF COSTS AND DAMAGES; PRODUCTION OF FINANCIAL RECORDS	46
CHAPTER VII: POWERS OF THE RESIDENT ENGINEER, THE ENGINEER OR ARCHITECT AND THE COMMISSIONER	48
ARTICLE 31. THE RESIDENT ENGINEER	48
ARTICLE 32. THE ENGINEER OR ARCHITECT OR PROJECT MANAGER	48
ARTICLE 33. THE COMMISSIONER	48
ARTICLE 34. NO ESTOPPEL	49
CHAPTER VIII: LABOR PROVISIONS.....	49
ARTICLE 35. EMPLOYEES	49
ARTICLE 36. NO DISCRIMINATION	57
ARTICLE 37. LABOR LAW REQUIREMENTS	59

ARTICLE 38. PAYROLL REPORTS	64
ARTICLE 39. DUST HAZARDS	64
CHAPTER IX: PARTIAL AND FINAL PAYMENTS	65
ARTICLE 40. CONTRACT PRICE	65
ARTICLE 41. BID BREAKDOWN ON LUMP SUM.....	65
ARTICLE 42. PARTIAL PAYMENTS	65
ARTICLE 43. PROMPT PAYMENT.....	66
ARTICLE 44. SUBSTANTIAL COMPLETION PAYMENT.....	66
ARTICLE 45. FINAL PAYMENT.....	67
ARTICLE 46. ACCEPTANCE OF FINAL PAYMENT.....	68
ARTICLE 47. APPROVAL BY PUBLIC DESIGN COMMISSION.....	69
CHAPTER X: CONTRACTOR'S DEFAULT	69
ARTICLE 48. COMMISSIONER'S RIGHT TO DECLARE CONTRACTOR IN DEFAULT	69
ARTICLE 49. EXERCISE OF THE RIGHT TO DECLARE DEFAULT	71
ARTICLE 50. QUITTING THE SITE.....	71
ARTICLE 51. COMPLETION OF THE WORK.....	71
ARTICLE 52. PARTIAL DEFAULT	71
ARTICLE 53. PERFORMANCE OF UNCOMPLETED WORK.....	72
ARTICLE 54. OTHER REMEDIES.....	72
CHAPTER XI: MISCELLANEOUS PROVISIONS	72
ARTICLE 55. CONTRACTOR'S WARRANTIES.....	72
ARTICLE 56. CLAIMS AND ACTIONS THEREON.....	73
ARTICLE 57. INFRINGEMENT	73
ARTICLE 58. NO CLAIM AGAINST OFFICIALS, AGENTS OR EMPLOYEES.....	74
ARTICLE 59. SERVICE OF NOTICES	74
ARTICLE 60. UNLAWFUL PROVISIONS DEEMED STRICKEN FROM CONTRACT.....	74
ARTICLE 61. ALL LEGAL PROVISIONS DEEMED INCLUDED	74
ARTICLE 62. TAX EXEMPTION	74
ARTICLE 63. INVESTIGATION(S) CLAUSE.....	76
ARTICLE 64. TERMINATION BY THE CITY	78
ARTICLE 65. CHOICE OF LAW, CONSENT TO JURISDICTION AND VENUE	80
ARTICLE 66. PARTICIPATION IN AN INTERNATIONAL BOYCOTT	81
ARTICLE 67. LOCALLY BASED ENTERPRISE PROGRAM	82
ARTICLE 68. ANTITRUST.....	82
ARTICLE 69. MACBRIDE PRINCIPLES PROVISIONS	83
ARTICLE 70. ELECTRONIC FILING/NYC DEVELOPMENT HUB	85
ARTICLE 71. PROHIBITION OF TROPICAL HARDWOODS.....	85
ARTICLE 72. CONFLICTS OF INTEREST.....	85
ARTICLE 73. MERGER CLAUSE	85
ARTICLE 74. STATEMENT OF WORK.....	85
ARTICLE 75. COMPENSATION TO BE PAID TO CONTRACTOR	85
ARTICLE 76. ELECTRONIC FUNDS TRANSFER.....	85
ARTICLE 77. RECORDS RETENTION	86
ARTICLE 78. EXAMINATION AND VIEWING OF SITE, CONSIDERATION OF OTHER SOURCES OF INFORMATION AND CHANGED SITE CONDITIONS.....	86

ARTICLE 79: PARTICIPATION BY MINORITY-OWNED AND WOMEN-OWNED BUSINESS ENTERPRISES IN CITY PROCUREMENT	87
SIGNATURES	95
ACKNOWLEDGMENT BY CORPORATION	96
ACKNOWLEDGMENT BY PARTNERSHIP.....	96
ACKNOWLEDGMENT BY INDIVIDUAL	96
ACKNOWLEDGMENT BY COMMISSIONER	97
AUTHORITY	98
COMPTROLLER'S CERTIFICATE	98
MAYOR'S CERTIFICATE	99
PERFORMANCE BOND #1	100
PERFORMANCE BOND #2.....	104
PAYMENT BOND	108

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WITNESSETH:

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

CHAPTER I: THE CONTRACT AND DEFINITIONS

ARTICLE 1. THE CONTRACT

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

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

1.1.2 The Contract Drawings and Specifications;

1.1.3 The General Conditions and Special Conditions, if any;

1.1.4 The **Contract**;

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

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

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

ARTICLE 2. DEFINITIONS

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

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

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

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

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

2.1.5 **“City”** shall mean the City of New York.

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

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

2.1.8 **“Comptroller”** shall mean the Comptroller of the City of New York.

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

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

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

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

2.1.13 **“Days”** shall mean calendar days, except where otherwise specified.

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

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

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

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

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

2.1.19 **“Final Approved Punch List”** shall mean a list, approved pursuant to Article 14.2.2, specifying those items of Work to be completed by the Contractor after Substantial Completion and dates for the completion of each item of Work.

2.1.20 **“Law”** or **“Laws”** shall mean the Constitution of the State of New York, the New York City Charter, the New York City Administrative Code, a statute of the United States or of the State of New York, a local law of the City of New York, any ordinance, rule or regulation having the force of law, or common law.

2.1.21 **“Materialman”** shall mean any corporation, firm, partnership, joint venture, or individual, other than employees of the Contractor, who or which contracts with the Contractor or any Subcontractor, to fabricate or deliver, or who actually fabricates or delivers, plant, materials or equipment to be incorporated in the Work.

2.1.22 **“Means and Methods of Construction”** shall mean the labor, materials, temporary structures, tools, plant, and construction equipment, and the manner and time of their use, necessary to accomplish the result intended by this Contract.

2.1.23 **“Notice to Proceed”** or **“Order to Work”** shall mean the written notice issued by the Commissioner specifying the time for commencement of the Work and the Engineer, Architect or Project Manager.

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

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

2.1.26 **“Project”** shall mean the public improvement to which this Contract relates.

2.1.27 **“Procurement Policy Board” (PPB)** shall mean the Agency of the City of New York whose function is to establish comprehensive and consistent procurement policies and rules which shall have broad application throughout the City.

2.1.28 **“Required Quantity”** in a unit price Contract shall mean the actual quantity of any item of Work or materials which is required to be performed or furnished in order to comply with the Contract.

2.1.29 **“Resident Engineer”** shall mean the representative of the Commissioner duly designated by the Commissioner to be his/her representative at the site of the Work.

2.1.30 **“Site”** shall mean the area upon or in which the Contractor’s operations are carried on, and such other areas adjacent thereto as may be designated as such by the Engineer.

2.1.31 “**Small Tools**” shall mean items that are ordinarily required for a worker’s job function, including but not limited to, equipment that ordinarily has no licensing, insurance or substantive storage costs associated with it; such as circular and chain saws, impact drills, threaders, benders, wrenches, socket tools, etc.

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

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

2.1.34 “**Substantial Completion**” shall mean the written determination by the Engineer that the Work required under this Contract is substantially, but not entirely, complete and the approval of the **Final Approved Punch List**.

2.1.35 “**Work**” shall mean all services required to complete the Project in accordance with the Contract Documents, including without limitation, labor, material, superintendence, management, administration, equipment, and incidentals, and obtaining any and all permits, certifications and licenses as may be necessary and required to complete the Work, and shall include both Contract Work and Extra Work.

CHAPTER II: THE WORK AND ITS PERFORMANCE

ARTICLE 3. CHARACTER OF THE WORK

3.1 Unless otherwise expressly provided in the **Contract Drawings, Specifications, and Addenda**, the **Work** shall be performed in accordance with the best modern practice, utilizing, unless otherwise specified in writing, new and unused materials of standard first grade quality and workmanship and design of the highest quality, to the satisfaction of the **Commissioner**.

ARTICLE 4. MEANS AND METHODS OF CONSTRUCTION

4.1 Unless otherwise expressly provided in the **Contract Drawings, Specifications, and Addenda**, the **Means and Methods of Construction** shall be such as the **Contractor** may choose; subject, however, to the **Engineer’s** right to reject the **Means and Methods of Construction** proposed by the **Contractor** which in the opinion of the **Engineer**:

4.1.1 Will constitute or create a hazard to the **Work**, or to persons or property; or

4.1.2 Will not produce finished **Work** in accordance with the terms of the **Contract**; or

4.1.3 Will be detrimental to the overall progress of the **Project**.

4.2 The **Engineer’s** approval of the **Contractor’s Means and Methods of Construction**, or his/her failure to exercise his/her right to reject such means or methods, shall not relieve the **Contractor**

of its obligation to complete the **Work** as provided in this **Contract**; nor shall the exercise of such right to reject create a cause of action for damages.

ARTICLE 5. COMPLIANCE WITH LAWS

5.1 The **Contractor** shall comply with all **Laws** applicable to this **Contract** and to the **Work** to be done hereunder.

5.2 Procurement Policy Board Rules: This **Contract** is subject to the Rules of the **PPB** (“**PPB Rules**”) in effect at the time of the bid opening for this **Contract**. In the event of a conflict between the **PPB Rules** and a provision of this **Contract**, the **PPB Rules** shall take precedence.

5.3 Noise Control Code provisions.

5.3.1 In accordance with the provisions of Section 24-216(b) of the Administrative Code of the **City** (“**Administrative Code**”), Noise Abatement Contract Compliance, devices and activities which will be operated, conducted, constructed or manufactured pursuant to this **Contract** and which are subject to the provisions of the **City Noise Control Code** shall be operated, conducted, constructed, or manufactured without causing a violation of the **Administrative Code**. Such devices and activities shall incorporate advances in the art of noise control development for the kind and level of noise emitted or produced by such devices and activities, in accordance with regulations issued by the **Commissioner** of the **City Department of Environmental Protection**.

5.3.2 The **Contractor** agrees to comply with Section 24-219 of the Administrative Code and implementing rules codified at 15 Rules of the City of New York (“**RCNY**”) Section 28-100 *et seq.* In accordance with such provisions, the **Contractor**, if the **Contractor** is the responsible party under such regulations, shall prepare and post a Construction Noise Mitigation Plan at each **Site**, in which the **Contractor** shall certify that all construction tools and equipment have been maintained so that they operate at normal manufacturers operating specifications. If the **Contractor** cannot make this certification, it must have in place an Alternative Noise Mitigation Plan approved by the **City Department of Environmental Protection**. In addition, the **Contractor’s** certified Construction Noise Mitigation Plan is subject inspection by the **City Department of Environmental Protection** in accordance with Section 28-101 of Title 15 of **RCNY**. No **Contract Work** may take place at a **Site** unless there is a Construction Noise Mitigation Plan or approved Alternative Noise Mitigation Plan in place. In addition, the **Contractor** shall create and implement a noise mitigation training program. Failure to comply with these requirements may result in fines and other penalties pursuant to the applicable provisions of the **Administrative Code** and **RCNY**.

5.4 Ultra Low Sulfur Diesel Fuel: In accordance with the provisions of Section 24-163.3 of the **Administrative Code**, the **Contractor** specifically agrees as follows:

5.4.1 Definitions. For purposes of this Article 5.4, the following definitions apply:

5.4.1(a) “**Contractor**” means any person or entity that enters into a Public Works Contract with a **City Agency**, or any person or entity that enters into an agreement with such person or entity, to perform work or provide labor or services related to such Public Works Contract.

5.4.1(b) "Motor Vehicle" means any self-propelled vehicle designed for transporting persons or property on a street or highway.

5.4.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of Title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

5.4.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty (50) horsepower and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except that this term shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five (65) horsepower or less and that are not used in any construction program or project.

5.4.1(e) "Public Works Contract" means a contract with a **City Agency** for a construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; a contract with a **City Agency** for the preparation for any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; or a contract with a **City Agency** for any final work involved in the completion of any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge.

5.4.1(f) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million (15 ppm).

5.4.2 Ultra Low Sulfur Diesel Fuel

5.4.2(a) All **Contractors** shall use Ultra Low Sulfur Diesel Fuel in diesel-powered Nonroad Vehicles in the performance of this **Contract**.

5.4.2(b) Notwithstanding the requirements of Article 5.4.2(a), **Contractors** may use diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) to fulfill the requirements of this Article 5.4.2, where the Commissioner of the **City** Department of Environmental Protection ("DEP Commissioner") has issued a determination that a sufficient quantity of Ultra Low Sulfur Diesel Fuel is not available to meet the needs of **Agencies** and **Contractors**. Any such determination shall expire after six (6) months unless renewed.

5.4.2(c) **Contractors** shall not be required to comply with this Article 5.4.2 where the **City Agency** letting this **Contract** makes a written finding, which is approved, in writing, by the DEP Commissioner, that a sufficient quantity of Ultra Low Sulfur Diesel Fuel, or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is not available to meet the requirements of Section 24-163.3 of the Administrative Code, provided that such **Contractor** in its fulfillment of the

requirements of this **Contract**, to the extent practicable, shall use whatever quantity of Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is available. Any finding made pursuant to this Article 5.4.2(c) shall expire after sixty (60) **Days**, at which time the requirements of this Article 5.4.2 shall be in full force and effect unless the **City Agency** renews the finding in writing and such renewal is approved by the DEP Commissioner.

5.4.2(d) **Contractors** may check on determinations and approvals issued by the DEP Commissioner pursuant to Section 24-163.3 of the Administrative Code, if any, at www.dep.nyc.gov or by contacting the **City Agency** letting this **Contract**.

5.4.2(e) The requirements of this Article 5.4.2 do not apply where they are precluded by federal or State funding requirements or where the **Contract** is an emergency procurement.

5.4.3 Best Available Technology

5.4.3(a) All **Contractors** shall utilize the best available technology for reducing the emission of pollutants for diesel-powered Nonroad Vehicles in the performance of this **Contract**. For determinations of best available technology for each type of diesel-powered Nonroad Vehicle, **Contractors** shall comply with the regulations of the **City Department of Environmental Protection**, as and when adopted, Chapter 14 of Title 15 of the Rules of the City of New York (RCNY). The **Contractor** shall fully document all steps in the best available technology selection process and shall furnish such documentation to the **City Agency** or the DEP Commissioner upon request. The **Contractor** shall retain all documentation generated in the best available technology selection process for as long as the selected best available technology is in use.

5.4.3(b) No **Contractor** shall be required to replace best available technology for reducing the emission of pollutants or other authorized technology utilized for a diesel-powered Nonroad Vehicle in accordance with the provisions of this Article 5.4.3 within three (3) years of having first utilized such technology for such vehicle.

5.4.3(c) This Article 5.4.3 shall not apply to any vehicle used to satisfy the requirements of a specific Public Works Contract for fewer than twenty (20) **Days**.

5.4.3(d) The **Contractor** shall not be required to comply with this Article 5.4.3 with respect to a diesel-powered Nonroad Vehicle under the following circumstances:

5.4.3(d)(i) Where the **City Agency** makes a written finding, which is approved, in writing, by the DEP Commissioner, that the best available technology for reducing the emission of pollutants as required by this Article 5.4.3 is unavailable for such vehicle, the **Contractor** shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle.

5.4.3(d)(ii) Where the DEP Commissioner has issued a written waiver based upon the **Contractor** having demonstrated to the DEP Commissioner that the use of the best available technology for reducing the emission of pollutants might endanger the operator of such vehicle or those working near such vehicle, due to engine malfunction, the **Contractor** shall use whatever technology for

reducing the emission of pollutants, if any, is available and appropriate for such vehicle, which would not endanger the operator of such vehicle or those working near such vehicle.

5.4.3(d)(iii) In determining which technology to use for the purposes of Articles 5.4.3(d)(i) and 5.4.3(d)(ii) above, the **Contractor** shall primarily consider the reduction in emissions of particulate matter and secondarily consider the reduction in emissions of nitrogen oxides associated with the use of such technology, which shall in no event result in an increase in the emissions of either such pollutant.

5.4.3(d)(iv) The **Contractor** shall submit requests for a finding or a waiver pursuant to this Article 5.4.3(d) in writing to the DEP Commissioner, with a copy to the **ACCO** of the **City Agency** letting this **Contract**. Any finding or waiver made or issued pursuant to Articles 5.4.3(d)(i) and 5.4.3(d)(ii) above shall expire after one hundred eighty (180) **Days**, at which time the requirements of Article 5.4.3(a) shall be in full force and effect unless the **City Agency** renews the finding, in writing, and the DEP Commissioner approves such finding, in writing, or the DEP Commissioner renews the waiver, in writing.

5.4.3(e) The requirements of this Article 5.4.3 do not apply where they are precluded by federal or State funding requirements or where the **Contract** is an emergency procurement.

5.4.4 Section 24-163 of the Administrative Code. The **Contractor** shall comply with Section 24-163 of the Administrative Code related to the idling of the engines of motor vehicles while parking.

5.4.5 Compliance

5.4.5(a) The **Contractor's** compliance with Article 5.4 may be independently monitored. If it is determined that the **Contractor** has failed to comply with any provision of Article 5.4, any costs associated with any independent monitoring incurred by the **City** shall be reimbursed by the **Contractor**.

5.4.5(b) Any **Contractor** who violates any provision of Article 5.4, except as provided in Article 5.4.5(c) below, shall be liable for a civil penalty between the amounts of one thousand (\$1,000) and ten thousand (\$10,000) dollars, in addition to twice the amount of money saved by such **Contractor** for failure to comply with Article 5.4.

5.4.5(c) No **Contractor** shall make a false claim with respect to the provisions of Article 5.4 to a **City Agency**. Where a **Contractor** has been found to have done so, such **Contractor** shall be liable for a civil penalty of twenty thousand (\$20,000) dollars, in addition to twice the amount of money saved by such **Contractor** in association with having made such false claim.

5.4.6 Reporting

5.4.6(a) For all Public Works Contracts covered by this Article 5.4, the **Contractor** shall report to the **City Agency** the following information:

5.4.6(a)(i) The total number of diesel-powered Nonroad Vehicles used to fulfill the requirements of this Public Works Contract;

5.4.6(a)(ii) The number of such Nonroad Vehicles that were powered by Ultra Low Sulfur Diesel Fuel;

5.4.6(a)(iii) The number of such Nonroad Vehicles that utilized the best available technology for reducing the emission of pollutants, including a breakdown by vehicle model and the type of technology;

5.4.6(a)(iv) The number of such Nonroad Vehicles that utilized such other authorized technology in accordance with Article 5.4.3, including a breakdown by vehicle model and the type of technology used for each such vehicle;

5.4.6(a)(v) The locations where such Nonroad Vehicles were used; and

5.4.6(a)(vi) Where a determination is in effect pursuant to Article 5.4.2(b) or 5.4.2(c), detailed information concerning the **Contractor's** efforts to obtain Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm).

5.4.6(b) The **Contractor** shall submit the information required by Article 5.4.6(a) at the completion of **Work** under the Public Works Contract and on a yearly basis no later than August 1 throughout the term of the Public Works Contract. The yearly report shall cover **Work** performed during the preceding fiscal year (July 1 - June 30).

5.5 Ultra Low Sulfur Diesel Fuel. In accordance with the Coordinated Construction Act for Lower Manhattan, as amended:

5.5.1 Definitions. For purposes of this Article 5.5, the following definitions apply:

5.5.1(a) "Lower Manhattan" means the area to the south of and within the following lines: a line beginning at a point where the United States pierhead line in the Hudson River as it exists now or may be extended would intersect with the southerly line of West Houston Street in the Borough of Manhattan extended, thence easterly along the southerly side of West Houston Street to the southerly side of Houston Street, thence easterly along the southerly side of Houston Street to the southerly side of East Houston Street, thence northeasterly along the southerly side of East Houston Street to the point where it would intersect with the United States pierhead line in the East River as it exists now or may be extended, including tax lots within or immediately adjacent thereto.

5.5.1(b) "Lower Manhattan Redevelopment Project" means any project in Lower Manhattan that is funded in whole or in part with federal or State funding, or any project intended to improve transportation between Lower Manhattan and the two air terminals in the City known as LaGuardia Airport and John F. Kennedy International Airport, or between Lower Manhattan and the air terminal in Newark known as Newark Liberty International Airport, and that is funded in whole or in part with federal funding.

5.5.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of Title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

5.5.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty (50) horsepower (HP) and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except that this term shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five (65) HP or less and that are not used in any construction program or project.

5.5.1(e) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million (15 ppm).

5.5.2 Requirements. **Contractors** and **Subcontractors** are required to use only Ultra Low Sulfur Diesel Fuel to power the diesel-powered Nonroad Vehicles with engine HP rating of fifty (50) HP and above used on a Lower Manhattan Redevelopment Project and, where practicable, to reduce the emission of pollutants by retrofitting such Nonroad Vehicles with oxidation catalysts, particulate filters, or technology that achieves lowest particulate matter emissions.

5.6 Pesticides. In accordance with Section 17-1209 of the Administrative Code, to the extent that the **Contractor** or any **Subcontractor** applies pesticides to any property owned or leased by the **City**, the **Contractor**, and any **Subcontractor** shall comply with Chapter 12 of the Administrative Code.

5.7 Waste Treatment, Storage, and Disposal Facilities and Transporters. In connection with the **Work**, the **Contractor** and any **Subcontractor** shall use only those waste treatment, storage, and disposal facilities and waste transporters that possess the requisite license, permit or other governmental approval necessary to treat, store, dispose, or transport the waste, materials or hazardous substances.

5.8 Environmentally Preferable Purchasing. The **Contractor** shall ensure that products purchased or leased by the **Contractor** or any **Subcontractor** for the **Work** that are not specified by the **City** or are submitted as equivalents to a product specified by the **City** comply with the requirements of the New York City Environmentally Preferable Purchasing Program contained in Chapter 11 of Title 43 of the RCNY, pursuant to Chapter 3 of Title 6 of the Administrative Code.

ARTICLE 6. INSPECTION

6.1 During the progress of the **Work** and up to the date of **Final Acceptance**, the **Contractor** shall at all times afford the representatives of the **City** every reasonable, safe, and proper facility for inspecting all **Work** done or being done at the **Site** and also for inspecting the manufacture or preparation of materials and equipment at the place of such manufacture or preparation.

6.2 The **Contractor's** obligation hereunder shall include the uncovering or taking down of finished **Work** and its restoration thereafter; provided, however, that the order to uncover, take down and restore shall be in writing, and further provided that if **Work** thus exposed proves satisfactory, and if the **Contractor** has complied with Article 6.1, such uncovering or taking down and restoration shall be

considered an item of **Extra Work** to be paid for in accordance with the provisions of Article 26. If the **Work** thus exposed proves unsatisfactory, the **City** has no obligation to compensate the **Contractor** for the uncovering, taking down or restoration.

6.3 Inspection and approval by the **Commissioner**, the **Engineer**, **Project Manager**, or **Resident Engineer**, of finished **Work** or of **Work** being performed, or of materials and equipment at the place of manufacture or preparation, shall not relieve the **Contractor** of its obligation to perform the **Work** in strict accordance with the **Contract**. Finished or unfinished **Work** not found to be in strict accordance with the **Contract** shall be replaced as directed by the **Engineer**, even though such **Work** may have been previously approved and paid for. Such corrective **Work** is **Contract Work** and shall not be deemed **Extra Work**.

6.4 Rejected **Work** and materials shall be promptly taken down and removed from the **Site**, which must at all times be kept in a reasonably clean and neat condition.

ARTICLE 7. PROTECTION OF WORK AND OF PERSONS AND PROPERTY; NOTICES AND INDEMNIFICATION

7.1 During the performance of the **Work** and up to the date of **Final Acceptance**, the **Contractor** shall be under an absolute obligation to protect the finished and unfinished **Work** against any damage, loss, injury, theft and/or vandalism and in the event of such damage, loss, injury, theft and/or vandalism, it shall promptly replace and/or repair such **Work** at the **Contractor's** sole cost and expense, as directed by the **Resident Engineer**. The obligation to deliver finished **Work** in strict accordance with the **Contract** prior to **Final Acceptance** shall be absolute and shall not be affected by the **Resident Engineer's** approval of, or failure to prohibit, the **Means and Methods of Construction** used by the **Contractor**.

7.2 During the performance of the **Work** and up to the date of **Final Acceptance**, the **Contractor** shall take all reasonable precautions to protect all persons and the property of the **City** and of others from damage, loss or injury resulting from the **Contractor's**, and/or its **Subcontractors'** operations under this **Contract**. The **Contractor's** obligation to protect shall include the duty to provide, place or replace, and adequately maintain at or about the **Site** suitable and sufficient protection such as lights, barricades, and enclosures.

7.3 The **Contractor** shall comply with the notification requirements set forth below in the event of any loss, damage or injury to **Work**, persons or property, or any accidents arising out of the operations of the **Contractor** and/or its **Subcontractors** under this **Contract**.

7.3.1 The **Contractor** shall make a full and complete report in writing to the **Resident Engineer** within three (3) **Days** after the occurrence.

7.3.2 The **Contractor** shall also send written notice of any such event to all insurance carriers that issued potentially responsive policies (including commercial general liability insurance carriers for events relating to the **Contractor's** own employees) no later than twenty (20) days after such event and again no later than twenty (20) days after the initiation of any claim and/or action resulting therefrom. Such notice shall contain the following information: the number of the insurance policy, the name of the Named Insured, the date and location of the incident, and the identity of the persons injured or property damaged. For any policy on which the **City** and/or the **Engineer**, **Architect**, or **Project Manager** are Additional Insureds, such notice shall expressly specify that "this notice is

being given on behalf of the City of New York as Additional Insured, such other Additional Insureds, as well as the Named Insured.”

7.3.2(a) Whenever such notice is sent under a policy on which the **City** is an Additional Insured, the **Contractor** shall provide copies of the notice to the **Comptroller**, the **Commissioner** and the **City Corporation Counsel**. The copy to the **Comptroller** shall be sent to the Insurance Unit, NYC Comptroller’s Office, 1 Centre Street – Room 1222, New York, New York, 10007. The copy to the **Commissioner** shall be sent to the address set forth in Schedule A of the General Conditions. The copy to the **City Corporation Counsel** shall be sent to Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, New York 10007.

7.3.2(b) If the **Contractor** fails to provide any of the foregoing notices to any appropriate insurance carrier(s) in a timely and complete manner, the **Contractor** shall indemnify the **City** for all losses, judgments, settlements, and expenses, including reasonable attorneys’ fees, arising from an insurer’s disclaimer of coverage citing late notice by or on behalf of the **City**.

7.4 To the fullest extent permitted by law, the **Contractor** shall defend, indemnify, and hold the **City**, its employees, and officials (the “Indemnitees”) harmless against any and all claims (including but not limited to claims asserted by any employee of the **Contractor** and/or its **Subcontractors**) and costs and expenses of whatever kind (including but not limited to payment or reimbursement of attorneys’ fees and disbursements) allegedly arising out of or in any way related to the operations of the **Contractor** and/or its **Subcontractors** in the performance of this **Contract** or from the **Contractor’s** and/or its **Subcontractors’** failure to comply with any of the provisions of this **Contract** or of the **Law**. Such costs and expenses shall include all those incurred in defending the underlying claim and those incurred in connection with the enforcement of this Article 7.4 by way of cross-claim, third-party claim, declaratory action or otherwise. The parties expressly agree that the indemnification obligation hereunder contemplates (1) full indemnity in the event of liability imposed against the Indemnitees without negligence and solely by reason of statute, operation of **Law** or otherwise; and (2) partial indemnity in the event of any actual negligence on the part of the Indemnitees either causing or contributing to the underlying claim (in which case, indemnification will be limited to any liability imposed over and above that percentage attributable to actual fault whether by statute, by operation of **Law**, or otherwise). Where partial indemnity is provided hereunder, all costs and expenses shall be indemnified on a pro rata basis.

7.4.1 Indemnification under Article 7.4 or any other provision of the **Contract** shall operate whether or not **Contractor** or its **Subcontractors** have placed and maintained the insurance specified under Article 22.

7.5 The provisions of this Article 7 shall not be deemed to create any new right of action in favor of third parties against the **Contractor** or the **City**.

CHAPTER III: TIME PROVISIONS

ARTICLE 8. COMMENCEMENT AND PROSECUTION OF THE WORK

8.1 The **Contractor** shall commence the **Work** on the date specified in the **Notice to Proceed** or the **Order to Work**. The time for performance of the **Work** under the **Contract** shall be computed from

the date specified in the **Notice to Proceed** or the **Order to Work**. **TIME BEING OF THE ESSENCE** to the **City**, the **Contractor** shall thereafter prosecute the **Work** diligently, using such **Means and Methods of Construction** as are in accord with Article 4 herein and as will assure its completion not later than the date specified in this Contract, or on the date to which the time for completion may be extended.

ARTICLE 9. PROGRESS SCHEDULES

9.1 To enable the **Work** to be performed in an orderly and expeditious manner, the **Contractor**, within fifteen (15) **Days** after the **Notice to Proceed** or **Order to Work**, unless otherwise directed by the **Engineer**, shall submit to the **Engineer** a proposed progress schedule based on the Critical Path Method in the form of a bar graph or in such other form as specified by the **Engineer**, and monthly cash flow requirements, showing:

9.1.1 The anticipated time of commencement and completion of each of the various operations to be performed under this **Contract**; and

9.1.2 The sequence and interrelation of each of these operations with the others and with those of other related contracts; and

9.1.3 The estimated time required for fabrication or delivery, or both, of all materials and equipment required for the **Work**, including the anticipated time for obtaining required approvals pursuant to Article 10; and

9.1.4 The estimated amount in dollars the **Contractor** will claim on a monthly basis.

9.2 The proposed schedule shall be revised as directed by the **Engineer**, until finally approved by the **Engineer**, and after such approval, subject to the provisions of Article 11, shall be strictly adhered to by the **Contractor**.

9.3 If the **Contractor** shall fail to adhere to the approved progress schedule, or to the schedule as revised pursuant to Article 11, it shall promptly adopt such other or additional **Means and Methods of Construction**, at its sole cost and expense, as will make up for the time lost and will assure completion in accordance with the approved progress schedule. The approval by the **City** of a progress schedule which is shorter than the time allotted under the **Contract** shall not create any liability for the **City** if the approved progress schedule is not met.

9.4 The **Contractor** will not receive any payments until the proposed progress schedule is submitted.

ARTICLE 10. REQUESTS FOR INFORMATION OR APPROVAL

10.1 From time to time as the **Work** progresses and in the sequence indicated by the approved progress schedule, the **Contractor** shall submit to the **Engineer** a specific request in writing for each item of information or approval required by the **Contractor**. These requests shall state the latest date upon which the information or approval is actually required by the **Contractor**, and shall be submitted in a reasonable time in advance thereof to provide the **Engineer** a sufficient time to act upon such submissions, or any necessary re-submissions thereof.

10.2 The **Contractor** shall not have any right to an extension of time on account of delays due to the **Contractor's** failure to submit requests for the required information or the required approval in accordance with the above requirements.

ARTICLE 11. NOTICE OF CONDITIONS CAUSING DELAY AND DOCUMENTATION OF DAMAGES CAUSED BY DELAY

11.1 After the commencement of any condition which is causing or may cause a delay in completion of the **Work**, including conditions for which the **Contractor** may be entitled to an extension of time, the following notifications and submittals are required:

11.1.1 Within fifteen (15) **Days** after the **Contractor** becomes aware or reasonably should be aware of each such condition, the **Contractor** must notify the **Resident Engineer** or **Engineer**, as directed by the **Commissioner**, 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. Such notice shall include a description of the construction activities that are or could be affected by the condition and may include any recommendations the **Contractor** may have to address the delay condition and any activities the **Contractor** may take to avoid or minimize the delay.

11.1.2 If the **Contractor** shall claim to be sustaining damages for delay as provided for in this Article 11, within forty-five (45) **Days** from the time such damages are first incurred for each such condition, the **Contractor** shall submit to the **Commissioner** a verified written statement of the details and estimates of the amounts of such damages, including categories of expected damages and projected monthly costs, together with documentary evidence of such damages as the **Contractor** may have at the time of submission ("statement of delay damages"), as further detailed in Article 11.6. The **Contractor** may submit the above statement within such additional time as may be granted by the **Commissioner** in writing upon written request therefor.

11.1.3 Articles 11.1.1 and 11.1.2 do not relieve the **Contractor** of its obligation to comply with the provisions of Article 44.

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 both Articles 11.1.1 and 11.1.2 shall be deemed a conclusive waiver by the **Contractor** of any and all claims for damages for delay arising from such condition and no right to recover on such claims shall exist.

11.3 When appropriate and directed by the **Engineer**, the progress schedule shall be revised by the **Contractor** until finally approved by the **Engineer**. The revised progress schedule must be strictly adhered to by the **Contractor**.

11.4 Compensable Delays

11.4.1 The **Contractor** agrees to make claim only for additional costs attributable to delay in the performance of this **Contract** necessarily extending the time for completion of the **Work** or resulting from acceleration directed by the **Commissioner** and required to maintain the progress 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** to the extent required by the **Contract**, 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 Unreasonable delays attributable to the review of shop drawings, the issuance of change orders, or the cumulative impact of change orders that were not brought about by any act or omission of the **Contractor**.
- 11.4.1.3 The unavailability of the **Site** caused by acts or omissions of the **City**.
- 11.4.1.4 The issuance by the **Engineer** of a stop work order that was not brought about through any act or omission of the **Contractor**.
- 11.4.1.5 Differing site conditions or environmental hazards that were neither known nor reasonably ascertainable on a pre-bid inspection of the **Site** or review of the bid documents or other publicly available sources, and that are not ordinarily encountered in the **Project's** geographical area or neighborhood or in the type of **Work** to be performed.
- 11.4.1.6 Delays caused by the **City's** bad faith or its willful, malicious, or grossly negligent conduct;
- 11.4.1.7 Delays not contemplated by the parties;
- 11.4.1.8 Delays so unreasonable that they constitute an intentional abandonment of the **Contract** by the **City**; and
- 11.4.1.9 Delays resulting from the **City's** breach of a fundamental obligation of the **Contract**.

11.4.2 No claim may be made for any alleged delay in **Substantial Completion** of the **Work** if the **Work** will be or is substantially completed by the date of **Substantial Completion** provided for in Schedule A unless acceleration has been directed by the **Commissioner** to meet the date of **Substantial Completion** set forth in Schedule A, or unless there is a provision in the **Contract** providing for additional compensation for early completion.

11.4.3 The provisions of this Article 11 apply only to claims for additional costs attributable to delay and do not preclude determinations by the **Commissioner** allowing reimbursements for additional costs for **Extra Work** pursuant to Articles 25 and 26 of this **Contract**. To the extent that any cost attributable to delay is reimbursed as part of a change order, no additional claim for compensation under this Article 11 shall be allowed.

11.5 Non-Compensable Delays. The **Contractor** agrees to make no claim for, and is deemed to have included in its bid prices for the various items of the **Contract**, the extra/additional costs attributable to any delays caused by or attributable to the items set forth below. For such items, the **Contractor** shall be compensated, if at all, solely by an extension of time to complete the performance of the **Work**, in accordance with the provisions of Article 13. Such extensions of time will be granted, if at all, pursuant to the grounds set forth in Article 13.3.

11.5.1 The acts or omissions of any third parties, including but not limited to **Other Contractors**, public/ governmental bodies (other than **City Agencies**), utilities or private enterprises, who are disclosed in the **Contract Documents** or are ordinarily encountered or generally recognized as related to the **Work**;

11.5.2 Any situation which was within the contemplation of the parties at the time of entering into the **Contract**, including any delay indicated or disclosed in the **Contract Documents** or that would be generally recognized by a reasonably prudent contractor 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 act or omission by the **City**;

11.5.4 Any labor boycott, strike, picketing, lockout or similar situation;

11.5.5 Any shortages of supplies or materials, or unavailability of equipment, required by the **Contract Work**;

11.5.6 Climatic conditions, storms, floods, droughts, tidal waves, fires, hurricanes, earthquakes, landslides or other catastrophes or acts of God, or acts of war or of the public enemy or terrorist acts, including the **City's** reasonable responses thereto; and

11.5.7 **Extra Work** which does not significantly affect the overall completion of the **Contract**, reasonable delays in the review or issuance of change orders or field orders and/or in shop drawing reviews or approvals.

11.6 Required Content of Submission of Statement of Delay Damages

11.6.1 In the verified written statement of delay damages required by Article 11.1.2, the following information shall be provided by the **Contractor**:

11.6.1.1 For each delay, the start and end dates of the claimed periods of delay and, in addition, a description of the operations that were delayed, an explanation of how they were delayed, and the reasons for the delay, including identifying the applicable act or omission of the **City** listed in Article 11.4.

11.6.1.2 A detailed factual statement of the claim providing all necessary dates, locations and items of **Work** affected by the claim.

11.6.1.3 The estimated amount of additional compensation sought and a breakdown of that amount into categories as described in Article 11.7.

11.6.1.4 Any additional information requested by the **Commissioner**.

11.7 Recoverable Costs

11.7.1 Delay damages may be recoverable for the following costs actually and necessarily incurred in the performance of the **Work**:

11.7.1.1 Direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits, based on time and materials records;

11.7.1.2 Necessary materials (including transportation to the **Site**), based on time and material records;

- 11.7.1.3 Reasonable rental value of necessary plant and equipment other than small tools, plus fuel/energy costs according to the applicable formula set forth in Articles 26.2.4 and/or 26.2.8, based on time and material records;
- 11.7.1.4 Additional insurance and bond costs;
- 11.7.1.5 Extended **Site** overhead, field office rental, salaries of field office staff, on-site project managers and superintendents, field office staff vehicles, **Project**-specific storage, field office utilities and telephone, and field office consumables;
- 11.7.1.6 Labor escalation costs based on actual costs;
- 11.7.1.7 Materials and equipment escalation costs based on applicable industry indices unless documentation of actual increased cost is provided;
- 11.7.1.8 Additional material and equipment storage costs based on actual documented costs and additional costs necessitated by extended manufacturer warranty periods; and
- 11.7.1.9 Extended home office overhead calculated based on the following formula:
 - (1) Subtract from the original **Contract** amount the amount earned by original contractual **Substantial Completion** date (not including change orders);
 - (2) Remove 15% overhead and profit from the calculation in item (1) by dividing the results of item (1) by 1.15;
 - (3) Multiply the result of item (2) by 7.25% for the total home office overhead;
 - (4) Multiply the result of item (3) by 7.25% for the total profit; and
 - (5) The total extended home office overhead will be the total of items (3) and (4).

11.7.2 Recoverable Subcontractor Costs. When the **Work** is performed by a **Subcontractor**, the **Contractor** may be paid the actual and necessary costs of such subcontracted **Work** as outlined above in Articles 11.7.1.1 through 11.7.1.8, and an additional overhead of 5% of the costs outlined in Articles 11.7.1.1 through 11.7.1.3.

11.7.3 Non-Recoverable Costs. The parties agree that the **City** will have no liability for the following items and the **Contractor** agrees it shall make no claim for the following items:

- 11.7.3.1 Profit, or loss of anticipated or unanticipated profit, except as provided in Article 11.7.1.9;
- 11.7.3.2 Consequential damages, including, but not limited to, construction or bridge loans or interest paid on such loans, 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 except those included in Article 11.7.1;
- 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 Any claims for delay 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 Any compensation provided to the **Contractor** in accordance with this Article 11 will be made pursuant to a claim filed with the **Comptroller**. Nothing in this Article 11 extends the time for the **Contractor** to file an action with respect to a claim within six months after **Substantial Completion** pursuant to Article 56.

ARTICLE 12. COORDINATION WITH OTHER CONTRACTORS

12.1 During the progress of the **Work**, **Other Contractors** may be engaged in performing other work or may be awarded other contracts for additional work on this **Project**. In that event, the **Contractor** shall coordinate the **Work** to be done hereunder with the work of such **Other Contractors** and the **Contractor** shall fully cooperate with such **Other Contractors** and carefully fit its own **Work** to that provided under other contracts as may be directed by the **Engineer**. The **Contractor** shall not commit or permit any act which will interfere with the performance of work by any **Other Contractors**.

12.2 If the **Engineer** determines that the **Contractor** is failing to coordinate its **Work** with the work of **Other Contractors** as the **Engineer** has directed, then the **Commissioner** shall have the right to withhold any payments otherwise due hereunder until the **Contractor** completely complies with the **Engineer's** directions.

12.3 The **Contractor** shall notify the **Engineer** in writing if any **Other Contractor** on this **Project** is failing to coordinate its work with the **Work** of this **Contract**. If the **Engineer** finds such charges to be true, the **Engineer** shall promptly issue such directions to the **Other Contractor** with respect thereto as the situation may require. The **City** shall not, however, be liable for any damages suffered by any **Other Contractor's** failure to coordinate its work with the **Work** of this **Contract** or by reason of the **Other Contractor's** failure to promptly comply with the directions so issued by the **Engineer**, or by reason of any **Other Contractor's** default in performance, it being understood that the **City** does not guarantee the responsibility or continued efficiency of any contractor. The **Contractor** agrees to make no claim against the **City** for any damages relating to or arising out of any directions issued by the **Engineer** pursuant to this Article 12 (including but not limited to the failure of any **Other Contractor** to comply or promptly comply with such directions), or the failure of any **Other Contractor** to coordinate its work, or the default in performance of any **Other Contractor**.

12.4 The **Contractor** shall indemnify and hold the **City** harmless from any and all claims or judgments for damages and from costs and expenses to which the **City** may be subjected or which it may suffer or incur by reason of the **Contractor's** failure to comply with the **Engineer's** directions promptly; and the **Comptroller** shall have the right to exercise the powers reserved in Article 23 with respect to any claims which may be made for damages due to the **Contractor's** failure to comply with the **Engineer's** directions promptly. Insofar as the facts and **Law** relating to any claim would preclude the **City** from being completely indemnified by the **Contractor**, the **City** shall be partially indemnified by the **Contractor** to the fullest extent provided by **Law**.

12.5 Should the **Contractor** sustain any damage through any act or omission of any **Other Contractor** having a contract with the **City** for the performance of work upon the **Site** or of work which may be necessary to be performed for the proper prosecution of the **Work** to be performed hereunder, or through any act or omission of a subcontractor of such **Other Contractor**, the **Contractor** shall have no claim against the **City** for such damage, but shall have a right to recover such damage from the **Other**

Contractor under the provision similar to the following provisions which apply to this **Contract** and have been or will be inserted in the contracts with such **Other Contractors**:

12.5.1 Should any **Other Contractor** having or who shall hereafter have a contract with the **City** for the performance of work upon the **Site** sustain any damage through any act or omission of the **Contractor** hereunder or through any act or omission of any **Subcontractor** of the **Contractor**, the **Contractor** agrees to reimburse such **Other Contractor** for all such damages and to defend at its own expense any action based upon such claim and if any judgment or claim (even if the allegations of the action are without merit) against the **City** shall be allowed the **Contractor** shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and agrees to indemnify and hold the **City** harmless from all such claims. Insofar as the facts and **Law** relating to any claim would preclude the **City** from being completely indemnified by the **Contractor**, the **City** shall be partially indemnified by the **Contractor** to the fullest extent provided by **Law**.

12.6 The **City's** right to indemnification hereunder shall in no way be diminished, waived or discharged by its recourse to assessment of liquidated damages as provided in Article 15, or by the exercise of any other remedy provided for by **Contract** or by **Law**.

ARTICLE 13. EXTENSION OF TIME FOR PERFORMANCE

13.1 If performance by the **Contractor** is delayed for a reason set forth in Article 13.3, the **Contractor** may be allowed a reasonable extension of time in conformance with this Article 13 and the **PPB Rules**.

13.2 Any extension of time may be granted only by the **ACCO** or by the Board for the Extension of Time (hereafter "Board") (as set forth below) upon written application by the **Contractor**.

13.3 Grounds for Extension: If such application is made, the **Contractor** shall be entitled to an extension of time for delay in completion of the **Work** caused solely:

13.3.1 By the acts or omissions of the **City**, its officials, agents or employees; or

13.3.2 By the act or omissions of **Other Contractors** on this **Project**; or

13.3.3 By supervening conditions entirely beyond the control of either party hereto (such as, but not limited to, acts of God or the public enemy, excessive inclement weather, war or other national emergency making performance temporarily impossible or illegal, or strikes or labor disputes not brought about by any act or omission of the **Contractor**).

13.3.4 The **Contractor** shall, however, be entitled to an extension of time for such causes only for the number of **Days** of delay which the **ACCO** or the Board may determine to be due solely to such causes, and then only if the **Contractor** shall have strictly complied with all of the requirements of Articles 9 and 10.

13.4 The **Contractor** shall not be entitled to receive a separate extension of time for each of several causes of delay operating concurrently, but, if at all, only for the actual period of delay in completion of the **Work** as determined by the **ACCO** or the Board, irrespective of the number of causes contributing to produce such delay. If one of several causes of delay operating concurrently results from any act, fault or omission of the **Contractor** or of its **Subcontractors** or **Materialmen**, and would of itself (irrespective

of the concurrent causes) have delayed the **Work**, no extension of time will be allowed for the period of delay resulting from such act, fault or omission.

13.5 The determination made by the **ACCO** or the Board on an application for an extension of time shall be binding and conclusive on the **Contractor**.

13.6 The **ACCO** or the Board acting entirely within their discretion may grant an application for an extension of time for causes of delay other than those herein referred.

13.7 Permitting the **Contractor** to continue with the **Work** after the time fixed for its completion has expired, or after the time to which such completion may have been extended has expired, or the making of any payment to the **Contractor** after such time, shall in no way operate as a waiver on the part of the **City** of any of its rights under this **Contract**.

13.8 Application for Extension of Time:

13.8.1 Before the **Contractor's** time extension request will be considered, the **Contractor** shall notify the **ACCO** of the condition which allegedly has caused or is causing the delay, and shall submit a written application to the **ACCO** identifying:

13.8.1(a) The **Contractor**; the registration number; and **Project** description;

13.8.1(b) Liquidated damage assessment rate, as specified in the **Contract**;

13.8.1(c) Original total bid price;

13.8.1(d) The original **Contract** start date and completion date;

13.8.1(e) Any previous time extensions granted (number and duration); and

13.8.1(f) The extension of time requested.

13.8.2 In addition, the application for extension of time shall set forth in detail:

13.8.2(a) The nature of each alleged cause of delay in completing the **Work**;

13.8.2(b) The date upon which each such cause of delay began and ended and the number of **Days** attributable to each such cause;

13.8.2(c) A statement that the **Contractor** waives all claims except for those delineated in the application, and the particulars of any claims which the **Contractor** does not agree to waive. For time extensions for **Substantial Completion** and final completion payments, the application shall include a detailed statement of the dollar amounts of each element of claim item reserved; and

13.8.2(d) A statement indicating the **Contractor's** understanding that the time extension is granted only for purposes of permitting continuation of **Contract** performance and payment for **Work** performed and that the **City** retains its right to conduct an investigation and assess liquidated damages as appropriate in the future.

13.9 Analysis and Approval of Time Extensions:

13.9.1 For time extensions for partial payments, a written determination shall be made by the **ACCO** who may, for good and sufficient cause, extend the time for the performance of the **Contract** as follows:

13.9.1(a) If the **Work** is to be completed within six (6) months, the time for performance may be extended for sixty (60) **Days**;

13.9.1(b) If the **Work** is to be completed within less than one (1) year but more than six (6) months, an extension of ninety (90) **Days** may be granted;

13.9.1(c) If the **Contract** period exceeds one (1) year, besides the extension granted in Article 13.9.1(b), an additional thirty (30) **Days** may be granted for each multiple of six (6) months involved beyond the one (1) year period; or

13.9.1(d) If exceptional circumstances exist, the **ACCO** may extend the time for performance beyond the extensions in Articles 13.9.1(a), 13.9.1(b), and 13.9.1(c). In that event, the **ACCO** shall file with the Mayor's Office of Contract Services a written explanation of the exceptional circumstances.

13.9.2 For extensions of time for **Substantial Completion** and final completion payments, the **Engineer**, in consultation with the **ACCO**, shall prepare a written analysis of the delay (including a preliminary determination of the causes of delay, the beginning and end dates for each such cause of delay, and whether the delays are excusable under the terms of this **Contract**). The report shall be subject to review by and approval of the Board, which shall have authority to question its analysis and determinations and request additional facts or documentation. The report as reviewed and made final by the Board shall be made a part of the **Agency** contract file. Neither the report itself nor anything contained therein shall operate as a waiver or release of any claim the **City** may have against the **Contractor** for either actual or liquidated damages.

13.9.3 Approval Mechanism for Time Extensions for **Substantial Completion** or Final Completion Payments: An extension shall be granted only with the approval of the Board which is comprised of the **ACCO** of the **Agency**, the **City** Corporation Counsel, and the **Comptroller**, or their authorized representatives.

13.9.4 Neither the granting of any application for an extension of time to the **Contractor** or any **Other Contractor** on this **Project** nor the papers, records or reports related to any application for or grant of an extension of time or determination related thereto shall be referred to or offered in evidence by the **Contractor** or its attorneys in any action or proceeding.

13.10 No Damage for Delay: The **Contractor** agrees to make no claim for damages for delay in the performance of this **Contract** occasioned by any act or omission to act of the **City** or any of its representatives, except as provided for in Article 11.

ARTICLE 14. COMPLETION AND FINAL ACCEPTANCE OF THE WORK

14.1 Date for **Substantial Completion**: The **Contractor** shall substantially complete the **Work** within the time fixed in Schedule A of the General Conditions, or within the time to which such **Substantial Completion** may be extended.

14.2 Determining the Date of **Substantial Completion**: The **Work** will be deemed to be substantially complete when the two conditions set forth below have been met.

14.2.1 Inspection: The **Engineer** or **Resident Engineer**, as applicable, has inspected the **Work** and has made a written determination that it is substantially complete.

14.2.2 Approval of **Final Approved Punch List** and Date for **Final Acceptance**: Following inspection of the **Work**, the **Engineer/Resident Engineer** shall furnish the **Contractor** with a final punch list, specifying all items of **Work** to be completed and proposing dates for the completion of each specified item of **Work**. The **Contractor** shall then submit in writing to the **Engineer/Resident Engineer** within ten (10) **Days** of the **Engineer/Resident Engineer** furnishing the final punch list either acceptance of the dates or proposed alternative dates for the completion of each specified item of **Work**. If the **Contractor** neither accepts the dates nor proposes alternative dates within ten (10) **Days**, the schedule proposed by the **Engineer/Resident Engineer** shall be deemed accepted. If the **Contractor** proposes alternative dates, then, within a reasonable time after receipt, the **Engineer/Resident Engineer**, in a written notification to the **Contractor**, shall approve the **Contractor's** completion dates or, if they are unable to agree, the **Engineer/Resident Engineer** 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 Date of **Substantial Completion**. The date of approval of the **Final Approved Punch List**, shall be the date of **Substantial Completion**. The date of approval of the **Final Approved Punch List** shall be either (a) if the **Contractor** approves the final punch list and proposed dates for completion furnished by the **Engineer/Resident Engineer**, the date of the **Contractor's** approval; or (b) if the **Contractor** neither accepts the dates nor proposes alternative dates, ten (10) **Days** after the **Engineer/Resident Engineer** furnishes the **Contractor** with a final punch list and proposed dates for completion; or (c) if the **Contractor** proposes alternative dates, the date that the **Engineer/Resident Engineer** sends written notification to the **Contractor** either approving the **Contractor's** proposed alternative dates or establishing dates for the completion for each item of **Work**.

14.4 Determining the Date of **Final Acceptance**: The **Work** will be accepted as final and complete as of the date of the **Engineer's/Resident Engineer's** inspection if, upon such inspection, the **Engineer/Resident Engineer** finds that all items on the **Final Approved Punch List** are complete and no further **Work** remains to be done. The **Commissioner** will then issue a written determination of **Final Acceptance**.

14.5 Request for Inspection: Inspection of the **Work** by the **Engineer/Resident Engineer** for the purpose of **Substantial Completion** or **Final Acceptance** shall be made within fourteen (14) **Days** after receipt of the **Contractor's** written request therefor.

14.6 Request for Re-inspection: If upon inspection for the purpose of **Substantial Completion** or **Final Acceptance**, the **Engineer/Resident 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/Resident 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/Resident Engineer** shall be made within ten (10) **Days** after receipt of the **Contractor's** written request therefor.

14.7 Initiation of Inspection by the **Engineer/Resident 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/Resident Engineer** may initiate such inspection or re-inspection.

ARTICLE 15. LIQUIDATED DAMAGES

15.1 In the event the **Contractor** fails to substantially complete the **Work** within the time fixed for such **Substantial Completion** in Schedule A of the General Conditions, plus authorized time extensions, or if the **Contractor**, in the sole determination of the **Commissioner**, has abandoned the **Work**, the **Contractor** shall pay to the **City** the sum fixed in Schedule A of the General Conditions, for each and every **Day** that the time consumed in substantially completing the **Work** exceeds the time allowed therefor; which said sum, in view of the difficulty of accurately ascertaining the loss which the **City** will suffer by reason of delay in the **Substantial Completion** of the **Work** hereunder, is hereby fixed and agreed as the liquidated damages that the **City** will suffer by reason of such delay, and not as a penalty. This Article 15 shall also apply to the **Contractor** whether or not the **Contractor** is defaulted pursuant to Chapter X of this **Contract**. Neither the failure to assess liquidated damages nor the granting of any time extension shall operate as a waiver or release of any claim the **City** may have against the **Contractor** for either actual or liquidated damages.

15.2 Liquidated damages received hereunder are not intended to be nor shall they be treated as either a partial or full waiver or discharge of the **City's** right to indemnification, or the **Contractor's** obligation to indemnify the **City**, or to any other remedy provided for in this **Contract** or by **Law**.

15.3 The **Commissioner** may deduct and retain out of the monies which may become due hereunder, the amount of any such liquidated damages; and in case the amount which may become due hereunder shall be less than the amount of liquidated damages suffered by the **City**, the **Contractor** shall be liable to pay the difference.

ARTICLE 16. OCCUPATION OR USE PRIOR TO COMPLETION

16.1 Unless otherwise provided for in the **Specifications**, the **Commissioner** may take over, use, occupy or operate any part of the **Work** at any time prior to **Final Acceptance**, upon written notification to the **Contractor**. The **Engineer** or **Resident Engineer**, as applicable, shall inspect the part of the **Work** to be taken over, used, occupied, or operated, and will furnish the **Contractor** with a written statement of the **Work**, if any, which remains to be performed on such part. The **Contractor** shall not object to, nor interfere with, the **Commissioner's** decision to exercise the rights granted by Article 16. In the event the **Commissioner** takes over, uses, occupies, or operates any part of the **Work**:

16.1.1 the **Engineer/Resident Engineer** shall issue a written determination of **Substantial Completion** with respect to such part of the **Work**;

16.1.2 the **Contractor** shall be relieved of its absolute obligation to protect such part of the unfinished **Work** in accordance with Article 7;

16.1.3 the **Contractor's** guarantee on such part of the **Work** shall begin on the date of such use by the **City**; and;

16.1.4 the **Contractor** shall be entitled to a return of so much of the amount retained in accordance with Article 21 as it relates to such part of the **Work**, except so much thereof as may be retained under Articles 24 and 44.

CHAPTER IV: SUBCONTRACTS AND ASSIGNMENTS

ARTICLE 17. SUBCONTRACTS

17.1 The **Contractor** shall not make subcontracts totaling an amount more than the percentage of the total **Contract** price fixed in Schedule A of the General Conditions, without prior written permission from the **Commissioner**. All subcontracts made by the **Contractor** shall be in writing. No **Work** may be performed by a **Subcontractor** prior to the **Contractor** entering into a written subcontract with the **Subcontractor** and complying with the provisions of this Article 17.

17.2 Before making any subcontracts, the **Contractor** shall submit a written statement to the **Commissioner** giving the name and address of the proposed **Subcontractor**; the portion of the **Work** and materials which it is to perform and furnish; the cost of the subcontract; the VENDEX questionnaire if required; the proposed subcontract if requested by the **Commissioner**; and any other information tending to prove that the proposed **Subcontractor** has the necessary facilities, skill, integrity, past experience, and financial resources to perform the **Work** in accordance with the terms and conditions of this **Contract**.

17.3 In addition to the requirements in Article 17.2, **Contractor** is required to list the **Subcontractor** in the web based Subcontractor Reporting System through the City's Payee Information Portal (PIP), available at www.nyc.gov/pip.¹ For each **Subcontractor** listed, **Contractor** is required to provide the following information: maximum contract value, description of **Subcontractor's** **Work**, start and end date of the subcontract and identification of the **Subcontractor's** industry. Thereafter, **Contractor** will be required to report in the system the payments made to each **Subcontractor** within 30 days of making the payment. If any of the required information changes throughout the Term of the **Contract**, **Contractor** will be required to revise the information in the system.

Failure of the **Contractor** to list a **Subcontractor** and/or to report **Subcontractor** payments in a timely fashion may result in the **Commissioner** declaring the **Contractor** in default of the **Contract** and will subject **Contractor** to liquidated damages in the amount of \$100 per day for each day that the **Contractor** fails to identify a **Subcontractor** along with the required information about the **Subcontractor** and/or fails to report payments to a **Subcontractor**, beyond the time frames set forth herein or in the notice from the **City**. Article 15 shall govern the issue of liquidated damages.

17.4 If an approved **Subcontractor** elects to subcontract any portion of its subcontract, the proposed sub-subcontract shall be submitted in the same manner as directed above.

17.5 The **Commissioner** will notify the **Contractor** in writing whether the proposed **Subcontractor** is approved. If the proposed **Subcontractor** is not approved, the **Contractor** may submit another proposed **Subcontractor** unless the **Contractor** decides to do the **Work**. No **Subcontractor** shall be permitted to enter or perform any work on the **Site** unless approved.

17.6 Before entering into any subcontract hereunder, the **Contractor** shall provide the proposed **Subcontractor** with a complete copy of this document and inform the proposed **Subcontractor** fully and completely of all provisions and requirements of this **Contract** relating either directly or indirectly to the **Work** to be performed and the materials to be furnished under such subcontract, and every such

¹ In order to use the new system, a PIP account will be required. Detailed instructions on creating a PIP account and using the new system are also available at www.nyc.gov/pip. Additional assistance with PIP may be obtained by emailing the Financial Information Services Agency Help Desk at pip@fisa.nyc.gov.

Subcontractor shall expressly stipulate that all labor performed and materials furnished by the **Subcontractor** shall strictly comply with the requirements of this **Contract**.

17.7 Documents given to a prospective **Subcontractor** for the purpose of soliciting the **Subcontractor's** bid shall include either a copy of the bid cover or a separate information sheet setting forth the **Project** name, the **Contract** number (if available), the **Agency** (as noted in Article 2.1.6), and the **Project's** location.

17.8 The **Commissioner's** approval of a **Subcontractor** shall not relieve the **Contractor** of any of its responsibilities, duties, and liabilities hereunder. The **Contractor** shall be solely responsible to the **City** for the acts or defaults of its **Subcontractor** and of such **Subcontractor's** officers, agents, and employees, each of whom shall, for this purpose, be deemed to be the agent or employee of the **Contractor** to the extent of its subcontract.

17.9 If the **Subcontractor** fails to maintain the necessary facilities, skill, integrity, past experience, and financial resources (other than due to the **Contractor's** failure to make payments where required) to perform the **Work** in accordance with the terms and conditions of this **Contract**, the **Contractor** shall promptly notify the **Commissioner** and replace such **Subcontractor** with a newly approved **Subcontractor** in accordance with this Article 17.

17.10 The **Contractor** shall be responsible for ensuring that all **Subcontractors** performing **Work** at the **Site** maintain all insurance required by **Law**.

17.11 The **Contractor** shall promptly, upon request, file with the **Engineer** a conformed copy of the subcontract and its cost. The subcontract shall provide the following:

17.11.1 Payment to **Subcontractors**: The agreement between the **Contractor** and its **Subcontractor** shall contain the same terms and conditions as to method of payment for **Work**, labor, and materials, and as to retained percentages, as are contained in this **Contract**.

17.11.2 Prevailing Rate of Wages: The agreement between the **Contractor** and its **Subcontractor** shall include the prevailing wage rates and supplemental benefits to be paid in accordance with Labor Law Section 220.

17.11.3 Section 6-123 of the Administrative Code: Pursuant to the requirements of Section 6-123 of the Administrative Code, every agreement between the **Contractor** and a **Subcontractor** in excess of fifty thousand (\$50,000) dollars shall include a provision that the **Subcontractor** shall not engage in any unlawful discriminatory practice as defined in Title VIII of the Administrative Code (Section 8-101 *et seq.*).

17.11.4 All requirements required pursuant to federal and/or state grant agreement(s), if applicable to the **Work**.

17.12 The **Commissioner** may deduct from the amounts certified under this **Contract** to be due to the **Contractor**, the sum or sums due and owing from the **Contractor** to the **Subcontractors** according to the terms of the said subcontracts, and in case of dispute between the **Contractor** and its **Subcontractor**, or **Subcontractors**, as to the amount due and owing, the **Commissioner** may deduct and withhold from the amounts certified under this **Contract** to be due to the **Contractor** such sum or sums as may be claimed by such **Subcontractor**, or **Subcontractors**, in a sworn affidavit, to be due and owing until such time as such claim or claims shall have been finally resolved.

17.13 On contracts where performance bonds and payment bonds are executed, the **Contractor** shall include on each requisition for payment the following data: **Subcontractor's** name, value of the subcontract, total amount previously paid to **Subcontractor** for **Work** previously requisitioned, and the amount, including retainage, to be paid to the **Subcontractor** for **Work** included in the requisition.

17.14 On **Contracts** where performance bonds and payment bonds are not executed, the **Contractor** shall include with each requisition for payment submitted hereunder, a signed statement from each and every **Subcontractor** and/or **Materialman** for whom payment is requested in such requisition. Such signed statement shall be on the letterhead of the **Subcontractor** and/or **Materialman** for whom payment is requested and shall (i) verify that such **Subcontractor** and/or **Materialman** has been paid in full for all **Work** performed and/or material supplied to date, exclusive of any amount retained and any amount included on the current requisition, and (ii) state the total amount of retainage to date, exclusive of any amount retained on the current requisition.

ARTICLE 18. ASSIGNMENTS

18.1 The **Contractor** shall not assign, transfer, convey or otherwise dispose of this **Contract**, or the right to execute it, or the right, title or interest in or to it or any part thereof, or assign, by power of attorney or otherwise any of the monies due or to become due under this **Contract**, unless the previous written consent of the **Commissioner** shall first be obtained thereto, and the giving of any such consent to a particular assignment shall not dispense with the necessity of such consent to any further or other assignments.

18.2 Such assignment, transfer, conveyance or other disposition of this **Contract** shall not be valid until filed in the office of the **Commissioner** and the **Comptroller**, with the written consent of the **Commissioner** endorsed thereon or attached thereto.

18.3 Failure to obtain the previous written consent of the **Commissioner** to such an assignment, transfer, conveyance or other disposition, may result in the revocation and annulment of this **Contract**. The **City** shall thereupon be relieved and discharged from any further liability to the **Contractor**, its assignees, transferees or sublessees, who shall forfeit and lose all monies therefor earned under the **Contract**, except so much as may be required to pay the **Contractor's** employees.

18.4 The provisions of this clause shall not hinder, prevent, or affect an assignment by the **Contractor** for the benefit of its creditors made pursuant to the **Laws** of the State of New York.

18.5 This **Contract** may be assigned by the **City** to any corporation, agency or instrumentality having authority to accept such assignment.

CHAPTER V: CONTRACTOR'S SECURITY AND GUARANTEE

ARTICLE 19. SECURITY DEPOSIT

19.1 If performance and payment bonds are required, the **City** shall retain the bid security to ensure that the successful bidder executes the **Contract** and furnishes the required payment and performance security within ten (10) **Days** after notice of the award of the **Contract**. If the successful bidder fails to execute the **Contract** and furnish the required payment and performance security, the **City** shall retain such bid security as set forth in the Information for Bidders. If the successful bidder executes the

Contract and furnishes the required payment and performance security, the **City** shall return the bid security within a reasonable time after the furnishing of such bonds and execution of the **Contract** by the **City**.

19.2 If performance and payment bonds are not required, the bid security shall be retained by the **City** as security for the **Contractor's** faithful performance of the **Contract**. If partial payments are provided, the bid security will be returned to the **Contractor** after the sum retained under Article 21 equals the amount of the bid security, subject to other provisions of this **Contract**. If partial payments are not provided, the bid security will be released when final payment is certified by the **City** for payment.

19.3 If the **Contractor** is declared in default under Article 48 prior to the return of the deposit, or if any claim is made such as referred to in Article 23, the amount of such deposit, or so much thereof as the **Comptroller** may deem necessary, may be retained and then applied by the **Comptroller**:

19.3.1 To compensate the **City** for any expense, loss or damage suffered or incurred by reason of or resulting from such default, including the cost of re-letting and liquidated damages; or

19.3.2 To indemnify the **City** against any and all claims.

ARTICLE 20. PAYMENT GUARANTEE

20.1 On **Contracts** where one hundred (100%) percent performance bonds and payment bonds are executed, this Article 20 does not apply.

20.2 In the event the terms of this **Contract** do not require the **Contractor** to provide a payment bond or where the **Contract** does not require a payment bond for one hundred (100%) percent of the **Contract** price, the **City** shall, in accordance with the terms of this Article 20, guarantee payment of all lawful claims for:

20.2.1 Wages and compensation for labor performed and/or services rendered; and

20.2.2 Materials, equipment, and supplies provided, whether incorporated into the **Work** or not, when demands have been filed with the **City** as provided hereinafter by any person, firm, or corporation which furnished labor, material, equipment, supplies, or any combination thereof, in connection with the **Work** performed hereunder (hereinafter referred to as the "beneficiary") at the direction of the **City** or the **Contractor**.

20.3 The provisions of Article 20.2 are subject to the following limitations and conditions:

20.3.1 If the **Contractor** provides a payment bond for a value that is less than one hundred (100%) percent of the value of the **Contract Work**, the payment bond provided by the **Contractor** shall be primary (and non-contributing) to the payment guarantee provided under this Article 20.

20.3.2 The guarantee is made for the benefit of all beneficiaries as defined in Article 20.2 provided that those beneficiaries strictly adhere to the terms and conditions of Article 20.3.4 and 20.3.5.

20.3.3 Nothing in this Article 20 shall prevent a beneficiary providing labor, services or material for the **Work** from suing the **Contractor** for any amounts due and owing the beneficiary by the **Contractor**.

20.3.4 Every person who has furnished labor or material, to the **Contractor** or to a **Subcontractor** of the **Contractor**, in the prosecution of the **Work** and who has not been paid in full therefor before the expiration of a period of ninety (90) **Days** after the date on which the last of the labor was performed or material was furnished by him/her for which the claim is made, shall have the right to sue on this payment guarantee in his/her own name for the amount, or the balance thereof, unpaid at the time of commencement of the action; provided, however, that a person having a direct contractual relationship with a **Subcontractor** of the **Contractor** but no contractual relationship express or implied with the **Contractor** shall not have a right of action upon the guarantee unless he/she shall have given written notice to the **Contractor** within one hundred twenty (120) **Days** from the date on which the last of the labor was performed or the last of the material was furnished, for which his/her claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the material was furnished or for whom the labor was performed. The notice shall be served by delivering the same personally to the **Contractor** or by mailing the same by registered mail, postage prepaid, in an envelope addressed to the **Contractor** at any place where it maintains an office or conducts its business; provided, however, that where such notice is actually received by the **Contractor** by other means, such notice shall be deemed sufficient.

20.3.5 Except as provided in Labor Law Section 220-g, no action on this payment guarantee shall be commenced after the expiration of the one-year limitations period set forth in Section 137(4)(b) of the State Finance Law.

20.3.6 The **Contractor** shall promptly forward to the **City** any notice or demand received pursuant to Article 20.3.4. The **Contractor** shall inform the **City** of any defenses to the notice or demand and shall forward to the **City** any documents the **City** requests concerning the notice or demand.

20.3.7 All demands made against the **City** by a beneficiary of this payment guarantee shall be presented to the **Engineer** along with all written documentation concerning the demand which the **Engineer** deems reasonably appropriate or necessary, which may include, but shall not be limited to: the subcontract; any invoices presented to the **Contractor** for payment; the notarized statement of the beneficiary that the demand is due and payable, that a request for payment has been made of the **Contractor** and that the demand has not been paid by the **Contractor** within the time allowed for such payment by the subcontract; and copies of any correspondence between the beneficiary and the **Contractor** concerning such demand. The **City** shall notify the **Contractor** that a demand has been made. The **Contractor** shall inform the **City** of any defenses to the demand and shall forward to the **City** any documents the **City** requests concerning the demand.

20.3.8 The **City** shall make payment only if, after considering all defenses presented by the **Contractor**, it determines that the payment is due and owing to the beneficiary making the demand.

20.3.9 No beneficiary shall be entitled to interest from the **City**, or to any other costs, including, but not limited to, attorneys' fees, except to the extent required by State Finance Law Section 137.

20.4 Upon the receipt by the **City** of a demand pursuant to this Article 20, the **City** may withhold from any payment otherwise due and owing to the **Contractor** under this **Contract** an amount sufficient to satisfy the demand.

20.4.1 In the event the **City** determines that the demand is valid, the **City** shall notify the **Contractor** of such determination and the amount thereof and direct the **Contractor** to immediately pay such amount to the beneficiary. In the event the **Contractor**, within seven (7) **Days** of receipt of such notification from the **City**, fails to pay the beneficiary, such failure shall constitute an automatic and irrevocable assignment of payment by the **Contractor** to the beneficiary for the amount of the demand determined by the **City** to be valid. The **Contractor**, without further notification or other process, hereby gives its unconditional consent to such assignment of payment to the beneficiary and authorizes the **City**, on its behalf, to take all necessary actions to implement such assignment of payment, including without limitation the execution of any instrument or documentation necessary to effectuate such assignment.

20.4.2 In the event that the amount otherwise due and owing to the **Contractor** by the **City** is insufficient to satisfy such demand, the **City** may, at its option, require payment from the **Contractor** of an amount sufficient to cover such demand and exercise any other right to require or recover payment which the **City** may have under **Law** or **Contract**.

20.4.3 In the event the **City** determines that the demand is invalid, any amount withheld pending the **City's** review of such demand shall be paid to the **Contractor**; provided, however, no lien has been filed. In the event a claim or an action has been filed, the terms and conditions set forth in Article 23 shall apply. In the event a lien has been filed, the parties will be governed by the provisions of the Lien Law of the State of New York.

20.5 The provisions of this Article 20 shall not prevent the **City** and the **Contractor** from resolving disputes in accordance with the **PPB** Rules, where applicable.

20.6 In the event the **City** determines that the beneficiary is entitled to payment pursuant to this Article 20, such determination and any defenses and counterclaims raised by the **Contractor** shall be taken into account in evaluating the **Contractor's** performance.

20.7 Nothing in this Article 20 shall relieve the **Contractor** of the obligation to pay the claims of all persons with valid and lawful claims against the **Contractor** relating to the **Work**.

20.8 The **Contractor** shall not require any performance, payment or other bonds of any **Subcontractor** if this **Contract** does not require such bonds of the **Contractor**.

20.9 The payment guarantee made pursuant to this Article 20 shall be construed in a manner consistent with Section 137 of the State Finance Law and shall afford to persons furnishing labor or materials to the **Contractor** or its **Subcontractors** in the prosecution of the **Work** under this **Contract** all of the rights and remedies afforded to such persons by such section, including but not limited to, the right to commence an action against the **City** on the payment guarantee provided by this Article 20 within the one-year limitations period set forth in Section 137(4)(b).

ARTICLE 21. RETAINED PERCENTAGE

21.1 If this **Contract** requires one hundred (100%) percent performance and payment security, then as further security for the faithful performance of this **Contract**, the **Commissioner** shall deduct, and

retain until the substantial completion of the **Work**, five (5%) percent of the value of **Work** certified for payment in each partial payment voucher.

21.2 If this **Contract** does not require one hundred (100%) percent performance and payment security and if the price for which this **Contract** was awarded does not exceed one million (\$1,000,000) dollars, then as further security for the faithful performance of this **Contract**, the **Commissioner** shall deduct, and retain until the substantial completion of the **Work**, five (5%) percent of the value of **Work** certified for payment in each partial payment voucher.

21.3 If this **Contract** does not require one hundred (100%) percent performance and payment security and if the price for which this **Contract** was awarded exceeds one million (\$1,000,000) dollars, then as further security for the faithful performance of this **Contract**, the **Commissioner** shall deduct, and retain until the substantial completion of the **Work**, up to ten (10%) percent of the value of **Work** certified for payment in each partial payment voucher. The percentage to be retained is set forth in Schedule A of the General Conditions.

ARTICLE 22. INSURANCE

22.1 Types of Insurance: The **Contractor** shall procure and maintain the following types of insurance if, and as indicated, in Schedule A of the General Conditions (with the minimum limits and special conditions specified in Schedule A). Such insurance shall be maintained from the date the **Contractor** is required to provide Proof of Insurance pursuant to Article 22.3.1 through the date of completion of all required **Work** (including punch list work as certified in writing by the **Resident Engineer**), except for insurance required pursuant to Article 22.1.4, which may terminate upon **Substantial Completion** of the **Contract**. All insurance shall meet the requirements set forth in this Article 22. Wherever this Article requires that insurance coverage be "at least as broad" as a specified form (including all ISO forms), there is no obligation that the form itself be used, provided that the **Contractor** can demonstrate that the alternative form or endorsement contained in its policy provides coverage at least as broad as the specified form.

22.1.1 Commercial General Liability Insurance: The **Contractor** shall provide Commercial General Liability Insurance covering claims for property damage and/or bodily injury, including death, which may arise from any of the operations under this **Contract**. Coverage under this insurance shall be at least as broad as that provided by the latest edition of Insurance Services Office ("ISO") Form CG 0001. Such insurance shall be "occurrence" based rather than "claims-made" and include, without limitation, the following types of coverage: premises operations; products and completed operations; contractual liability (including the tort liability of another assumed in a contract); broad form property damage; independent contractors; explosion, collapse and underground (XCU); construction means and methods; and incidental malpractice. Such insurance shall contain a "per project" aggregate limit, as specified in Schedule A, that applies separately to operations under this **Contract**.

22.1.1(a) Such Commercial General Liability Insurance shall name the **City** as an Additional Insured. Coverage for the **City** shall specifically include the **City's** officials and employees, be at least as broad as the latest edition of ISO Form CG 20 10 and provide completed operations coverage at least as broad as the latest edition of ISO Form CG 20 37.

22.1.1(b) Such Commercial General Liability Insurance shall name all other entities designated as additional insureds in Schedule A but only for claims arising from the

Contractor's operations under this **Contract**, with coverage at least as broad as the latest edition of ISO Form CG 20 26.

22.1.1(c) If the **Work** requires a permit from the Department of Buildings pursuant to 1 RCNY Section 101-08, the **Contractor** shall provide Commercial General Liability Insurance with limits of at least those required by 1 RCNY section 101-08 or greater limits required by the Agency in accordance with Schedule A. If the **Work** does not require such a permit, the minimum limits shall be those provided for in Schedule A.

22.1.1(d) If any of the **Work** includes repair of a waterborne vessel owned by or to be delivered to the **City**, such Commercial General Liability shall include, or be endorsed to include, Ship Repairer's Legal Liability Coverage to protect against, without limitation, liability arising from navigation of such vessels prior to delivery to and acceptance by the **City**.

22.1.2 Workers' Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance: The **Contractor** shall provide, and shall cause its **Subcontractors** to provide, Workers Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance in accordance with the **Laws** of the State of New York on behalf of all employees providing services under this **Contract** (except for those employees, if any, for which the **Laws** require insurance only pursuant to Article 22.1.3).

22.1.3 United States Longshoremen's and Harbor Workers Act and/or Jones Act Insurance: If specified in Schedule A of the General Conditions or if required by **Law**, the **Contractor** shall provide insurance in accordance with the United States Longshoremen's and Harbor Workers Act and/or the Jones Act, on behalf of all qualifying employees providing services under this **Contract**.

22.1.4 Builders Risk Insurance: If specified in Schedule A of the General Conditions, the **Contractor** shall provide Builders Risk Insurance on a completed value form for the total value of the **Work** through **Substantial Completion** of the **Work** in its entirety. Such insurance shall be provided on an All Risk basis and include coverage, without limitation, for windstorm (including named windstorm), storm surge, flood and earth movement. Unless waived by the **Commissioner**, it shall include coverage for ordinance and law, demolition and increased costs of construction, debris removal, pollutant clean up and removal, and expediting costs. Such insurance shall cover, without limitation, (a) all buildings and/or structures involved in the **Work**, as well as temporary structures at the **Site**, and (b) any property that is intended to become a permanent part of such building or structure, whether such property is on the **Site**, in transit or in temporary storage. Policies shall name the **Contractor** as Named Insured and list the **City** as both an Additional Insured and a Loss Payee as its interest may appear.

22.1.4(a) Policies of such insurance shall specify that, in the event a loss occurs at an occupied facility, occupancy of such facility is permitted without the consent of the issuing insurance company.

22.1.4(b) Such insurance may be provided through an Installation Floater, at the **Contractor's** option, if it otherwise conforms with the requirements of this Article 22.1.4.

22.1.5 Commercial Automobile Liability Insurance: The **Contractor** shall provide Commercial Automobile Liability Insurance for liability arising out of ownership,

maintenance or use of any owned (if any), non-owned and hired vehicles to be used in connection with this **Contract**. Coverage shall be at least as broad as the latest edition of ISO Form CA0001. If vehicles are used for transporting hazardous materials, the Automobile Liability Insurance shall be endorsed to provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90.

22.1.6 Contractors Pollution Liability Insurance: If specified in Schedule A of the General Conditions, the **Contractor** shall maintain, or cause the **Subcontractor** doing such **Work** to maintain, Contractors Pollution Liability Insurance covering bodily injury and property damage. Such insurance shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants (including asbestos), including any loss, cost or expense incurred as a result of any cleanup of pollutants (including asbestos) or in the investigation, settlement or defense of any claim, action, or proceedings arising from the operations under this **Contract**. Such insurance shall be in the **Contractor's** name and list the **City** as an Additional Insured and any other entity specified in Schedule A. Coverage shall include, without limitation, (a) loss of use of damaged property or of property that has not been physically injured, (b) transportation, and (c) non-owned disposal sites.

22.1.6(a) Coverage for the **City** as Additional Insured shall specifically include the **City's** officials and employees and be at least as broad as provided to the **Contractor** for this **Project**.

22.1.6(b) If such insurance is written on a claims-made policy, such policy shall have a retroactive date on or before the effective date of this **Contract**, and continuous coverage shall be maintained, or an extended discovery period exercised, for a period of not less than three (3) years from the time the **Work** under this **Contract** is completed.

22.1.7 Marine Insurance:

22.1.7(a) Marine Protection and Indemnity Insurance: If specified in Schedule A of the General Conditions or if the **Contractor** engages in marine operations in the execution of any part of the **Work**, the **Contractor** shall maintain, or cause the **Subcontractor** doing such **Work** to maintain, Marine Protection and Indemnity Insurance with coverage at least as broad as Form SP-23. The insurance shall provide coverage for the **Contractor** or **Subcontractor** (whichever is doing this **Work**) and for the **City** (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured for bodily injury and property damage arising from marine operations under this **Contract**. Coverage shall include, without limitation, injury or death of crew members (if not fully provided through other insurance), removal of wreck, damage to piers, wharves and other fixed or floating objects and loss of or damage to any other vessel or craft, or to property on such other vessel or craft.

22.1.7(b) Hull and Machinery Insurance: If specified in Schedule A of the General Conditions or if the **Contractor** engages in marine operations in the execution of any part of the **Work**, the **Contractor** shall maintain, or cause the **Subcontractor** doing such **Work** to maintain, Hull and Machinery Insurance with coverage for the **Contractor** or **Subcontractor** (whichever is doing this **Work**) and for the **City** (together with its officials and employees) as Additional Insured at least as broad as the latest edition of American Institute Tug Form for all tugs used under this

Contract and Collision Liability at least as broad as the latest edition of American Institute Hull Clauses.

22.1.7(c) Marine Pollution Liability Insurance: If specified in Schedule A of the General Conditions or if the **Contractor** engages in marine operations in the execution of any part of the **Work**, the **Contractor** shall maintain, or cause the **Subcontractor** doing such Work to maintain, Marine Pollution Liability Insurance covering itself (or the Subcontractor doing such Work) as Named Insured and the **City** (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured. Coverage shall be at least as broad as that provided by the latest edition of Water Quality Insurance Syndicate Form and include, without limitation, liability arising from the discharge or substantial threat of a discharge of oil, or from the release or threatened release of a hazardous substance including injury to, or economic losses resulting from, the destruction of or damage to real property, personal property or natural resources.

22.1.8 The **Contractor** shall provide such other types of insurance, at such minimum limits and with such conditions, as are specified in Schedule A of the General Conditions.

22.2 General Requirements for Insurance Coverage and Policies:

22.2.1 All required insurance policies shall be maintained with companies that may lawfully issue the required policy and have an A.M. Best rating of at least A-/VII or a Standard and Poor's rating of at least A, unless prior written approval is obtained from the **City** Corporation Counsel.

22.2.2 The **Contractor** shall be solely responsible for the payment of all premiums for all required policies and all deductibles and self-insured retentions to which such policies are subject, whether or not the **City** is an insured under the policy.

22.2.3 In his/her sole discretion, the **Commissioner** may, subject to the approval of the **Comptroller** and the **City** Corporation Counsel, accept Letters of Credit and/or custodial accounts in lieu of required insurance.

22.2.4 The **City's** limits of coverage for all types of insurance required pursuant to Schedule A of the General Conditions shall be the greater of (i) the minimum limits set forth in Schedule A or (ii) the limits provided to the **Contractor** as Named Insured under all primary, excess, and umbrella policies of that type of coverage.

22.2.5 The **Contractor** may satisfy its insurance obligations under this Article 22 through primary policies or a combination of primary and excess/umbrella policies, so long as all policies provide the scope of coverage required herein.

22.2.6 Policies of insurance provided pursuant to this Article 22 shall be primary and non-contributing to any insurance or self-insurance maintained by the **City**.

22.3 Proof of Insurance:

22.3.1 For all types of insurance required by Article 22.1 and Schedule A, except for insurance required by Articles 22.1.4 and 22.1.7, the **Contractor** shall file proof of insurance in accordance with this Article 22.3 within ten (10) **Days** of award. For insurance

provided pursuant to Articles 22.1.4 and 22.1.7, proof shall be filed by a date specified by the **Commissioner** or ten (10) **Days** prior to the commencement of the portion of the **Work** covered by such policy, whichever is earlier.

22.3.2 For Workers' Compensation Insurance provided pursuant to Article 22.1.2, the **Contractor** shall submit one of the following forms: C-105.2 Certificate of Workers' Compensation Insurance; U-26.3 - State Insurance Fund Certificate of Workers' Compensation Insurance; Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the **Commissioner**. For Disability Benefits Insurance provided pursuant to Article 22.1.2, the Contractor shall submit DB-120.1 - Certificate Of Insurance Coverage Under The NYS Disability Benefits Law, Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the **Commissioner**. ACORD forms are not acceptable.

22.3.3 For policies provided pursuant to all of Article 22.1 other than Article 22.1.2, the **Contractor** shall submit one or more Certificates of Insurance on forms acceptable to the **Commissioner**. All such Certificates of Insurance shall certify (a) the issuance and effectiveness of such policies of insurance, each with the specified minimum limits (b) for insurance secured pursuant to Article 22.1.1 that the **City** and any other entity specified in Schedule A is an Additional Insured thereunder; (c) in the event insurance is required pursuant to Article 22.1.6 and/or Article 22.1.7, that the **City** is an Additional Insured thereunder; (d) the company code issued to the insurance company by the National Association of Insurance Commissioners (the NAIC number); and (e) the number assigned to the **Contract** by the **City**. All such Certificates of Insurance shall be accompanied by either a duly executed "Certification by Insurance Broker or Agent" in the form contained in Part III of Schedule A or copies of all policies referenced in such Certificate of Insurance as certified by an authorized representative of the issuing insurance carrier. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

22.3.4 Documentation confirming renewals of insurance shall be submitted to the **Commissioner** prior to the expiration date of coverage of policies required under this **Contract**. Such proofs of insurance shall comply with the requirements of Articles 22.3.2 and 22.3.3.

22.3.5 The **Contractor** shall be obligated to provide the **City** with a copy of any policy of insurance provided pursuant to this Article 22 upon the demand for such policy by the **Commissioner** or the **City** Corporation Counsel.

22.4 Operations of the **Contractor**:

22.4.1 The **Contractor** shall not commence the **Work** unless and until all required certificates have been submitted to and accepted by the **Commissioner**. Acceptance by the **Commissioner** of a certificate does not excuse the **Contractor** from securing insurance consistent with all provisions of this Article 22 or of any liability arising from its failure to do so.

22.4.2 The **Contractor** shall be responsible for providing continuous insurance coverage in the manner, form, and limits required by this **Contract** and shall be authorized to perform **Work** only during the effective period of all required coverage.

22.4.3 In the event that any of the required insurance policies lapse, are revoked, suspended or otherwise terminated, for whatever cause, the **Contractor** shall immediately stop all **Work**, and shall not recommence **Work** until authorized in writing to do so by the **Commissioner**. Upon quitting the **Site**, except as otherwise directed by the **Commissioner**, the **Contractor** shall leave all plant, materials, equipment, tools, and supplies on the **Site**. **Contract** time shall continue to run during such periods and no extensions of time will be granted. The **Commissioner** may also declare the **Contractor** in default for failure to maintain required insurance.

22.4.4 In the event the **Contractor** receives notice, from an insurance company or other person, that any insurance policy required under this Article 22 shall be cancelled or terminated (or has been cancelled or terminated) for any reason, the **Contractor** shall immediately forward a copy of such notice to both the **Commissioner** and the New York City Comptroller, attn: Office of Contract Administration, Municipal Building, One Centre Street, room 1005, New York, New York 10007. Notwithstanding the foregoing, the **Contractor** shall ensure that there is no interruption in any of the insurance coverage required under this Article 22.

22.4.5 Where notice of loss, damage, occurrence, accident, claim or suit is required under an insurance policy maintained in accordance with this Article 22, the **Contractor** shall notify in writing all insurance carriers that issued potentially responsive policies of any such event relating to any operations under this **Contract** (including notice to Commercial General Liability insurance carriers for events relating to the **Contractor**'s own employees) no later than 20 days after such event. For any policy where the **City** is an Additional Insured, such notice shall expressly specify that "this notice is being given on behalf of the City of New York as Insured as well as the Named Insured." Such notice shall also contain the following information: the number of the insurance policy, the name of the named insured, the date and location of the damage, occurrence, or accident, and the identity of the persons or things injured, damaged or lost. The **Contractor** shall simultaneously send a copy of such notice to the City of New York c/o Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, New York 10007.

22.4.6 In the event of any loss, accident, claim, action, or other event that does or can give rise to a claim under any insurance policy required under this Article 22, the **Contractor** shall at all times fully cooperate with the **City** with regard to such potential or actual claim.

22.5 **Subcontractor Insurance:** In the event the **Contractor** requires any **Subcontractor** to procure insurance with regard to any operations under this **Contract** and requires such **Subcontractor** to name the **Contractor** as an **Additional Insured** thereunder, the **Contractor** shall ensure that the **Subcontractor** name the **City**, including its officials and employees, as an Additional Insured with coverage at least as broad as the most recent edition of ISO Form CG 20 26.

22.6 Wherever reference is made in Article 7 or this Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth in Schedule A of the General Conditions. In the event no address is set forth in Schedule A, such documents are to be sent to the **Commissioner**'s address as provided elsewhere in this **Contract**.

22.7 Apart from damages or losses covered by insurance provided pursuant to Articles 22.1.2, 22.1.3, or 22.1.5, the **Contractor** waives all rights against the **City**, including its officials and employees, for any damages or losses that are covered under any insurance required under this Article 22 (whether or

not such insurance is actually procured or claims are paid thereunder) or any other insurance applicable to the operations of the **Contractor** and/or its employees, agents, or **Subcontractors**.

22.8 In the event the **Contractor** utilizes a self-insurance program to satisfy any of the requirements of this Article 22, the **Contractor** shall ensure that any such self-insurance program provides the **City** with all rights that would be provided by traditional insurance under this Article 22, including but not limited to the defense and indemnification obligations that insurers are required to undertake in liability policies.

22.9 Materiality/Non-Waiver: The **Contractor's** failure to secure policies in complete conformity with this Article 22, or to give an insurance company timely notice of any sort required in this **Contract** or to do anything else required by this Article 22 shall constitute a material breach of this **Contract**. Such breach shall not be waived or otherwise excused by any action or inaction by the **City** at any time.

22.10 Pursuant to General Municipal Law Section 108, this **Contract** shall be void and of no effect unless **Contractor** maintains Workers' Compensation Insurance for the term of this **Contract** to the extent required and in compliance with the New York State Workers' Compensation Law.

22.11 Other Remedies: Insurance coverage provided pursuant to this Article 22 or otherwise shall not relieve the **Contractor** of any liability under this **Contract**, nor shall it preclude the **City** from exercising any rights or taking such other actions available to it under any other provisions of this **Contract** or **Law**.

ARTICLE 23. MONEY RETAINED AGAINST CLAIMS

23.1 If any claim shall be made by any person or entity (including **Other Contractors** with the **City** on this **Project**) against the **City** or against the **Contractor** and the **City** for any of the following:

- (a) An alleged loss, damage, injury, theft or vandalism of any of the kinds referred to in Articles 7 and 12, plus the reasonable costs of defending the **City**, which in the opinion of the **Comptroller** may not be paid by an insurance company (for any reason whatsoever); or
- (b) An infringement of copyrights, patents or use of patented articles, tools, etc., as referred to in Article 57; or
- (c) Damage claimed to have been caused directly or indirectly by the failure of the **Contractor** to perform the **Work** in strict accordance with this **Contract**,

the amount of such claim, or so much thereof as the **Comptroller** may deem necessary, may be withheld by the **Comptroller**, as security against such claim, from any money due hereunder. The **Comptroller**, in his/her discretion, may permit the **Contractor** to substitute other satisfactory security in lieu of the monies so withheld.

23.2 If an action on such claim is timely commenced and the liability of the **City**, or the **Contractor**, or both, shall have been established therein by a final judgment of a court of competent jurisdiction, or if such claim shall have been admitted by the **Contractor** to be valid, the **Comptroller** shall pay such judgment or admitted claim out of the monies retained by the **Comptroller** under the provisions of this Article 23, and return the balance, if any, without interest, to the **Contractor**.

ARTICLE 24. MAINTENANCE AND GUARANTY

24.1 The **Contractor** shall promptly repair, replace, restore or rebuild, as the **Commissioner** may determine, any finished **Work** in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of **Substantial Completion** (or use and occupancy in accordance with Article 16), except where other periods of maintenance and guaranty are provided for in Schedule A.

24.2 As security for the faithful performance of its obligations hereunder, the **Contractor**, upon filing its requisition for payment on **Substantial Completion**, shall deposit with the **Commissioner** a sum equal to one (1%) percent of the price (or the amount fixed in Schedule A of the General Conditions) in cash or certified check upon a state or national bank and trust company or a check of such bank and trust company signed by a duly authorized officer thereof and drawn to the order of the **Comptroller**, or obligations of the **City**, which the **Comptroller** may approve as of equal value with the sum so required.

24.3 In lieu of the above, the **Contractor** may make such security payment to the **City** by authorizing the **Commissioner** in writing to deduct the amount from the **Substantial Completion** payment which shall be deemed the deposit required above.

24.4 If the **Contractor** has faithfully performed all of its obligations hereunder the **Commissioner** shall so certify to the **Comptroller** within five (5) **Days** after the expiration of one (1) year from the date of **Substantial Completion** and acceptance of the **Work** or within thirty (30) **Days** after the expiration of the guarantee period fixed in the **Specifications**. The security payment shall be repaid to the **Contractor** without interest within thirty (30) **Days** after certification by the **Commissioner** to the **Comptroller** that the **Contractor** has faithfully performed all of its obligations hereunder.

24.5 Notice by the **Commissioner** to the **Contractor** to repair, replace, rebuild or restore such defective or damaged **Work** shall be timely, pursuant to this article, if given not later than ten (10) **Days** subsequent to the expiration of the one (1) year period or other periods provided for herein.

24.6 If the **Contractor** shall fail to repair, replace, rebuild or restore such defective or damaged **Work** promptly after receiving such notice, the **Commissioner** shall have the right to have the **Work** done by others in the same manner as provided for in the completion of a defaulted **Contract**, under Article 51.

24.7 If the security payment so deposited is insufficient to cover the cost of such **Work**, the **Contractor** shall be liable to pay such deficiency on demand by the **Commissioner**.

24.8 The **Engineer's** certificate setting forth the fair and reasonable cost of repairing, replacing, rebuilding or restoring any damaged or defective **Work** when performed by one other than the **Contractor**, shall be binding and conclusive upon the **Contractor** as to the amount thereof.

24.9 The **Contractor** shall obtain all manufacturers' warranties and guaranties of all equipment and materials required by this **Contract** in the name of the **City** and shall deliver same to the **Commissioner**. All of the **City's** rights and title and interest in and to said manufacturers' warranties and guaranties may be assigned by the **City** to any subsequent purchasers of such equipment and materials or lessees of the premises into which the equipment and materials have been installed.

CHAPTER VI: CHANGES, EXTRA WORK, AND DOCUMENTATION OF CLAIM

ARTICLE 25. CHANGES

25.1 Changes may be made to this **Contract** only as duly authorized in writing by the **Commissioner** in accordance with the **Law** and this **Contract**. All such changes, modifications, and amendments will become a part of the **Contract**. **Work** so ordered shall be performed by the **Contractor**.

25.2 **Contract** changes will be made only for **Work** necessary to complete the **Work** included in the original scope of the **Contract** and/or for non-material changes to the scope of the **Contract**. Changes are not permitted for any material alteration in the scope of **Work** in the **Contract**.

25.3 The **Contractor** shall be entitled to a price adjustment for **Extra Work** performed pursuant to a written change order. Adjustments to price shall be computed in one or more of the following ways:

25.3.1 By applicable unit prices specified in the **Contract**; and/or

25.3.2 By agreement of a fixed price; and/or

25.3.3 By time and material records; and/or

25.3.4 In any other manner approved by the **CCPO**.

25.4 All payments for change orders are subject to pre-audit by the **Engineering Audit Officer** and may be post-audited by the **Comptroller** and/or the **Agency**.

ARTICLE 26. METHODS OF PAYMENT FOR OVERRUNS AND EXTRA WORK

26.1 **Overrun of Unit Price Item**: An overrun is any quantity of a unit price item which the **Contractor** is directed to provide which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule.

26.1.1 For any unit price item, the **Contractor** will be paid at the unit price bid for any quantity up to one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule. If during the progress of the **Work**, the actual quantity of any unit price item required to complete the **Work** approaches the estimated quantity for that item, and for any reason it appears that the actual quantity of any unit price item necessary to complete the **Work** will exceed the estimated quantity for that item by twenty-five (25%) percent, the **Contractor** shall immediately notify the **Engineer** of such anticipated overrun. The **Contractor** shall not be compensated for any quantity of a unit price item provided which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule without written authorization from the **Engineer**.

26.1.2 If the actual quantity of any unit price item necessary to complete the **Work** will exceed one hundred twenty five (125%) percent of the estimated quantity for that item set forth in the bid schedule, the **City** reserves the right and the **Contractor** agrees to negotiate a new unit price for such item. In no event shall such negotiated new unit price exceed the unit bid price. If the **City** and **Contractor** cannot agree on a new unit price, then the **City** shall order the **Contractor** and the **Contractor** agrees to provide additional quantities of

the item on the basis of time and material records for the actual and reasonable cost as determined under Article 26.2, but in no event at a unit price exceeding the unit price bid.

26.2 **Extra Work:** For **Extra Work** where payment is by agreement on a fixed price in accordance with Article 25.3.2, the price to be paid for such **Extra Work** shall be based on the fair and reasonable estimated cost of the items set forth below. For **Extra Work** where payment is based on time and material records in accordance with Article 25.3.3, the price to be paid for such **Extra Work** shall be the actual and reasonable cost of the items set forth below, calculated in accordance with the formula specified therein, if any.

26.2.1 Necessary materials (including transportation to the **Site**); plus

26.2.2 Necessary direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits; plus

26.2.3 Sales and personal property taxes, if any, required to be paid on materials not incorporated into such **Extra Work**; plus

26.2.4 Reasonable rental value of **Contractor**-owned (or **Subcontractor**-owned, as applicable), necessary plant and equipment other than **Small Tools**, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per operating hour: $(.035) \times (\text{HP rating}) \times (\text{Fuel cost/gallon})$. Reasonable rental value is defined as the lower of either seventy-five percent of the monthly prorated rental rates established in "The AED Green Book, Rental Rates and Specifications for Construction Equipment" published by Equipment Watch (the "Green Book"), or seventy-five percent of the monthly prorated rental rates established in the "Rental Rate Blue Book for Construction Equipment" published by Equipment Watch (the "Blue Book") (the applicable Blue Book rate being for rental only without the addition of any operational costs listed in the Blue Book). The reasonable rental value is deemed to be inclusive of all operating costs except for fuel/energy consumption and equipment operator's wages/costs. For multiple shift utilization, reimbursement shall be calculated as follows: first shift shall be seventy-five (75%) percent of such rental rates; second shift shall be sixty (60%) percent of the first shift rate; and third shift shall be forty (40%) percent of the first shift rate. Equipment on standby shall be reimbursed at one-third (1/3) the prorated monthly rental rate. **Contractor**-owned (or **Subcontractor**-owned, as applicable) equipment includes equipment from rental companies affiliated with or controlled by the **Contractor** (or **Subcontractor**, as applicable), as determined by the **Commissioner**. In establishing cost reimbursement for non-operating **Contractor**-owned (or **Subcontractor**-owned, as applicable) equipment (scaffolding, sheeting systems, road plates, etc.), the **City** may restrict reimbursement to a purchase-salvage/life cycle basis if less than the computed rental costs; plus

26.2.5 Necessary installation and dismantling of such plant and equipment, including transportation to and from the **Site**, if any, provided that, in the case of non-**Contractor**-owned (or non-**Subcontractor**-owned, as applicable) equipment rented from a third party, the cost of installation and dismantling are not allowable if such costs are included in the rental rate; plus

26.2.6 Necessary fees charged by governmental entities; plus

26.2.7 Necessary construction-related service fees charged by non-governmental entities, such as landfill tipping fees; plus

26.2.8 Reasonable rental costs of non-**Contractor**-owned (or non-**Subcontractor**-owned, as applicable) necessary plant and equipment other than **Small Tools**, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per hour of operation: $(.035) \times (\text{HP rating}) \times (\text{Fuel cost/gallon})$. In lieu of renting, the **City** reserves the right to direct the purchase of non-operating equipment (scaffolding, sheeting systems, road plates, etc.), with payment on a purchase-salvage/life cycle basis, if less than the projected rental costs; plus

26.2.9 Workers' Compensation Insurance, and any insurance coverage expressly required by the **City** for the performance of the **Extra Work** which is different than the types of insurance required by Article 22 and Schedule A of the General Conditions. The cost of Workers' Compensation Insurance is subject to applicable payroll limitation caps and shall be based upon the carrier's Manual Rate for such insurance derived from the applicable class Loss Cost ("LC") and carrier's Lost Cost Multiplier ("LCM") approved by the New York State Department of Financial Services, and with the exception of experience rating, rate modifiers as promulgated by the New York Compensation Insurance Rating Board ("NYCIRB"); plus

26.2.10 Additional costs incurred as a result of the **Extra Work** for performance and payment bonds; plus

26.2.11 Twelve percent (12%) percent of the total of items in Articles 26.2.1 through 26.2.5 as compensation for overhead, except that no percentage for overhead will be allowed on **Payroll Taxes** or on the premium portion of overtime pay or on sales and personal property taxes. Overhead shall include without limitation, all costs and expenses in connection with administration, management superintendence, small tools, and insurance required by Schedule A of the General Conditions other than Workers' Compensation Insurance; plus

26.2.12 Ten (10%) percent of the total of items in Articles 26.2.1 through 26.2.5, plus the items in Article 26.2.11, as compensation for profit, except that no percentage for profit will be allowed on **Payroll Taxes** or on the premium portion of overtime pay or on sales and personal property taxes; plus

26.2.13 Five (5%) percent of the total of items in Articles 26.2.6 through 26.2.10 as compensation for overhead and profit.

26.3 Where the **Extra Work** is performed in whole or in part by other than the **Contractor's** own forces pursuant to Article 26.2, the **Contractor** shall be paid, subject to pre-audit by the **Engineering Audit Officer**, the cost of such **Work** computed in accordance with Article 26.2 above, plus an additional allowance of five (5%) percent to cover the **Contractor's** overhead and profit.

26.4 Where a change is ordered, involving both **Extra Work** and omitted or reduced **Contract Work**, the **Contract** price shall be adjusted, subject to pre-audit by the **EAO**, in an amount based on the difference between the cost of such **Extra Work** and of the omitted or reduced **Work**.

26.5 Where the **Contractor** and the **Commissioner** can agree upon a fixed price for **Extra Work** in accordance with Article 25.3.2 or another method of payment for **Extra Work** in accordance with

Article 25.3.4, or for **Extra Work** ordered in connection with omitted **Work**, such method, subject to pre-audit by the **EAO**, may, at the option of the **Commissioner**, be substituted for the cost plus a percentage method provided in Article 26.2; provided, however, that if the **Extra Work** is performed by a **Subcontractor**, the **Contractor** shall not be entitled to receive more than an additional allowance of five (5%) percent for overhead and profit over the cost of such **Subcontractor's Work** as computed in accordance with Article 26.2.

ARTICLE 27. RESOLUTION OF DISPUTES

27.1 All disputes between the **City** and the **Contractor** of the kind delineated in this Article 27.1 that arise under, or by virtue of, this **Contract** shall be finally resolved in accordance with the provisions of this Article 27 and the **PPB** Rules. This procedure for resolving all disputes of the kind delineated herein shall be the exclusive means of resolving any such disputes.

27.1.1 This Article 27 shall not apply to disputes concerning matters dealt with in other sections of the **PPB** Rules, or to disputes involving patents, copyrights, trademarks, or trade secrets (as interpreted by the courts of New York State) relating to proprietary rights in computer software.

27.1.2 This Article 27 shall apply only to disputes about the scope of **Work** delineated by the **Contract**, the interpretation of **Contract** documents, the amount to be paid for **Extra Work** or disputed work performed in connection with the **Contract**, the conformity of the **Contractor's Work** to the **Contract**, and the acceptability and quality of the **Contractor's Work**; such disputes arise when the **Engineer, Resident Engineer, Engineering Audit Officer**, or other designee of the **Commissioner** makes a determination with which the **Contractor** disagrees.

27.2 All determinations required by this Article 27 shall be made in writing clearly stated, with a reasoned explanation for the determination based on the information and evidence presented to the party making the determination. Failure to make such determination within the time required by this Article 27 shall be deemed a non-determination without prejudice that will allow application to the next level.

27.3 During such time as any dispute is being presented, heard, and considered pursuant to this Article 27, the **Contract** terms shall remain in force and the **Contractor** shall continue to perform **Work** as directed by the **ACCO** or the **Engineer**. Failure of the **Contractor** to continue **Work** as directed shall constitute a waiver by the **Contractor** of its claim.

27.4 Presentation of Disputes to **Commissioner**.

Notice of Dispute and Agency Response. The **Contractor** shall present its dispute in writing ("Notice of Dispute") to the **Commissioner** within thirty (30) Days of receiving written notice of the determination or action that is the subject of the dispute. This notice requirement shall not be read to replace any other notice requirements contained in the **Contract**. The Notice of Dispute shall include all the facts, evidence, documents, or other basis upon which the **Contractor** relies in support of its position, as well as a detailed computation demonstrating how any amount of money claimed by the **Contractor** in the dispute was arrived at. Within thirty (30) Days after receipt of the detailed written submission comprising the complete Notice of Dispute, the **Engineer, Resident Engineer, Engineering Audit Officer**, or other designee of the **Commissioner** shall submit to the **Commissioner** all materials he or she deems pertinent to the dispute. Following initial submissions to the **Commissioner**, either party may demand of the other the production of any document or other material the demanding party believes may be relevant to the dispute. The requested party shall produce all relevant materials that are not otherwise

protected by a legal privilege recognized by the courts of New York State. Any question of relevancy shall be determined by the **Commissioner** whose decision shall be final. Willful failure of the **Contractor** to produce any requested material whose relevancy the **Contractor** has not disputed, or whose relevancy has been affirmatively determined, shall constitute a waiver by the **Contractor** of its claim.

27.4.1 **Commissioner Inquiry.** The **Commissioner** shall examine the material and may, in his or her discretion, convene an informal conference with the **Contractor**, the **ACCO**, and the **Engineer, Resident Engineer, Engineering Audit Officer**, or other designee of the **Commissioner** to resolve the issue by mutual consent prior to reaching a determination. The **Commissioner** may seek such technical or other expertise as he or she shall deem appropriate, including the use of neutral mediators, and require any such additional material from either or both parties as he or she deems fit. The **Commissioner's** ability to render, and the effect of, a decision hereunder shall not be impaired by any negotiations in connection with the dispute presented, whether or not the **Commissioner** participated therein. The **Commissioner** may or, at the request of any party to the dispute, shall compel the participation of any **Other Contractor** with a contract related to the **Work** of this **Contract**, and that **Contractor** shall be bound by the decision of the **Commissioner**. Any **Other Contractor** thus brought into the dispute resolution proceeding shall have the same rights and obligations under this Article 27 as the **Contractor** initiating the dispute.

27.4.2 **Commissioner Determination.** Within thirty (30) **Days** after the receipt of all materials and information, or such longer time as may be agreed to by the parties, the **Commissioner** shall make his or her determination and shall deliver or send a copy of such determination to the **Contractor**, the **ACCO**, and **Engineer, Resident Engineer, Engineering Audit Officer**, or other designee of the **Commissioner**, as applicable, together with a statement concerning how the decision may be appealed.

27.4.3 **Finality of Commissioner's Decision.** The **Commissioner's** decision shall be final and binding on all parties, unless presented to the Contract Dispute Resolution Board pursuant to this Article 27. The **City** may not take a petition to the Contract Dispute Resolution Board. However, should the **Contractor** take such a petition, the **City** may seek, and the Contract Dispute Resolution Board may render, a determination less favorable to the **Contractor** and more favorable to the **City** than the decision of the **Commissioner**.

27.5 **Presentation of Dispute to the Comptroller.** Before any dispute may be brought by the **Contractor** to the Contract Dispute Resolution Board, the **Contractor** must first present its claim to the **Comptroller** for his or her review, investigation, and possible adjustment.

27.5.1 **Time, Form, and Content of Notice.** Within thirty (30) **Days** of its receipt of a decision by the **Commissioner**, the **Contractor** shall submit to the **Comptroller** and to the **Commissioner** a Notice of Claim regarding its dispute with the **Agency**. The Notice of Claim shall consist of (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed and the reason(s) the **Contractor** contends the dispute was wrongly decided by the **Commissioner**; (ii) a copy of the written decision of the **Commissioner**; and (iii) a copy of all materials submitted by the **Contractor** to the **Agency**, including the Notice of Dispute. The **Contractor** may not present to the **Comptroller** any material not presented to the **Commissioner**, except at the request of the **Comptroller**.

27.5.2 Response. Within thirty (30) **Days** of receipt of the Notice of Claim, the **Agency** shall make available to the **Comptroller** a copy of all material submitted by the **Agency** to the **Commissioner** in connection with the dispute. The **Agency** may not present to the **Comptroller** any material not presented to the **Commissioner** except at the request of the **Comptroller**.

27.5.3 **Comptroller** Investigation. The **Comptroller** may investigate the claim in dispute and, in the course of such investigation, may exercise all powers provided in Sections 7-201 and 7-203 of the Administrative Code. In addition, the **Comptroller** may demand of either party, and such party shall provide, whatever additional material the **Comptroller** deems pertinent to the claim, including original business records of the **Contractor**. Willful failure of the **Contractor** to produce within fifteen (15) **Days** any material requested by the **Comptroller** shall constitute a waiver by the **Contractor** of its claim. The **Comptroller** may also schedule an informal conference to be attended by the **Contractor**, **Agency** representatives, and any other personnel desired by the **Comptroller**.

27.5.4 Opportunity of **Comptroller** to Compromise or Adjust Claim. The **Comptroller** shall have forty-five (45) **Days** from his or her receipt of all materials referred to in Article 27.5.3 to investigate the disputed claim. The period for investigation and compromise may be further extended by agreement between the **Contractor** and the **Comptroller**, to a maximum of ninety (90) **Days** from the **Comptroller's** receipt of all materials. The **Contractor** may not present its petition to the Contract Dispute Resolution Board until the period for investigation and compromise delineated in this Article 27.5.4 has expired. In compromising or adjusting any claim hereunder, the **Comptroller** may not revise or disregard the terms of the **Contract** between the parties.

27.6 Contract Dispute Resolution Board. There shall be a Contract Dispute Resolution Board composed of:

27.6.1 The chief administrative law judge of the Office of Administrative Trials and Hearings (OATH) or his/her designated OATH administrative law judge, who shall act as chairperson, and may adopt operational procedures and issue such orders consistent with this Article 27 as may be necessary in the execution of the Contract Dispute Resolution Board's functions, including, but not limited to, granting extensions of time to present or respond to submissions;

27.6.2 The **CCPO** or his/her designee; any designee shall have the requisite background to consider and resolve the merits of the dispute and shall not have participated personally and substantially in the particular matter that is the subject of the dispute or report to anyone who so participated; and

27.6.3 A person with appropriate expertise who is not an employee of the **City**. This person shall be selected by the presiding administrative law judge from a prequalified panel of individuals, established and administered by OATH with appropriate background to act as decision-makers in a dispute. Such individual may not have a contract or dispute with the **City** or be an officer or employee of any company or organization that does, or regularly represents persons, companies, or organizations having disputes with the **City**.

27.7 Petition to the Contract Dispute Resolution Board. In the event the claim has not been settled or adjusted by the **Comptroller** within the period provided in this Article 27, the **Contractor**,

within thirty (30) **Days** thereafter, may petition the Contract Dispute Resolution Board to review the **Commissioner's** determination.

27.7.1 **Form and Content of Petition by Contractor.** The **Contractor** shall present its dispute to the Contract Dispute Resolution Board in the form of a petition, which shall include (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed, and the reason(s) the **Contractor** contends the dispute was wrongly decided by the **Commissioner**; (ii) a copy of the written Decision of the **Commissioner**, (iii) copies of all materials submitted by the **Contractor** to the Agency; (iv) a copy of the written decision of the **Comptroller**, if any, and (v) copies of all correspondence with, or written material submitted by the **Contractor**, to the **Comptroller**. The **Contractor** shall concurrently submit four (4) complete sets of the Petition: one set to the **City Corporation Counsel** (Attn: Commercial and Real Estate Litigation Division) and three (3) sets to the Contract Dispute Resolution Board at OATH's offices with proof of service on the **City Corporation Counsel**. In addition, the **Contractor** shall submit a copy of the written statement of the substance of the dispute, cited in (i) above, to both the **Commissioner** and the **Comptroller**.

27.7.2 **Agency Response.** Within thirty (30) **Days** of its receipt of the Petition by the **City Corporation Counsel**, the **Agency** shall respond to the brief written statement of the **Contractor** and make available to the Contract Dispute Resolution Board all material it submitted to the **Commissioner** and **Comptroller**. Three (3) complete copies of the **Agency** response shall be provided to the Contract Dispute Resolution Board and one to the **Contractor**. Extensions of time for submittal of the **Agency** response shall be given as necessary upon a showing of good cause or, upon consent of the parties, for an initial period of up to thirty (30) **Days**.

27.7.3 **Further Proceedings.** The Contract Dispute Resolution Board shall permit the **Contractor** to present its case by submission of memoranda, briefs, and oral argument. The Contract Dispute Resolution Board shall also permit the **Agency** to present its case in response to the **Contractor** by submission of memoranda, briefs, and oral argument. If requested by the **City Corporation Counsel**, the **Comptroller** shall provide reasonable assistance in the preparation of the **Agency's** case. Neither the **Contractor** nor the **Agency** may support its case with any documentation or other material that was not considered by the **Comptroller**, unless requested by the Contract Dispute Resolution Board. The Contract Dispute Resolution Board, in its discretion, may seek such technical or other expert advice as it shall deem appropriate and may seek, on its own or upon application of a party, any such additional material from any party as it deems fit. The Contract Dispute Resolution Board, in its discretion, may combine more than one dispute between the parties for concurrent resolution.

27.7.4 **Contract Dispute Resolution Board Determination.** Within forty-five (45) **Days** of the conclusion of all written submissions and oral arguments, the Contract Dispute Resolution Board shall render a written decision resolving the dispute. In an unusually complex case, the Contract Dispute Resolution Board may render its decision in a longer period, not to exceed ninety (90) **Days**, and shall so advise the parties at the commencement of this period. The Contract Dispute Resolution Board's decision must be consistent with the terms of the **Contract**. Decisions of the Contract Dispute Resolution Board shall only resolve matters before the Contract Dispute Resolution Board and shall not have precedential effect with respect to matters not before the Contract Dispute Resolution Board.

27.7.5 Notification of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution Board shall send a copy of its decision to the **Contractor**, the **ACCO**, the Engineer, the **Comptroller**, the **City Corporation Counsel**, the **CCPO**, and the **PPB**. A decision in favor of the **Contractor** shall be subject to the prompt payment provisions of the **PPB Rules**. The Required Payment Date shall be thirty (30) Days after the date the parties are formally notified of the Contract Dispute Resolution Board's decision.

27.7.6 Finality of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution Board's decision shall be final and binding on all parties. Any party may seek review of the Contract Dispute Resolution Board's decision solely in the form of a challenge, filed within four (4) months of the date of the Contract Dispute Resolution Board's decision, in a court of competent jurisdiction of the State of New York, County of New York pursuant to Article 78 of the Civil Practice Law and Rules. Such review by the court shall be limited to the question of whether or not the Contract Dispute Resolution Board's decision was made in violation of lawful procedure, was affected by an error of **Law**, or was arbitrary and capricious or an abuse of discretion. No evidence or information shall be introduced or relied upon in such proceeding that was not presented to the Contract Dispute Resolution Board in accordance with this Article 27.

27.8 Any termination, cancellation, or alleged breach of the **Contract** prior to or during the pendency of any proceedings pursuant to this Article 27 shall not affect or impair the ability of the **Commissioner** or Contract Dispute Resolution Board to make a binding and final decision pursuant to this Article 27.

ARTICLE 28. RECORD KEEPING FOR EXTRA OR DISPUTED WORK OR WORK ON A TIME & MATERIALS BASIS

28.1 While the **Contractor** or any of its **Subcontractors** is performing **Work** on a time and material basis or **Extra Work** on a time and material basis ordered by the **Commissioner** under Article 25, or where the **Contractor** believes that it or any of its **Subcontractors** is performing **Extra Work** but a final determination by **Agency** has not been made, or the **Contractor** or any of its **Subcontractors** is performing disputed **Work** (whether on or off the **Site**), or complying with a determination or order under protest in accordance with Articles 11, 27, and 30, in each such case the **Contractor** shall furnish the **Resident Engineer** daily with three (3) copies of written statements signed by the **Contractor's** representative at the **Site** showing:

28.1.1 The name, trade, and number of each worker employed on such **Work** or engaged in complying with such determination or order, the number of hours employed, and the character of the **Work** each is doing; and

28.1.2 The nature and quantity of any materials, plant and equipment furnished or used in connection with the performance of such **Work** or compliance with such determination or order, and from whom purchased or rented.

28.2 A copy of such statement will be countersigned by the **Resident Engineer**, noting thereon any items not agreed to or questioned, and will be returned to the **Contractor** within two (2) **Days** after submission.

28.3 The **Contractor** and its **Subcontractors**, when required by the **Commissioner**, or the **Comptroller**, shall also produce for inspection, at the office of the **Contractor** or **Subcontractor**, any and all of its books, bid documents, financial statements, vouchers, records, daily job diaries and reports,

and cancelled checks, and any other documents relating to showing the nature and quantity of the labor, materials, plant and equipment actually used in the performance of such **Work**, or in complying with such determination or order, and the amounts expended therefor, and shall permit the **Commissioner** and the **Comptroller** to make such extracts therefrom, or copies thereof, as they or either of them may desire.

28.4 In connection with the examination provided for herein, the **Commissioner**, upon demand therefor, will produce for inspection by the **Contractor** such records as the **Agency** may have with respect to such **Extra Work** or disputed **Work** performed under protest pursuant to order of the **Commissioner**, except those records and reports which may have been prepared for the purpose of determining the accuracy and validity of the **Contractor's** claim.

28.5 Failure to comply strictly with these requirements shall constitute a waiver of any claim for extra compensation or damages on account of the performance of such **Work** or compliance with such determination or order.

ARTICLE 29. OMITTED WORK

29.1 If any **Contract Work** in a lump sum **Contract**, or if any part of a lump sum item in a unit price, lump sum, or percentage-bid **Contract** is omitted by the **Commissioner** pursuant to Article 33, the **Contract** price, subject to audit by the EAO, shall be reduced by a pro rata portion of the lump sum bid amount based upon the percent of **Work** omitted subject to Article 29.4. For the purpose of determining the pro rata portion of the lump sum bid amount, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be the determining factor.

29.2 If the whole of a lump sum item or units of any other item is so omitted by the **Commissioner** in a unit price, lump sum, or percentage-bid **Contract**, then no payment will be made therefor except as provided in Article 29.4.

29.3 For units that have been ordered but are only partially completed, the unit price shall be reduced by a pro rata portion of the unit price bid based upon the percentage of **Work** omitted subject to Article 29.4.

29.4 In the event the **Contractor**, with respect to any omitted **Work**, has purchased any non-cancelable material and/or equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract**, but not yet incorporated into the **Work**, the **Contractor** shall be paid for such material and/or equipment in accordance with Article 64.2.1(b); provided, however, such payment is contingent upon the **Contractor's** delivery of such material and/or equipment in acceptable condition to a location designated by the **City**.

29.5 The **Contractor** agrees to make no claim for damages or for loss of overhead and profit with regard to any omitted **Work**.

ARTICLE 30. NOTICE AND DOCUMENTATION OF COSTS AND DAMAGES; PRODUCTION OF FINANCIAL RECORDS

30.1 If the **Contractor** shall claim to be sustaining damages by reason of any act or omission of the **City** or its agents, it shall submit to the **Commissioner** within forty-five (45) **Days** from the time such damages are first incurred, and every thirty (30) **Days** thereafter to the extent additional damages are being incurred for the same condition, verified statements of the details and the amounts of such

damages, together with documentary evidence of such damages. The **Contractor** may submit any of the above statements within such additional time as may be granted by the **Commissioner** in writing upon written request therefor. Failure of the **Commissioner** to respond in writing to a written request for additional time within thirty (30) **Days** shall be deemed a denial of the request. On failure of the **Contractor** to strictly comply with the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the **Contractor** may claim in any action or dispute resolution procedure arising under or by reason of this **Contract** shall not be different from or in excess of the statements and documentation made pursuant to this Article 30. This Article 30.1 does not apply to claims submitted to the **Commissioner** pursuant to Article 11 or to claims disputing a determination under Article 27.

30.2 In addition to the foregoing statements, the **Contractor** shall, upon notice from the **Commissioner**, produce for examination at the **Contractor's** office, by the **Engineer, Architect or Project Manager**, all of its books of account, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this **Contract**, and submit itself and persons in its employment, for examination under oath by any person designated by the **Commissioner** or **Comptroller** to investigate claims made or disputes against the **City** under this **Contract**. At such examination, a duly authorized representative of the **Contractor** may be present.

30.3 In addition to the statements required under Article 28 and this Article 30, the **Contractor** and/or its **Subcontractor** shall, within thirty (30) **Days** upon notice from the **Commissioner** or **Comptroller**, produce for examination at the **Contractor's** and/or **Subcontractor's** office, by a representative of either the **Commissioner** or **Comptroller**, all of its books of account, bid documents, financial statements, accountant workpapers, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this **Contract**. Further, the **Contractor** and/or its **Subcontractor** shall submit any person in its employment, for examination under oath by any person designated by the **Commissioner** or **Comptroller** to investigate claims made or disputes against the **City** under this **Contract**. At such examination, a duly authorized representative of the **Contractor** may be present.

30.4 Unless the information and examination required under Article 30.3 is provided by the **Contractor** and/or its **Subcontractor** upon thirty (30) **Days'** notice from the **Commissioner** or **Comptroller**, or upon the **Commissioner's** or **Comptroller's** written authorization to extend the time to comply, the **City** shall be released from all claims arising under, relating to or by reason of this **Contract**, except for sums certified by the **Commissioner** to be due under the provisions of this **Contract**. It is further stipulated and agreed that no person has the power to waive any of the foregoing provisions and that in any action or dispute resolution procedure against the **City** to recover any sum in excess of the sums certified by the **Commissioner** to be due under or by reason of this **Contract**, the **Contractor** must allege in its complaint and prove, at trial or during such dispute resolution procedure, compliance with the provisions of this Article 30.

30.5 In addition, after the commencement of any action or dispute resolution procedure by the **Contractor** arising under or by reason of this **Contract**, the **City** shall have the right to require the **Contractor** to produce for examination under oath, up until the trial of the action or hearing before the Contract Dispute Resolution Board, the books and documents described in Article 30.3 and submit itself and all persons in its employ for examination under oath. If this Article 30 is not complied with as required, then the **Contractor** hereby consents to the dismissal of the action or dispute resolution procedure.

CHAPTER VII: POWERS OF THE RESIDENT ENGINEER, THE ENGINEER OR ARCHITECT AND THE COMMISSIONER

ARTICLE 31. THE RESIDENT ENGINEER

31.1 The **Resident Engineer** shall have the power to inspect, supervise, and control the performance of the **Work**, subject to review by the **Commissioner**. The **Resident Engineer** shall not, however, have the power to issue an **Extra Work** order, except as specifically designated in writing by the **Commissioner**.

ARTICLE 32. THE ENGINEER OR ARCHITECT OR PROJECT MANAGER

32.1 The **Engineer** or **Architect** or **Project Manager**, in addition to those matters elsewhere herein delegated to the **Engineer** and expressly made subject to his/her determination, direction or approval, shall have the power, subject to review by the **Commissioner**:

32.1.1 To determine the amount, quality, and location of the **Work** to be paid for hereunder; and

32.1.2 To determine all questions in relation to the **Work**, to interpret the **Contract Drawings, Specifications, and Addenda**, and to resolve all patent inconsistencies or ambiguities therein; and

32.1.3 To determine how the **Work** of this **Contract** shall be coordinated with **Work** of **Other Contractors** engaged simultaneously on this **Project**, including the power to suspend any part of the **Work**, but not the whole thereof; and

32.1.4 To make minor changes in the **Work** as he/she deems necessary, provided such changes do not result in a net change in the cost to the **City** or to the **Contractor** of the **Work** to be done under the **Contract**; and

32.1.5 To amplify the **Contract Drawings**, add explanatory information and furnish additional **Specifications** and drawings, consistent with this **Contract**.

32.2 The foregoing enumeration shall not imply any limitation upon the power of the **Engineer** or **Architect** or **Project Manager**, for it is the intent of this **Contract** that all of the **Work** shall generally be subject to his/her determination, direction, and approval, except where the determination, direction or approval of someone other than the **Engineer** or **Architect** or **Project Manager** is expressly called for herein.

32.3 The **Engineer** or **Architect** or **Project Manager** shall not, however, have the power to issue an **Extra Work** order, except as specifically designated in writing by the **Commissioner**.

ARTICLE 33. THE COMMISSIONER

33.1 The **Commissioner**, in addition to those matters elsewhere herein expressly made subject to his/her determination, direction or approval, shall have the power:

33.1.1 To review and make determinations on any and all questions in relation to this **Contract** and its performance; and

33.1.2 To modify or change this **Contract** so as to require the performance of **Extra Work** (subject, however, to the limitations specified in Article 25) or the omission of **Contract Work**; and

33.1.3 To suspend the whole or any part of the **Work** whenever in his/her judgment such suspension is required:

33.1.3(a) In the interest of the **City** generally; or

33.1.3(b) To coordinate the **Work** of the various contractors engaged on this **Project** pursuant to the provisions of Article 12; or

33.1.3(c) To expedite the completion of the entire **Project** even though the completion of this particular **Contract** may thereby be delayed.

ARTICLE 34. NO ESTOPPEL

34.1 Neither the **City** nor any **Agency**, official, agent or employee thereof, shall be bound, precluded or estopped by any determination, decision, approval, order, letter, payment or certificate made or given under or in connection with this **Contract** by the **City**, the **Commissioner**, the **Engineer**, the **Resident Engineer**, or any other official, agent or employee of the **City**, either before or after the final completion and acceptance of the **Work** and payment therefor:

34.1.1 From showing the true and correct classification, amount, quality or character of the **Work** actually done; or that any such determination, decision, order, letter, payment or certificate was untrue, incorrect or improperly made in any particular, or that the **Work**, or any part thereof, does not in fact conform to the requirements of this **Contract**; and

34.1.2 From demanding and recovering from the **Contractor** any overpayment made to it, or such damages as the **City** may sustain by reason of the **Contractor's** failure to perform each and every part of its **Contract**.

CHAPTER VIII: LABOR PROVISIONS

ARTICLE 35. EMPLOYEES

35.1 The **Contractor** and its **Subcontractors** shall not employ on the **Work**:

35.1.1 Anyone who is not competent, faithful and skilled in the **Work** for which he/she shall be employed; and whenever the **Commissioner** shall inform the **Contractor**, in writing, that any employee is, in his/her opinion, incompetent, unfaithful or disobedient, that employee shall be discharged from the **Work** forthwith, and shall not again be employed upon it; or

35.1.2 Any labor, materials or means whose employment, or utilization during the course of this **Contract**, may tend to or in any way cause or result in strikes, work stoppages, delays, suspension of **Work** or similar troubles by workers employed by the **Contractor** or its **Subcontractors**, or by any of the trades working in or about the buildings and premises where **Work** is being performed under this **Contract**, or by **Other Contractors** or their **Subcontractors** pursuant to other contracts, or on any other building or premises owned or operated by the **City**, its **Agencies**, departments, boards or authorities. Any violation by the **Contractor** of this requirement may, upon certification of the **Commissioner**, be considered as proper and sufficient cause for declaring the **Contractor** to be in default, and for the **City** to take action against it as set forth in Chapter X of this **Contract**, or such other article of this **Contract** as the Commissioner may deem proper; or

35.1.3 In accordance with Section 220.3-e of the Labor Law of the State of New York (hereinafter "Labor Law"), the **Contractor** and its **Subcontractors** shall not employ on the **Work** any apprentice, unless he/she is a registered individual, under a bona fide program registered with the New York State Department of Labor. The allowable ratio of apprentices to journey-level workers in any craft classification shall not be greater than the ratio permitted to the **Contractor** as to its work force on any job under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the wage rate determined by the **Comptroller** of the **City** for the classification of **Work** actually performed. The **Contractor** or **Subcontractor** will be required to furnish written evidence of the registration of its program and apprentices as well as all the appropriate ratios and wage rates, for the area of the construction prior to using any apprentices on the **Contract Work**.

35.2 If the total cost of the **Work** under this **Contract** is at least two hundred fifty thousand (\$250,000) dollars, all laborers, workers, and mechanics employed in the performance of the **Contract** on the public work site, either by the **Contractor**, **Subcontractor** or other person doing or contracting to do the whole or a part of the **Work** contemplated by the **Contract**, shall be certified prior to performing any **Work** as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration.

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

35.3.1 The **Contractor** shall not take an adverse personnel action with respect to an officer or employee in retaliation for such officer or employee making a report of information concerning conduct which such officer or employee knows or reasonably believes to involve corruption, criminal activity, conflict of interest, gross mismanagement or abuse of authority by any officer or employee relating to this **Contract** to (a) the Commissioner of the Department of Investigation, (b) a member of the New York City Council, the Public Advocate, or the **Comptroller**, or (c) the **CCPO**, **ACCO**, **Agency** head, or **Commissioner**.

35.3.2 If any of the **Contractor's** officers or employees believes that he or she has been the subject of an adverse personnel action in violation of Article 35.3.1, he or she shall be entitled to bring a cause of action against the **Contractor** to recover all relief necessary to make him or her whole. Such relief may include but is not limited to: (a) an injunction to restrain continued retaliation, (b) reinstatement to the position such employee would have had but for the retaliation or to an equivalent position, (c) reinstatement of full fringe benefits and seniority rights, (d) payment of two times back

pay, plus interest, and (e) compensation for any special damages sustained as a result of the retaliation, including litigation costs and reasonable attorney's fees.

35.3.3 The **Contractor** shall post a notice provided by the **City** in a prominent and accessible place on any site where work pursuant to the **Contract** is performed that contains information about:

35.3.3(a) how its employees can report to the New York City Department of Investigation allegations of fraud, false claims, criminality or corruption arising out of or in connection with the **Contract**; and

35.3.3(b) the rights and remedies afforded to its employees under Administrative Code sections 7-805 (the New York City False Claims Act) and 12-113 (the Whistleblower Protection Expansion Act) for lawful acts taken in connection with the reporting of allegations of fraud, false claims, criminality or corruption in connection with the **Contract**.

35.3.4 For the purposes of this Article 35.3, "adverse personnel action" includes dismissal, demotion, suspension, disciplinary action, negative performance evaluation, any action resulting in loss of staff, office space, equipment or other benefit, failure to appoint, failure to promote, or any transfer or assignment or failure to transfer or assign against the wishes of the affected officer or employee.

35.3.5 This Article 35.3 is applicable to all of the **Contractor's Subcontractors** having subcontracts with a value in excess of \$100,000; accordingly, the **Contractor** shall include this rider in all subcontracts with a value a value in excess of \$100,000.

35.4 Article 35.3 is not applicable to this **Contract** if it is valued at \$100,000 or less. Articles 35.3.1, 35.3.2, 35.3.4, and 35.3.5 are not applicable to this **Contract** if it was solicited pursuant to a finding of an emergency.

35.5 Paid Sick Leave Law.

35.5.1 Introduction and General Provisions.

35.5.1(a) The Earned Sick Time Act, also known as the Paid Sick Leave Law ("PSLL"), requires covered employees who annually perform more than 80 hours of work in New York City to be provided with paid sick time.² Contractors of the **City** or of other governmental entities may be required to provide sick time pursuant to the PSLL.

35.5.1(b) The PSLL became effective on April 1, 2014, and is codified at Title 20, Chapter 8, of the New York City Administrative Code. It is administered by the City's Department of Consumer Affairs ("DCA"); DCA's rules promulgated under the PSLL are codified at Chapter 7 of Title 6 of the Rules of the City of New York ("Rules").

² Pursuant to the PSLL, if fewer than five employees work for the same employer, as determined pursuant to New York City Administrative Code § 20-912(g), such employer has the option of providing such employees uncompensated sick time.

35.5.1(c) The **Contractor** agrees to comply in all respects with the PSLL and the Rules, and as amended, if applicable, in the performance of this **Contract**. The **Contractor** further acknowledges that such compliance is a material term of this **Contract** and that failure to comply with the PSLL in performance of this **Contract** may result in its termination.

35.5.1(d) The **Contractor** must notify the **Agency Chief Contracting Officer** of the **Agency** with whom it is contracting in writing within ten (10) days of receipt of a complaint (whether oral or written) regarding the PSLL involving the performance of this **Contract**. Additionally, the **Contractor** must cooperate with DCA's education efforts and must comply with DCA's subpoenas and other document demands as set forth in the PSLL and Rules.

35.5.1(e) The PSLL is summarized below for the convenience of the **Contractor**. The **Contractor** is advised to review the PSLL and Rules in their entirety. On the website www.nyc.gov/PaidSickLeave there are links to the PSLL and the associated Rules as well as additional resources for employers, such as Frequently Asked Questions, timekeeping tools and model forms, and an event calendar of upcoming presentations and webinars at which the **Contractor** can get more information about how to comply with the PSLL. The **Contractor** acknowledges that it is responsible for compliance with the PSLL notwithstanding any inconsistent language contained herein.

35.5.2 Pursuant to the PSLL and the Rules: Applicability, Accrual, and Use.

35.5.2(a) An employee who works within the City of New York for more than eighty hours in any consecutive 12-month period designated by the employer as its "calendar year" pursuant to the PSLL ("Year") must be provided sick time. Employers must provide a minimum of one hour of sick time for every 30 hours worked by an employee and compensation for such sick time must be provided at the greater of the employee's regular hourly rate or the minimum wage. Employers are not required to provide more than 40 hours of sick time to an employee in any Year.

35.5.2(b) An employee has the right to determine how much sick time he or she will use, provided that employers may set a reasonable minimum increment for the use of sick time not to exceed four hours per **Day**. In addition, an employee may carry over up to 40 hours of unused sick time to the following Year, provided that no employer is required to allow the use of more than forty hours of sick time in a Year or carry over unused paid sick time if the employee is paid for such unused sick time and the employer provides the employee with at least the legally required amount of paid sick time for such employee for the immediately subsequent Year on the first **Day** of such Year.

35.5.2(c) An employee entitled to sick time pursuant to the PSLL may use sick time for any of the following:

- i. such employee's mental illness, physical illness, injury, or health condition or the care of such illness, injury, or condition or such employee's need for medical diagnosis or preventive medical care;
- ii. such employee's care of a family member (an employee's child, spouse, domestic partner, parent, sibling, grandchild or grandparent, or the child or parent of an employee's spouse or domestic partner) who has a mental

- illness, physical illness, injury or health condition or who has a need for medical diagnosis or preventive medical care;
- iii. closure of such employee's place of business by order of a public official due to a public health emergency; or
 - iv. such employee's need to care for a child whose school or childcare provider has been closed due to a public health emergency.

35.5.2(d) An employer must not require an employee, as a condition of taking sick time, to search for a replacement. However, an employer may require an employee to provide: reasonable notice of the need to use sick time; reasonable documentation that the use of sick time was needed for a reason above if for an absence of more than three consecutive work days; and/or written confirmation that an employee used sick time pursuant to the PSLL. However, an employer may not require documentation specifying the nature of a medical condition or otherwise require disclosure of the details of a medical condition as a condition of providing sick time and health information obtained solely due to an employee's use of sick time pursuant to the PSLL must be treated by the employer as confidential.

35.5.2(e) If an employer chooses to impose any permissible discretionary requirement as a condition of using sick time, it must provide to all employees a written policy containing those requirements, using a delivery method that reasonably ensures that employees receive the policy. If such employer has not provided its written policy, it may not deny sick time to an employee because of non-compliance with such a policy.

35.5.2(f) Sick time to which an employee is entitled must be paid no later than the payday for the next regular payroll period beginning after the sick time was used.

35.5.3 Exemptions and Exceptions. Notwithstanding the above, the PSLL does not apply to any of the following:

35.5.3(a) an independent contractor who does not meet the definition of employee under section 190(2) of the New York State Labor Law;

35.5.3(b) an employee covered by a valid collective bargaining agreement in effect on April 1, 2014, until the termination of such agreement;

35.5.3(c) an employee in the construction or grocery industry covered by a valid collective bargaining agreement if the provisions of the PSLL are expressly waived in such collective bargaining agreement;

35.5.3(d) an employee covered by another valid collective bargaining agreement if such provisions are expressly waived in such agreement and such agreement provides a benefit comparable to that provided by the PSLL for such employee;

35.5.3(e) an audiologist, occupational therapist, physical therapist, or speech language pathologist who is licensed by the New York State Department of Education and who calls in for work assignments at will, determines his or her own schedule, has the ability to reject or accept any assignment referred to him or her, and is paid an average hourly wage that is at least four times the federal minimum wage;

35.5.3(f) an employee in a work study program under Section 2753 of Chapter 42 of the United States Code;

35.5.3(g) an employee whose work is compensated by a qualified scholarship program as that term is defined in the Internal Revenue Code, Section 117 of Chapter 20 of the United States Code; or

35.5.3(h) a participant in a Work Experience Program (WEP) under section 336-c of the New York State Social Services Law.

35.5.4 Retaliation Prohibited. An employer may not threaten or engage in retaliation against an employee for exercising or attempting in good faith to exercise any right provided by the PSL. In addition, an employer may not interfere with any investigation, proceeding, or hearing pursuant to the PSL.

35.5.5 Notice of Rights.

35.5.5(a) An employer must provide its employees with written notice of their rights pursuant to the PSL. Such notice must be in English and the primary language spoken by an employee, provided that DCA has made available a translation into such language. Downloadable notices are available on DCA's website at <http://www.nyc.gov/html/dca/html/law/PaidSickLeave.shtml>.

35.5.5(b) Any person or entity that willfully violates these notice requirements is subject to a civil penalty in an amount not to exceed fifty dollars for each employee who was not given appropriate notice.

35.5.6 Records. An employer must retain records documenting its compliance with the PSL for a period of at least three years, and must allow DCA to access such records in furtherance of an investigation related to an alleged violation of the PSL.

35.5.7 Enforcement and Penalties.

35.5.7(a) Upon receiving a complaint alleging a violation of the PSL, DCA has the right to investigate such complaint and attempt to resolve it through mediation. Within 30 **Days** of written notification of a complaint by DCA, or sooner in certain circumstances, the employer must provide DCA with a written response and such other information as DCA may request. If DCA believes that a violation of the PSL has occurred, it has the right to issue a notice of violation to the employer.

35.5.7(b) DCA has the power to grant an employee or former employee all appropriate relief as set forth in New York City Administrative Code § 20-924(d). Such relief may include, among other remedies, treble damages for the wages that should have been paid, damages for unlawful retaliation, and damages and reinstatement for unlawful discharge. In addition, DCA may impose on an employer found to have violated the PSL civil penalties not to exceed \$500 for a first violation, \$750 for a second violation within two years of the first violation, and \$1,000 for each succeeding violation within two years of the previous violation.

35.5.8 More Generous Policies and Other Legal Requirements. Nothing in the PSL is intended to discourage, prohibit, diminish, or impair the adoption or retention of a more generous sick time policy, or the obligation of an employer to comply with any contract,

collective bargaining agreement, employment benefit plan or other agreement providing more generous sick time. The PSLL provides minimum requirements pertaining to sick time and does not preempt, limit or otherwise affect the applicability of any other law, regulation, rule, requirement, policy or standard that provides for greater accrual or use by employees of sick leave or time, whether paid or unpaid, or that extends other protections to employees. The PSLL may not be construed as creating or imposing any requirement in conflict with any federal or state law, rule or regulation.

35.6 HireNYC: Hiring and Reporting Requirements. This Article 35.6 applies to construction contracts of \$1,000,000 or more. The **Contractor** shall comply with the requirements of Articles 35.6.1-35.6.5 for all non-trades jobs (e.g., for an administrative position arising out of **Work** ant located in New York City). The **Contractor** shall reasonably cooperate with SBS and the **City** on specific outreach events, including "Hire-on-the-Spot" events, for the hiring of trades workers in connection with the **Work**. If provided elsewhere in this **Contract**, this **Contract** is subject to a project labor agreement.

35.6.1 Enrollment. The **Contractor** shall enroll with the HireNYC system, found at www.nyc.gov/sbs, within thirty (30) days after the registration of this **Contract** pursuant to Section 328 of the New York City Charter. The **Contractor** shall provide information about the business, designate a primary contact and say whether it intends to hire for any entry to mid-level job opportunities arising from this **Contract** and located in New York City, and, if so, the approximate start date of the first hire.

35.6.2 Job Posting Requirements.

35.6.2(a) Once enrolled in HireNYC, the **Contractor** agrees to update the HireNYC portal with all entry to mid-level job opportunities arising from this **Contract** and located in New York City, if any, which shall be defined as jobs requiring no more than an associate degree, as provided by the New York State Department of Labor (see Column F of <https://labor.ny.gov/stats/2012-2022-NYS-Employment-Prospects.xls>). The information to be updated includes the types of entry and mid-level positions made available from the work arising from the **Contract** and located in New York City, the number of positions, the anticipated schedule of initiating the hiring process for these positions, and the contact information for the **Contractor's** representative charged with overseeing hiring. The **Contractor** must update the HireNYC portal with any hiring needs arising from the contract and located in New York City, and the requirements of the jobs to be filled, no less than three weeks prior to the intended first day of employment for each new position, except with the permission of SBS, not to be unreasonably withheld, and must also update the HireNYC portal as set forth below.

35.6.2(b) After enrollment through HireNYC and submission of relevant information, SBS will work with the **Contractor** to develop a recruitment plan which will outline the candidate screening process, and will provide clear instructions as to when, where, and how interviews will take place. HireNYC will screen applicants based on employer requirements and refer applicants whom it believes are qualified to the **Contractor** for interviews. The **Contractor** must interview referred applicants whom it believes are qualified.

35.6.2(c) After completing an interview of a candidate referred by HireNYC, the **Contractor** must provide feedback via the portal within twenty (20) business days to indicate which candidates were interviewed and hired, if any. In addition, the **Contractor** shall provide the start date of new hires, and additional information

reasonably related to such hires, within twenty (20) business days after the start date. In the event the **Contractor** does not have any job openings covered by this Rider in any given year, the **Contractor** shall be required to provide an annual update to HireNYC to that effect. For this purpose, the reporting year shall run from the date of the registration of the **Contract** pursuant to Charter section 328 and each anniversary date.

35.6.2(d) These requirements do not limit the **Contractor's** ability to assess the qualifications of prospective workers, and to make final hiring and retention decisions. No provision of this Article 35.6 shall be interpreted so as to require the **Contractor** to employ any particular worker.

35.6.2(e) In addition, the provisions of this Article 35.6 shall not apply to positions that the **Contractor** intends to fill with employees employed pursuant to the job retention provision of Section 22-505 of the Administrative Code of the City of New York. The **Contractor** shall not be required to report such openings with HireNYC. However, the **Contractor** shall enroll with the HireNYC system pursuant to Article 35.6.1, above, and, if such positions subsequently become open, then the remaining provisions of this Article 35.6 will apply.

35.6.3 Breach and Liquidated Damages. If the **Contractor** fails to comply with the terms of the **Contract** and this Article 35.6 (1) by not enrolling its business with HireNYC; (2) by not informing HireNYC, as required, of open positions; or (3) by failing to interview a qualified candidate, the **Agency** may assess liquidated damages in the amount of two-thousand five hundred dollars (\$2,500) per breach. For all other events of noncompliance with the terms of this Article 35.6, the **Agency** may assess liquidated damages in the amount of five hundred dollars (\$500) per breach. Furthermore, in the event the **Contractor** breaches the requirements of this Article 35.6 during the term of the **Contract**, the **City** may hold the **Contractor** in default of this **Contract**.

35.6.4 Audit Compliance. In addition to the auditing requirements set forth in other parts of the **Contract**, the **Contractor** shall permit SBS and the **City** to inspect any and all records concerning or relating to job openings or the hiring of individuals for work arising from the **Contract** and located in New York City. The **Contractor** shall permit an inspection within seven (7) business days of the request.

35.6.5 Other Reporting Requirements. The **Contractor** shall report to the **City**, on a monthly basis, all information reasonably requested by the **City** that is necessary for the **City** to comply with any reporting requirements imposed by **Law**, including any requirement that the **City** maintain a publicly accessible database. In addition, the **Contractor** agrees to comply with all reporting requirements imposed by **Law**, or as otherwise requested by the **City**.

35.6.6 Federal Hiring Requirements. If this **Contract** is federally funded (as indicated elsewhere in this **Contract**), the **Contractor** shall comply with all federal hiring requirements as may be set forth in this **Contract**, including, as applicable: (a) Section 3 of the HUD Act of 1968, which requires, to the greatest extent feasible, economic opportunities for 30 percent of new hires be given to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing and Executive Order 11246, which prohibits discrimination in employment due to race, color, religion, sex or national origin, and requires the implementation of goals for minority and female participation for work involving any construction trade.

ARTICLE 36. NO DISCRIMINATION

36.1 The **Contractor** specifically agrees, as required by Labor Law Section 220-e, as amended, that:

36.1.1 In the hiring of employees for the performance of **Work** under this **Contract** or any subcontract hereunder, neither the **Contractor**, **Subcontractor**, nor any person acting on behalf of such **Contractor** or **Subcontractor**, shall by reason of race, creed, color or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the **Work** to which the employment relates;

36.1.2 Neither the **Contractor**, **Subcontractor**, nor any person on its behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of **Work** under this **Contract** on account of race, creed, color or national origin;

36.1.3 There may be deducted from the amount payable to the **Contractor** by the **City** under this **Contract** a penalty of fifty (\$50.00) dollars for each person for each **Day** during which such person was discriminated against or intimidated in violation of the provisions of this **Contract**; and

36.1.4 This **Contract** may be cancelled or terminated by the **City** and all moneys due or to become due hereunder may be forfeited, for a second or any subsequent violation of the terms or conditions of this Article 36.

36.1.5 This Article 36 covers all construction, alteration and repair of any public building or public work occurring in the State of New York and the manufacture, sale, and distribution of materials, equipment, and supplies to the extent that such operations are performed within the State of New York pursuant to this **Contract**.

36.2 The **Contractor** specifically agrees, as required by Section 6-108 of the Administrative Code, as amended, that:

36.2.1 It shall be unlawful for any person engaged in the construction, alteration or repair of buildings or engaged in the construction or repair of streets or highways pursuant to a **Contract** with the **City** or engaged in the manufacture, sale or distribution of materials, equipment or supplies pursuant to a **Contract** with the **City** to refuse to employ or to refuse to continue in any employment any person on account of the race, color or creed of such person.

36.2.2 It shall be unlawful for any person or any servant, agent or employee of any person, described in Article 36.1.2, to ask, indicate or transmit, orally or in writing, directly or indirectly, the race, color or creed or religious affiliation of any person employed or seeking employment from such person, firm or corporation.

36.2.3 Breach of the foregoing provisions shall be deemed a violation of a material provision of this **Contract**.

36.2.4 Any person, or the employee, manager or owner of or officer of such firm or corporation who shall violate any of the provisions of this Article 36.2 shall, upon

conviction thereof, be punished by a fine of not more than one hundred (\$100.00) dollars or by imprisonment for not more than thirty (30) **Days**, or both.

36.3 This **Contract** is subject to the requirements of Executive Order No. 50 (1980) ("E.O. 50"), as revised, and the rules and regulations promulgated thereunder. No contract will be awarded unless and until these requirements have been complied with in their entirety. By signing this **Contract**, the **Contractor** agrees that it:

36.3.1 Will not engage in any unlawful discrimination against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, marital status or sexual orientation with respect to all employment decisions including, but not limited to, recruitment, hiring, upgrading, demotion, downgrading, transfer, training, rates of pay or other forms of compensation, layoff, termination, and all other terms and conditions of employment; and

36.3.2 Will not engage in any unlawful discrimination in the selection of **Subcontractors** on the basis of the owner's race, color, creed, national origin, sex, age, disability, marital status or sexual orientation; and

36.3.3 Will state in all solicitations or advertisements for employees placed by or on behalf of the **Contractor** that all qualified applicants will receive consideration for employment without unlawful discrimination based on race, creed, color, national origin, sex, age, citizens status, disability, marital status, sexual orientation, or that it is an equal employment opportunity employer; and

36.3.4 Will send to each labor organization or representative of workers with which it has a collective bargaining agreement or other contract or memorandum of understanding, written notification of its equal employment opportunity commitments under E.O. 50 and the rules and regulations promulgated thereunder; and

36.3.5 Will furnish, before the award of the **Contract**, all information and reports, including an employment report, that are required by E.O. 50, the rules and regulations promulgated thereunder, and orders of the **City Department of Business Services, Division of Labor Services (DLS)** and will permit access to its books, records, and accounts by the **DLS** for the purposes of investigation to ascertain compliance with such rules, regulations, and orders.

36.4 The **Contractor** understands that in the event of its noncompliance with the nondiscrimination clauses of this **Contract** or with any of such rules, regulations, or orders, such noncompliance shall constitute a material breach of this **Contract** and noncompliance with E.O. 50 and the rules and regulations promulgated thereunder. After a hearing held pursuant to the rules of the **DLS**, the Director of the **DLS** may direct the **Commissioner** to impose any or all of the following sanctions:

36.4.1 Disapproval of the **Contractor**; and/or

36.4.2 Suspension or termination of the **Contract**; and/or

36.4.3 Declaring the **Contractor** in default; and/or

36.4.4 In lieu of any of the foregoing sanctions, the Director of the **DLS** may impose an employment program.

In addition to any actions taken under this **Contract**, failure to comply with E.O. 50 and the rules and regulations promulgated thereunder, in one or more instances, may result in a **City Agency** declaring the **Contractor** to be non-responsible in future procurements. The **Contractor** further agrees that it will refrain from entering into any **Contract** or **Contract** modification subject to E.O. 50 and the rules and regulations promulgated thereunder with a **Subcontractor** who is not in compliance with the requirements of E.O. 50 and the rules and regulations promulgated thereunder.

36.5 The **Contractor** specifically agrees, as required by Section 6-123 of the Administrative Code, that:

36.5.1 The **Contractor** will not engage in any unlawful discriminatory practice in violation of Title 8 of the Administrative Code; and

36.5.2 Any failure to comply with this Article 36.5 may subject the **Contractor** to the remedies set forth in Section 6-123 of the Administrative Code, including, where appropriate, sanctions such as withholding of payment, imposition of an employment program, finding the **Contractor** to be in default, cancellation of the **Contract**, or any other sanction or remedy provided by **Law** or **Contract**.

ARTICLE 37. LABOR LAW REQUIREMENTS

37.1 The **Contractor** shall strictly comply with all applicable provisions of the Labor Law, as amended. Such compliance is a material term of this **Contract**.

37.2 The **Contractor** specifically agrees, as required by Labor Law Sections 220 and 220-d, as amended, that:

37.2.1 **Hours of Work:** No laborer, worker, or mechanic in the employ of the **Contractor**, **Subcontractor** or other person doing or contracting to do the whole or a part of the **Work** contemplated by this **Contract** shall be permitted or required to work more than eight (8) hours in any one (1) **Day**, or more than five (5) **Days** in any one (1) week, except as provided in the Labor Law and in cases of extraordinary emergency including fire, flood, or danger to life or property, or in the case of national emergency when so proclaimed by the President of the United States of America.

37.2.2 In situations in which there are not sufficient laborers, workers, and mechanics who may be employed to carry on expeditiously the **Work** contemplated by this **Contract** as a result of such restrictions upon the number of hours and **Days** of labor, and the immediate commencement or prosecution or completion without undue delay of the **Work** is necessary for the preservation of the **Site** and/or for the protection of the life and limb of the persons using the same, such laborers, workers, and mechanics shall be permitted or required to work more than eight (8) hours in any one (1) **Day**; or five (5) **Days** in any one (1) week; provided, however, that upon application of any **Contractor**, the **Commissioner** shall have first certified to the Commissioner of Labor of the State of New York (hereinafter "Commissioner of Labor") that such public **Work** is of an important nature and that a delay in carrying it to completion would result in serious disadvantage to the public; and provided, further, that such Commissioner of Labor shall have determined that such an emergency does in fact exist as provided in Labor Law Section 220.2.

37.2.3 Failure of the **Commissioner** to make such a certification to the Commissioner of Labor shall not entitle the **Contractor** to damages for delay or for any cause whatsoever.

37.2.4 Prevailing Rate of Wages: The wages to be paid for a legal day's **Work** to laborers, workers, or mechanics employed upon the **Work** contemplated by this **Contract** or upon any materials to be used thereon shall not be less than the "prevailing rate of wage" as defined in Labor Law Section 220, and as fixed by the **Comptroller** in the attached Schedule of Wage Rates and in updated schedules thereof. The prevailing wage rates and supplemental benefits to be paid are those in effect at the time the **Work** is being performed.

37.2.5 Requests for interpretation or correction in the Information for Bidders includes all requests for clarification of the classification of trades to be employed in the performance of the **Work** under this **Contract**. In the event that a trade not listed in the **Contract** is in fact employed during the performance of this **Contract**, the **Contractor** shall be required to obtain from the **Agency** the prevailing wage rates and supplementary benefits for the trades used and to complete the performance of this **Contract** at the price at which the **Contract** was awarded.

37.2.6 Minimum Wages: Except for employees whose wage is required to be fixed pursuant to Labor Law Section 220, all persons employed by the **Contractor** and any **Subcontractor** in the manufacture or furnishing of the supplies, materials, or equipment, or the furnishing of work, labor, or services, used in the performance of this **Contract**, shall be paid, without subsequent deduction or rebate unless expressly authorized by **Law**, not less than the sum mandated by **Law**.

37.3 Working Conditions: No part of the **Work**, labor or services shall be performed or rendered by the **Contractor** in any plants, factories, buildings or surroundings or under working conditions which are unsanitary or hazardous or dangerous to the health and safety of employees engaged in the performance of this **Contract**. Compliance with the safety, sanitary, and factory inspection **Laws** of the state in which the **Work** is to be performed shall be prima facie evidence of compliance with this Article 37.3.

37.4 Prevailing Wage Enforcement: The **Contractor** agrees to pay for all costs incurred by the **City** in enforcing prevailing wage requirements, including the cost of any investigation conducted by or on behalf of the **Agency** or the **Comptroller**, where the **City** discovers a failure to comply with any of the requirements of this Article 37 by the **Contractor** or its **Subcontractor(s)**. The **Contractor** also agrees that, should it fail or refuse to pay for any such investigation, the **Agency** is hereby authorized to deduct from a **Contractor's** account an amount equal to the cost of such investigation.

37.4.1 The Labor Law Section 220 and Section 220-d, as amended, provide that this **Contract** shall be forfeited and no sum paid for any **Work** done hereunder on a second conviction for willfully paying less than:

37.4.1(a) The stipulated prevailing wage scale as provided in Labor Law section 220, as amended, or

37.4.1(b) The stipulated minimum hourly wage scale as provided in Labor Law section 220-d, as amended.

37.4.2 For any breach or violation of either working conditions (Article 37.3) or minimum wages (Article 37.2.6) provisions, the party responsible therefor shall be liable to the **City** for liquidated damages, which may be withheld from any amounts due on any contracts with the **City** of such party responsible, or may be recovered in actions brought by the **City**

Corporation Counsel in the name of the **City**, in addition to damages for any other breach of this **Contract**, for a sum equal to the amount of any underpayment of wages due to any employee engaged in the performance of this **Contract**. In addition, the **Commissioner** shall have the right to cancel contracts and enter into other contracts for the completion of the original contract, with or without public letting, and the original **Contractor** shall be liable for any additional cost. All sums withheld or recovered as deductions, rebates, refunds, or underpayment of wages hereunder, shall be held in a special deposit account and shall be paid without interest, on order of the **Comptroller**, directly to the employees who have been paid less than minimum rates of pay as set forth herein and on whose account such sums were withheld or recovered, provided that no claims by employees for such payments shall be entertained unless made within two (2) years from the date of actual notice to the **Contractor** of the withholding or recovery of such sums by the **City**.

37.4.3 A determination by the **Comptroller** that a **Contractor** and/or its **Subcontractor** willfully violated Labor Law Section 220 will be forwarded to the **City's** five District Attorneys for review.

37.4.4 The **Contractor's** or **Subcontractor's** noncompliance with this Article 37.4 and Labor Law Section 220 may result in an unsatisfactory performance evaluation and the **Comptroller** may also find and determine that the **Contractor** or **Subcontractor** willfully violated the New York Labor Law.

37.4.4(a) An unsatisfactory performance evaluation for noncompliance with this Article 37.4 may result in a determination that the **Contractor** is a non-responsible bidder on subsequent procurements with the **City** and thus a rejection of a future award of a contract with the **City**, as well as any other sanctions provided for by Law.

37.4.4(b) Labor Law Section 220-b, as amended, provides that when two (2) final determinations have been rendered against a **Contractor** or **Subcontractor** within any consecutive six (6) year period determining that such **Contractor** or **Subcontractor** has willfully failed to pay the prevailing rate of wages or to provide supplements in accordance with the Labor Law and this Article 37.4, whether such failures were concurrent or consecutive and whether or not such final determinations concerning separate public works projects are rendered simultaneously, such **Contractor** or **Subcontractor** shall be ineligible to submit a bid on or be awarded any public works contract with the **City** for a period of five (5) years from the second final determination. If the final determination involves the falsification of payroll records or the kickback of wages or supplements, the **Contractor** or **Subcontractor** shall be ineligible to submit a bid on or be awarded any public works contract with the **City** for a period of five (5) years from the first final determination.

37.4.4(c) Labor Law Section 220, as amended, provides that the **Contractor** or **Subcontractor** found to have violated this Article 37.4 may be directed to make payment of wages or supplements including interest found to be due, and the **Contractor** or **Subcontractor** may be directed to make payment of a further sum as a civil penalty in an amount not exceeding twenty-five (25%) percent of the total amount found to be due.

37.5 The **Contractor** and its **Subcontractors** shall within ten (10) **Days** after mailing of a Notice of Award or written order, post in prominent and conspicuous places in each and every plant, factory, building, and structure where employees of the **Contractor** and its **Subcontractors** engaged in the

performance of this **Contract** are employed, notices furnished by the **City**, in relation to prevailing wages and supplements, minimum wages, and other stipulations contained in Sections 220 and 220-h of the Labor Law, and the **Contractor** and its **Subcontractors** shall continue to keep such notices posted in such prominent and conspicuous places until **Final Acceptance** of the supplies, materials, equipment, or **Work**, labor, or services required to be furnished or rendered under this **Contract**.

37.6 The **Contractor** shall strictly comply with all of the provisions of Articles 37.6.1 through 37.6.5, and provide for all workers, laborers or mechanics in its employ, the following:

37.6.1 Notices Posted At **Site**: Post, in a location designated by the **City**, schedules of prevailing wages and supplements for this **Project**, a copy of all re-determinations of such schedules for the **Project**, the Workers' Compensation Law Section 51 notice, all other notices required by Law to be posted at the **Site**, the **City** notice that this **Project** is a public works project on which each worker is entitled to receive the prevailing wages and supplements for the occupation at which he or she is working, and all other notices which the **City** directs the **Contractor** to post. The **Contractor** shall provide a surface for such notices which is satisfactory to the **City**. The **Contractor** shall maintain and keep current such notices in a legible manner and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason. The **Contractor** shall post such notices before commencing any **Work** on the **Site** and shall maintain such notices until all **Work** on the **Site** is complete; and

37.6.2 Daily **Site** Sign-in Sheets: Maintain daily **Site** sign-in sheets, and require that **Subcontractors** maintain daily **Site** sign-in sheets for its employees, which include blank spaces for an employee's name to be both printed and signed, job title, date started and Social Security number, the time the employee began work and the time the employee left work, until **Final Acceptance** of the supplies, materials, equipment, or **Work**, labor, or services to be furnished or rendered under this **Contract** unless exception is granted by the **Comptroller** upon application by the **Agency**. In the alternative, subject to the approval of the **CCPO**, the **Contractor** and **Subcontractor** may maintain an electronic or biometric sign-in system, which provides the information required by this Article 37.6.2; and

37.6.3 Individual Employee Information Notices: Distribute a notice to each worker, laborer or mechanic employed under this **Contract**, in a form provided by the **Agency**, that this **Project** is a public works project on which each worker, laborer or mechanic is entitled to receive the prevailing rate of wages and supplements for the occupation at which he or she is working. If the total cost of the **Work** under this **Contract** is at least two hundred fifty thousand (\$250,000) dollars, such notice shall also include a statement that each worker, laborer or mechanic must be certified prior to performing any **Work** as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration. Such notice shall be distributed to each worker before he or she starts performing any **Work** of this **Contract** and with the first paycheck after July first of each year. "Worker, laborer or mechanic" includes employees of the **Contractor** and all **Subcontractors** and all employees of suppliers entering the **Site**. At the time of distribution, the **Contractor** shall have each worker, laborer or mechanic sign a statement, in a form provided by the **Agency**, certifying that the worker has received the notice required by this Article 37.6.3, which signed statement shall be maintained with the payroll records required by this **Contract**; and

37.6.3(a) The **Contractor** and each **Subcontractor** shall notify each worker, laborer or mechanic employed under this **Contract** in writing of the prevailing rate of

wages for their particular job classification. Such notification shall be given to every worker, laborer, and mechanic on their first pay stub and with every pay stub thereafter; and

37.6.4 **Site Laminated Identification Badges:** The **Contractor** shall provide laminated identification badges which include a photograph of the worker's, laborer's or mechanic's face and indicate the worker's, laborer's or mechanic's name, trade, employer's name, and employment starting date (month/day/year). Further, the **Contractor** shall require as a condition of employment on the **Site**, that each and every worker, laborer or mechanic wear the laminated identification badge at all times and that it may be seen by any representative of the **City**. The **Commissioner** may grant a written waiver from the requirement that the laminated identification badge include a photograph if the **Contractor** demonstrates that the identity of an individual wearing a laminated identification badge can be easily verified by another method; and

37.6.5 **Language Other Than English Used On Site:** Provide the **ACCO** notice when three (3) or more employees (worker and/or laborer and/or mechanic) on the **Site**, at any time, speak a language other than English. The **ACCO** will then provide the **Contractor** the notices described in Article 37.6.1 in that language or languages as may be required. The **Contractor** is responsible for all distributions under this Article 37; and

37.6.6 **Provision of Records:** The **Contractor** and **Subcontractor(s)** shall produce within five (5) **Days** on the **Site** of the **Work** and upon a written order of the **Engineer**, the **Commissioner**, the **ACCO**, the **Agency EAO**, or the **Comptroller**, such records as are required to be kept by this Article 37.6; and

37.6.7 The **Contractor** and **Subcontractor(s)** shall pay employees by check or direct deposit. If this **Contract** is for an amount greater than one million (\$1,000,000) dollars, checks issued by the **Contractor** to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the **Agency**). For any subcontract for an amount greater than seven hundred fifty thousand (\$750,000) dollars, checks issued by a **Subcontractor** to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the **Agency**); and

37.6.8 The failure of the **Contractor** or **Subcontractor(s)** to comply with the provisions of Articles 37.6.1 through 37.6.7 may result in the **Commissioner** declaring the **Contractor** in default and/or the withholding of payments otherwise due under the **Contract**.

37.7 The **Contractor** and its **Subcontractors** shall keep such employment and payroll records as are required by Section 220 of the Labor Law. The failure of the **Contractor** or **Subcontractor(s)** to comply with the provisions of this Article 37.7 may result in the **Commissioner** declaring the **Contractor** in default and/or the withholding of payments otherwise due under the **Contract**.

37.8 At the time the **Contractor** makes application for each partial payment and for final payment, the **Contractor** shall submit to the **Commissioner** a written payroll certification, in the form provided by this **Contract**, of compliance with the prevailing wage, minimum wage, and other provisions and stipulations required by Labor Law Section 220 and of compliance with the training requirements of Labor Law Section 220-h set forth in Article 35.2. This certification of compliance shall be a condition precedent to payment and no payment shall be made to the **Contractor** unless and until each such certification shall have been submitted to and received by the **Commissioner**.

37.9 This **Contract** is executed by the **Contractor** with the express warranty and representation that the **Contractor** is not disqualified under the provisions of Section 220 of the Labor Law from the award of the **Contract**.

37.10 Any breach or violation of any of the foregoing shall be deemed a breach or violation of a material provision of this **Contract**, and grounds for cancellation thereof by the **City**.

ARTICLE 38. PAYROLL REPORTS

38.1 The **Contractor** and its **Subcontractor(s)** shall maintain on the **Site** during the performance of the **Work** the original payrolls or transcripts thereof which the **Contractor** and its **Subcontractor(s)** are required to maintain and shall submit such original payrolls or transcripts, subscribed and affirmed by it as true, within thirty (30) **Days** after issuance of its first payroll, and every thirty (30) **Days** thereafter, pursuant to Labor Law Section 220(3-a)(a)(iii). The **Contractor** and **Subcontractor(s)** shall submit such original payrolls or transcripts along with each and every payment requisition. If payment requisitions are not submitted at least once a month, the **Contractor** and its **Subcontractor(s)** shall submit original payrolls and transcripts both along with its payment requisitions and independently of its payment requisitions.

38.2 The **Contractor** shall maintain payrolls or transcripts thereof for six (6) years from the date of completion of the **Work** on this **Contract**. If such payrolls and transcripts are maintained outside of New York City after the completion of the **Work** and their production is required pursuant to this Article 38, the **Contractor** shall produce such records in New York City upon request by the **City**.

38.3 The **Contractor** and **Subcontractor(s)** shall comply with any written order, direction, or request made by the **Engineer**, the **Commissioner**, the **ACCO**, the **Agency EAO**, the **Agency Labor Law Investigator(s)**, or the **Comptroller**, to provide to the requesting party any of the following information and/or records within five (5) **Days** of such written order, direction, or request:

38.3.1 Such original payrolls or transcripts thereof subscribed and affirmed by it as true and the statements signed by each worker pursuant to this Chapter VIII; and/or

38.3.2 Attendance sheets for each **Day** on which any employee of the **Contractor** and/or any of the **Subcontractor(s)** performed **Work** on the **Site**, which attendance sheet shall be in a form acceptable to the **Agency** and shall provide information acceptable to the **Agency** to identify each such employee; and/or

38.3.3 Any other information to satisfy the **Engineer**, the **Commissioner**, the **ACCO**, the **Agency EAO**, the **Agency Labor Law Investigator(s)** or the **Comptroller**, that this Chapter VIII and the Labor Law, as to the hours of employment and prevailing rates of wages and/or supplemental benefits, are being observed.

38.4 The failure of the **Contractor** or **Subcontractor(s)** to comply with the provisions of Articles 38.1 and/or 38.2 may result in the **Commissioner** declaring the **Contractor** in default and/or the withholding of payments otherwise due under the **Contract**.

ARTICLE 39. DUST HAZARDS

39.1 Should a harmful dust hazard be created in performing the **Work** of this **Contract**, for the elimination of which appliances or methods have been approved by the Board of Standards and Appeals

of the City of New York, such appliances and methods shall be installed, maintained, and effectively operated during the continuance of such harmful dust hazard. Failure to comply with this provision after notice shall make this **Contract** voidable at the sole discretion of the **City**.

CHAPTER IX: PARTIAL AND FINAL PAYMENTS

ARTICLE 40. CONTRACT PRICE

40.1 The **City** shall pay, and the **Contractor** agrees to accept, in full consideration for the **Contractor's** performance of the **Work** subject to the terms and conditions hereof, the lump sum price or unit prices for which this **Contract** was awarded, plus the amount required to be paid for any **Extra Work** ordered by the **Commissioner** under Article 25, less credit for any **Work** omitted pursuant to Article 29.

ARTICLE 41. BID BREAKDOWN ON LUMP SUM

41.1 Within fifteen (15) **Days** after the commencement date specified in the **Notice to Proceed** or **Order to Work**, unless otherwise directed by the **Resident Engineer**, the **Contractor** shall submit to the **Resident Engineer** a breakdown of its bid price, or of lump sums bid for items of the **Contract**, showing the various operations to be performed under the **Contract**, as directed in the progress schedule required under Article 9, and the value of each of such operations, the total of such items to equal the lump sum price bid. Said breakdown must be approved in writing by the **Resident Engineer**.

41.2 No partial payment will be approved until the **Contractor** submits a bid breakdown that is acceptable to the **Resident Engineer**.

41.3 The **Contractor** shall also submit such other information relating to the bid breakdown as directed by the **Resident Engineer**. Thereafter, the breakdown may be used only for checking the **Contractor's** applications for partial payments hereunder, but shall not be binding upon the **City**, the **Commissioner**, or the **Engineer** for any purpose whatsoever.

ARTICLE 42. PARTIAL PAYMENTS

42.1 From time to time as the **Work** progresses satisfactorily, but not more often than once each calendar month (except where the **Commissioner** approves in writing the submission of invoices on a more frequent basis and for invoices relating to **Work** performed pursuant to a change order), the **Contractor** may submit to the **Engineer** a requisition for a partial payment in the prescribed form, which shall contain an estimate of the quantity and the fair value of the **Work** done during the payment period.

42.2 Partial payments may be made for materials, fixtures, and equipment in advance of their actual incorporation in the **Work**, as the **Commissioner** may approve, and upon the terms and conditions set forth in the General Conditions.

42.3 The **Contractor** shall also submit to the **Commissioner** in connection with every application for partial payment a verified statement in the form prescribed by the **Comptroller** setting forth the information required under Labor Law Section 220-a.

42.4 Within thirty (30) **Days** after receipt of a satisfactory payment application, and within sixty (60) **Days** after receipt of a satisfactory payment application in relation to **Work** performed pursuant to a change order, the **Engineer** will prepare and certify, and the **Commissioner** will approve, a voucher for a partial payment in the amount of such approved estimate, less any and all deductions authorized to be made by the **Commissioner** under the terms of this **Contract** or by **Law**.

ARTICLE 43. PROMPT PAYMENT

43.1 The Prompt Payment provisions of the **PPB** Rules in effect at the time of the bid will be applicable to payments made under this **Contract**. The provisions require the payment to the **Contractor** of interest on payments made after the required payment date, except as set forth in the **PPB** Rules.

43.2 The **Contractor** shall submit a proper invoice to receive payment, except where the **Contract** provides that the **Contractor** will be paid at predetermined intervals without having to submit an invoice for each scheduled payment.

43.3 Determination of interest due will be made in accordance with the **PPB** Rules.

43.4 If the **Contractor** is paid interest, the proportionate share(s) of that interest shall be forwarded by the **Contractor** to its **Subcontractor(s)**.

43.5 The **Contractor** shall pay each **Subcontractor** or **Materialman** not later than seven (7) **Days** after receipt of payment out of amounts paid to the **Contractor** by the **City** for **Work** performed by the **Subcontractor** or **Materialman** under this **Contract**.

43.5.1 If **Contractor** fails to make any payment to any **Subcontractor** or **Materialman** within seven (7) **Days** after receipt of payment by the **City** pursuant to this Article 43.5, then the **Contractor** shall pay interest on amounts due to such **Subcontractor** or **Materialman** at the rate of interest in effect on the date such payment is made by the **Contractor** computed in accordance with Section 756-b (1)(b) of the New York General Business Law. Accrual of interest shall commence on the **Day** immediately following the expiration of the seventh **Day** following receipt of payment by the **Contractor** from the **City** and shall end on the date on which payment is made.

43.6 The **Contractor** shall include in each of its subcontracts a provision requiring each **Subcontractor** to make payment to each of its **Subcontractors** or **Materialmen** for **Work** performed under this **Contract** in the same manner and within the same time period set forth above.

ARTICLE 44. SUBSTANTIAL COMPLETION PAYMENT

44.1 The **Contractor** shall submit with the **Substantial Completion** requisition:

44.1.1 A final verified statement of any pending Article 27 disputes in accordance with the **PPB** Rules and this **Contract** and any and all alleged claims against the **City**, in any way connected with or arising out of this **Contract** (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) setting forth with respect to each such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the

Contractor claims the performance of the **Work** or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay.

44.1.1(a) With respect to each such claim, the **Commissioner**, the **Comptroller** and, in the event of litigation, the **City Corporation Counsel** shall have the same right to inspect, and to make extracts or copies of, the **Contractor's** books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 44.1.1(a) is intended to or shall relieve the **Contractor** from the obligation of complying strictly with Articles 11, 27, 28, and 30. The **Contractor** is warned that unless such claims are completely set forth as herein required, the **Contractor** upon acceptance of the **Substantial Completion** payment pursuant to this Article 44, will have waived any such claims.

44.1.2 A **Final Approved Punch List**.

44.1.3 Where required, a request for an extension of time to achieve **Substantial Completion** or final extension of time.

44.2 The **Commissioner** shall issue a voucher calling for payment of any part or all of the balance due for **Work** performed under the **Contract**, including monies retained under Article 21, less any and all deductions authorized to be made by the **Commissioner**, under this **Contract** or by **Law**, and less twice the amount the **Commissioner** considers necessary to ensure the completion of the balance of the **Work** by the **Contractor**. Such a payment shall be considered a partial and not a final payment. No **Substantial Completion** payment shall be made under this Article 44 where the **Contractor** failed to complete the **Work** within the time fixed for such completion in the Schedule A of the General Conditions, or within the time to which completion may have been extended, until an extension or extensions of time for the completion of **Work** have been acted upon pursuant to Article 13.

44.3 No further partial payments shall be made to the **Contractor** after **Substantial Completion**, except the **Substantial Completion** payment and payment pursuant to any **Contractor's** requisition that were properly filed with the **Commissioner** prior to the date of **Substantial Completion**; however, the **Commissioner** may grant a waiver for further partial payments after the date of **Substantial Completion** to permit payments for change order **Work** and/or release of retainage and deposits pursuant to Articles 21 and 24. Such waiver shall be in writing.

44.4 The **Contractor** acknowledges that nothing contained in this Article 44 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 45. FINAL PAYMENT

45.1 After completion and **Final Acceptance** of the **Work**, the **Contractor** shall submit all required certificates and documents, together with a requisition for the balance claimed to be due under the **Contract**, less the amount authorized to be retained for maintenance under Article 24. Such submission shall be within 90 days of the date of the **Commissioner's** written determination of **Final Acceptance**, or within such additional time as may be granted by the **Commissioner** in writing. If the **Contractor** fails to submit all required certificates and documents within the time allowed, no payment of the balance claimed shall be made to the **Contractor** and the **Contractor** shall be deemed to have forfeited its right to payment of any balance claimed. A verified statement similar to that required in connection with applications for partial payments shall also be submitted to the **Commissioner**.

45.2 Amended Verified Statement of Claims: The **Contractor** shall also submit with the final requisition any amendments to the final verified statement of any pending dispute resolution procedures in accordance with the **PPB** Rules and this **Contract** and any and all alleged claims against the **City**, in any way connected with or arising out of this **Contract** (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) that have occurred subsequent to **Substantial Completion**, setting forth with respect to each such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each such item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the **Contractor** claims the performance of the **Work** or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay. With reference to each such claim, the **Commissioner**, the **Comptroller** and, in the event of litigation, the **City** Corporation Counsel shall have the same right to inspect, and to make extracts or copies of, the **Contractor's** books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 45.2, is intended to or shall relieve the **Contractor** from the obligation of complying strictly with Articles 11, 27, 28, and 30. The **Contractor** is warned that unless such claims are completely set forth as herein required, the **Contractor**, upon acceptance of the Final Payment pursuant to Article 46, will have waived any such claims.

45.3 Preparation of Final Voucher: Upon determining the balance due hereunder other than on account of claims, the **Engineer** will prepare and certify, for the Commissioner's approval, a voucher for final payment in that amount less any and all deductions authorized to be made by the **Commissioner** under this **Contract** or by **Law**. In the case of a lump sum **Contract**, the **Commissioner** shall certify the voucher for final payment within thirty (30) **Days** from the date of completion and acceptance of the **Work**, provided all requests for extensions of time have been acted upon.

45.3.1 All prior certificates and vouchers upon which partial payments were made, being merely estimates made to enable the **Contractor** to prosecute the **Work** more advantageously, shall be subject to correction in the final voucher, and the certification of the **Engineer** thereon and the approval of the **Commissioner** thereof, shall be conditions precedent to the right of the **Contractor** to receive any money hereunder. Such final voucher shall be binding and conclusive upon the **Contractor**.

45.3.2 Payment pursuant to such final voucher, less any deductions authorized to be made by the **Commissioner** under this **Contract** or by **Law**, shall constitute the final payment, and shall be made by the **Comptroller** within thirty (30) **Days** after the filing of such voucher in his/her office.

45.4 The **Contractor** acknowledges that nothing contained in this Article 45 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 46. ACCEPTANCE OF FINAL PAYMENT

46.1 The acceptance by the **Contractor**, or by anyone claiming by or through it, of the final payment, whether such payment be made pursuant to any judgment of any court, or otherwise, shall constitute and operate as a release of the **City** from any and all claims of and liability to the **Contractor** for anything heretofore done or furnished for the **Contractor** relating to or arising out of this **Contract** and the **Work** done hereunder, and for any prior act, neglect or default on the part of the **City** or any of its officials, agents or employees, excepting only a claim against the **City** for the amounts deducted or retained in accordance with the terms and provisions of this **Contract** or by **Law**, and excepting any claims, not otherwise waived, or any pending dispute resolution procedures which are contained in the

verified statement filed with the **Contractor's** substantial and final requisitions pursuant to Articles 44 and 45.

46.2 The **Contractor** is warned that the execution by it of a release, in connection with the acceptance of the final payment, containing language purporting to reserve claims other than those herein specifically excepted from the operation of this Article 46, or those for amounts deducted by the **Commissioner** from the final requisition or from the final payment as certified by the **Engineer** and approved by the **Commissioner**, shall not be effective to reserve such claims, anything stated to the **Contractor** orally or in writing by any official, agent or employee of the **City** to the contrary notwithstanding.

46.3 Should the **Contractor** refuse to accept the final payment as tendered by the **Comptroller**, it shall constitute a waiver of any right to interest thereon.

46.4 The **Contractor**, however, shall not be barred by this Article 46 from commencing an action for breach of **Contract** to the extent permitted by **Law** and by the terms of the **Contract** for any claims that are contained in the verified statement filed with the **Contractor's** substantial and final requisitions pursuant to Articles 44 and 45 or that arose after submission of the final payment requisition, provided that a detailed and verified statement of claim is served upon the contracting **Agency** and **Comptroller** not later than forty (40) **Days** after the making of such final payment by electronic funds transfer (EFT) or the mailing of such final payment. The statement shall specify the items upon which the claim will be based and any such claim shall be limited to such items.

ARTICLE 47. APPROVAL BY PUBLIC DESIGN COMMISSION

47.1 All works of art, including paintings, mural decorations, stained glass, statues, bas-reliefs, and other sculptures, monuments, fountains, arches, and other structures of a permanent character intended for ornament or commemoration, and every design of the same to be used in the performance of this **Contract**, and the design of all bridges, approaches, buildings, gates, fences, lamps, or structures to be erected, pursuant to the terms of this **Contract**, shall be submitted to the Art Commission, d/b/a the Public Design Commission of the City of New York, and shall be approved by the Public Design Commission prior to the erection or placing in position of the same. The final payment shall not become due or payable under this **Contract** unless and until the Public Design Commission shall certify that the design for the **Work** herein contracted for has been approved by the said Public Design Commission, and that the same has been executed in substantial accordance with the design so approved, pursuant to the provisions of Chapter 37, Section 854 of the **City Charter**, as amended.

CHAPTER X: CONTRACTOR'S DEFAULT

ARTICLE 48. COMMISSIONER'S RIGHT TO DECLARE CONTRACTOR IN DEFAULT

48.1 In addition to those instances specifically referred to in other Articles herein, the **Commissioner** shall have the right to declare the **Contractor** in default of this **Contract** if:

48.1.1 The **Contractor** fails to commence **Work** when notified to do so by the **Commissioner**; or if

48.1.2 The **Contractor** shall abandon the **Work**; or if

48.1.3 The **Contractor** shall refuse to proceed with the **Work** when and as directed by the **Commissioner**; or if

48.1.4 The **Contractor** shall, without just cause, reduce its working force to a number which, if maintained, would be insufficient, in the opinion of the **Commissioner**, to complete the **Work** in accordance with the progress schedule; or if

48.1.5 The **Contractor** shall fail or refuse to increase sufficiently such working force when ordered to do so by the **Commissioner**; or if

48.1.6 The **Contractor** shall sublet, assign, transfer, convert or otherwise dispose of this **Contract** other than as herein specified; or sell or assign a majority interest in the **Contractor**; or if

48.1.7 The **Contractor** fails to secure and maintain all required insurance; or if

48.1.8 A receiver or receivers are appointed to take charge of the **Contractor's** property or affairs; or if

48.1.9 The **Commissioner** shall be of the opinion that the **Contractor** is or has been unnecessarily or unreasonably or willfully delaying the performance and completion of the **Work**, or the award of necessary subcontracts, or the placing of necessary material and equipment orders; or if

48.1.10 The **Commissioner** shall be of the opinion that the **Contractor** is or has been willfully or in bad faith violating any of the provisions of this **Contract**; or if

48.1.11 The **Commissioner** shall be of the opinion that the **Work** cannot be completed within the time herein provided therefor or within the time to which such completion may have been extended; provided, however, that the impossibility of timely completion is, in the **Commissioner's** opinion, attributable to conditions within the **Contractor's** control; or if

48.1.12 The **Work** is not completed within the time herein provided therefor or within the time to which the **Contractor** may be entitled to have such completion extended; or if

48.1.13 Any statement or representation of the **Contractor** in the **Contract** or in any document submitted by the **Contractor** with respect to the **Work**, the **Project**, or the **Contract** (or for purposes of securing the **Contract**) was untrue or incorrect when made; or if

48.1.14 The **Contractor** or any of its officers, directors, partners, five (5%) percent shareholders, principals, or other persons substantially involved in its activities, commits any of the acts or omissions specified as the grounds for debarment in the **PPB** Rules.

48.2 Before the **Commissioner** shall exercise his/her right to declare the **Contractor** in default, the **Commissioner** shall give the **Contractor** an opportunity to be heard, upon not less than two (2) **Days'** notice.

ARTICLE 49. EXERCISE OF THE RIGHT TO DECLARE DEFAULT

49.1 The right to declare the **Contractor** in default for any of the grounds specified or referred to in Article 48 shall be exercised by sending the **Contractor** a notice, signed by the **Commissioner**, setting forth the ground or grounds upon which such default is declared (hereinafter referred to as a "Notice of Default").

49.2 The **Commissioner's** determination that the **Contractor** is in default shall be conclusive, final, and binding on the parties and such a finding shall preclude the **Contractor** from commencing a plenary action for any damages relating to the **Contract**. If the **Contractor** protests the determination of the **Commissioner**, the **Contractor** may commence an action in a court of competent jurisdiction of the State of New York under Article 78 of the New York Civil Practice Law and Rules.

ARTICLE 50. QUITTING THE SITE

50.1 Upon receipt of such notice the **Contractor** shall immediately discontinue all further operations under this **Contract** and shall immediately quit the **Site**, leaving untouched all plant, materials, equipment, tools, and supplies then on the **Site**.

ARTICLE 51. COMPLETION OF THE WORK

51.1 The **Commissioner**, after declaring the **Contractor** in default, may then have the **Work** completed by such means and in such manner, by contract with or without public letting, or otherwise, as he/she may deem advisable, utilizing for such purpose such of the **Contractor's** plant, materials, equipment, tools, and supplies remaining on the **Site**, and also such **Subcontractors**, as he/she may deem advisable.

51.2 After such completion, the **Commissioner** shall make a certificate stating the expense incurred in such completion, which shall include the cost of re-letting and also the total amount of liquidated damages (at the rate provided for in the **Contract**) from the date when the **Work** should have been completed by the **Contractor** in accordance with the terms hereof to the date of actual completion of the **Work**. Such certificate shall be binding and conclusive upon the **Contractor**, its sureties, and any person claiming under the **Contractor**, as to the amount thereof.

51.3 The expense of such completion, including any and all related and incidental costs, as so certified by the **Commissioner**, and any liquidated damages assessed against the **Contractor**, shall be charged against and deducted out of monies which are earned by the **Contractor** prior to the date of default. Should the expense of such completion, as certified by the **Commissioner**, exceed the total sum which would have been payable under the **Contract** if it had been completed by the **Contractor**, any excess shall be paid by the **Contractor**.

ARTICLE 52. PARTIAL DEFAULT

52.1 In case the **Commissioner** shall declare the **Contractor** in default as to a part of the **Work** only, the **Contractor** shall discontinue such part, shall continue performing the remainder of the **Work** in strict conformity with the terms of this **Contract**, and shall in no way hinder or interfere with any **Other Contractor(s)** or persons whom the **Commissioner** may engage to complete the **Work** as to which the **Contractor** was declared in default.

52.2 The provisions of this Chapter relating to declaring the **Contractor** in default as to the entire **Work** shall be equally applicable to a declaration of partial default, except that the **Commissioner** shall be entitled to utilize for completion of the part of the **Work** as to which the **Contractor** was declared in default only such plant, materials, equipment, tools, and supplies as had been previously used by the **Contractor** on such part.

ARTICLE 53. PERFORMANCE OF UNCOMPLETED WORK

53.1 In completing the whole or any part of the **Work** under the provisions of this Chapter X, the **Commissioner** shall have the power to depart from or change or vary the terms and provisions of this **Contract**, provided, however, that such departure, change or variation is made for the purpose of reducing the time or expense of such completion. Such departure, change or variation, even to the extent of accepting a lesser or different performance, shall not affect the conclusiveness of the **Commissioner's** certificate of the cost of completion referred to in Article 51, nor shall it constitute a defense to an action to recover the amount by which such certificate exceeds the amount which would have been payable to the **Contractor** hereunder but for its default.

ARTICLE 54. OTHER REMEDIES

54.1 In addition to the right to declare the **Contractor** in default pursuant to this Chapter X, the **Commissioner** shall have the absolute right, in his/her sole discretion and without a hearing, to complete or cause to be completed in the same manner as described in Articles 51 and 53, any or all unsatisfactory or uncompleted punch list **Work** that remains after the completion date specified in the **Final Approved Punch List**. A written notice of the exercise of this right shall be sent to the **Contractor** who shall immediately quit the **Site** in accordance with the provisions of Article 50.

54.2 The expense of completion permitted under Article 54.1, including any and all related and incidental costs, as so certified by the **Commissioner**, shall be charged against and deducted out of monies which have been earned by the **Contractor** prior to the date of the exercise of the right set forth in Article 54.1; the balance of such monies, if any, subject to the other provisions of this **Contract**, to be paid to the **Contractor** without interest after such completion. Should the expense of such completion, as certified by the **Commissioner**, exceed the total sum which would have been payable under the **Contract** if it had been completed by the **Contractor**, any excess shall be paid by the **Contractor**.

54.3 The previous provisions of this Chapter X shall be in addition to any and all other remedies available under **Law** or in equity.

54.4 The exercise by the **City** of any remedy set forth herein shall not be deemed a waiver by the **City** of any other legal or equitable remedy contained in this **Contract** or provided under **Law**.

CHAPTER XI: MISCELLANEOUS PROVISIONS

ARTICLE 55. CONTRACTOR'S WARRANTIES

55.1 In consideration of, and to induce, the award of this **Contract** to the **Contractor**, the **Contractor** represents and warrants:

55.1.1 That it is financially solvent, sufficiently experienced and competent to perform the **Work**; and

55.1.2 That the facts stated in its bid and the information given by it pursuant to the Information for Bidders is true and correct in all respects; and

55.1.3 That it has read and complied with all requirements set forth in the **Contract**.

ARTICLE 56. CLAIMS AND ACTIONS THEREON

56.1 Any claim, that is not subject to dispute resolution under the **PPB** Rules or this **Contract**, against the **City** for damages for breach of **Contract** shall not be made or asserted in any action, unless the **Contractor** shall have strictly complied with all requirements relating to the giving of notice and of information with respect to such claims, as herein before provided.

56.2 Nor shall any action be instituted or maintained on any such claims unless such action is commenced within six (6) months after **Substantial Completion**; except that:

56.2.1 Any claims arising out of events occurring after **Substantial Completion** and before **Final Acceptance** of the **Work** shall be asserted within six (6) months of **Final Acceptance** of the **Work**;

56.2.2 If the **Commissioner** exercises his/her right to complete or cause to complete any or all unsatisfactory or uncompleted punch list **Work** that remains after the completion date specified in the **Final Approved Punch List** pursuant to Article 54, any such action shall be commenced within six (6) months from the date the **Commissioner** notifies the **Contractor** in writing that he/she has exercised such right. Any claims for monies deducted, retained or withheld under the provisions of this **Contract** shall be asserted within six (6) months after the date when such monies otherwise become due and payable hereunder; and

56.2.3 If the **Commissioner** exercises his/her right to terminate the **Contract** pursuant to Article 64, any such action shall be commenced within six (6) months of the date the **Commissioner** exercises said right.

ARTICLE 57. INFRINGEMENT

57.1 The **Contractor** shall be solely responsible for and shall defend, indemnify, and hold the **City** harmless from any and all claims (even if the allegations of the lawsuit are without merit) and judgments for damages and from costs and expenses to which the **City** may be subject to or which it may suffer or incur allegedly arising out of or in connection with any infringement by the **Contractor** of any copyright, trade secrets, trademark or patent rights or any other property or personal right of any third party by the **Contractor** and/or its **Subcontractors** in the performance or completion of the **Work**. Insofar as the facts or **Law** relating to any claim would preclude the **City** from being completely indemnified by the **Contractor**, the **City** shall be partially indemnified by the **Contractor** to the fullest extent permitted by **Law**.

ARTICLE 58. NO CLAIM AGAINST OFFICIALS, AGENTS OR EMPLOYEES

58.1 No claim whatsoever shall be made by the **Contractor** against any official, agent or employee of the **City** for, or on account of, anything done or omitted to be done in connection with this **Contract**.

ARTICLE 59. SERVICE OF NOTICES

59.1 The **Contractor** hereby designates the business address, fax number, and email address specified in its bid, as the place where all notices, directions or other communications to the **Contractor** may be delivered, or to which they may be mailed. Any notice, direction, or communication from either party to the other shall be in writing and shall be deemed to have been given when (i) delivered personally; (ii) sent by certified mail, return receipt requested; (iii) delivered by overnight or same day courier service in a properly addressed envelope with confirmation; or (iv) sent by fax or email and, unless receipt of the fax or e-mail is acknowledged by the recipient by fax or e-mail, deposited in a post office box regularly maintained by the United States Postal Service in a properly addressed, postage pre-paid envelope.

59.2 **Contractor's** notice address, email address, or fax number may be changed at any time by an instrument in writing, executed and acknowledged by the **Contractor**, and delivered to the **Commissioner**.

59.3 Nothing herein contained shall, however, be deemed to preclude or render inoperative the service of any notice, direction or other communication upon the **Contractor** personally, or, if the **Contractor** is a corporation, upon any officer thereof.

ARTICLE 60. UNLAWFUL PROVISIONS DEEMED STRICKEN FROM CONTRACT

60.1 If this **Contract** contains any unlawful provision not an essential part of the **Contract** and which shall not appear to have been a controlling or material inducement to the making thereof, the same shall be deemed of no effect and shall, upon notice by either party, be deemed stricken from the **Contract** without affecting the binding force of the remainder.

ARTICLE 61. ALL LEGAL PROVISIONS DEEMED INCLUDED

61.1 It is the intent and understanding of the parties to this **Contract** that each and every provision of **Law** required to be inserted in this **Contract** shall be and is inserted herein. Furthermore, it is hereby stipulated that every such provision is to be deemed to be inserted herein, and if, through mistake or otherwise, any such provision is not inserted, or is not inserted in correct form, then this **Contract** shall forthwith upon the application of either party be amended by such insertion so as to comply strictly with the **Law** and without prejudice to the rights of either party hereunder.

ARTICLE 62. TAX EXEMPTION

62.1 The **City** is exempt from payment of Federal, State, and local taxes, including sales and compensating use taxes of the State of New York and its cities and counties on all tangible personal property sold to the **City** pursuant to the provisions of this **Contract**. These taxes are not to be included in bids. However, this exemption does not apply to tools, machinery, equipment or other property leased by or to the **Contractor**, **Subcontractor** or **Materialman** or to tangible personal property which, even

though it is consumed, is not incorporated into the completed **Work** (consumable supplies) and tangible personal property that the **Contractor** is required to remove from the **Site** during or upon completion of the **Work**. The **Contractor** and its **Subcontractors** and **Materialmen** shall be responsible for and pay any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property and upon all such consumable supplies and tangible personal property that the **Contractor** is required to remove from the **Site** during or upon completion of the **Work**.

62.2 The **Contractor** agrees to sell and the **City** agrees to purchase all tangible personal property, other than consumable supplies and other tangible personal property that the **Contractor** is required to remove from the **Site** during or upon completion of the **Work**, that is required, necessary or proper for or incidental to the construction of the **Project** covered by this **Contract**. The sum paid under this **Contract** for such tangible personal property shall be in full payment and consideration for the sale of such tangible personal property.

62.2.1 The **Contractor** agrees to construct the **Project** and to perform all **Work**, labor and services rendered, necessary, proper or incidental thereto for the sum shown in the bid for the performance of such **Work**, labor, and services, and the sum so paid pursuant to this **Contract** for such **Work**, labor, and services, shall be in full consideration for the performance by the **Contractor** of all its duties and obligations under this **Contract** in connection with said **Work**, labor, and services.

62.3 20 NYCRR Section 541.3(d) provides that a **Contractor's** purchases of tangible personal property that is either incorporated into real property owned by a governmental entity or purchased for and sold to a governmental entity are exempt from sales and use tax. The **City** shall not pay sales tax for any such tangible personal property that it purchases from the **Contractor** pursuant to the **Contract**. With respect to such tangible personal property, the **Contractor**, at the request of the **City**, shall furnish to the **City** such bills of sale and other instruments as may be required by the **City**, properly executed, acknowledged and delivered assuring to the **City** title to such tangible personal property, free of liens and/or encumbrances, and the **Contractor** shall mark or otherwise identify all such tangible personal property as the property of the **City**.

62.4 Title to all tangible personal property to be sold by the **Contractor** to the **City** pursuant to the provisions of the **Contract** shall immediately vest in and become the sole property of the **City** upon delivery of such tangible personal property to the **Site**. Notwithstanding such transfer of title, the **Contractor** shall have the full and continuing responsibility to install such tangible personal property in accordance with the provisions of this **Contract**, protect it, maintain it in a proper condition and forthwith repair, replace and make good any damage thereto, theft or disappearance thereof, and furnish additional tangible personal property in place of any that may be lost, stolen or rendered unusable, without cost to the **City**, until such time as the **Work** covered by the **Contract** is fully accepted by the **City**. Such transfer of title shall in no way affect any of the **Contractor's** obligations hereunder. In the event that, after title has passed to the **City**, any of the tangible personal property is rejected as being defective or otherwise unsatisfactory, title to all such tangible personal property shall be deemed to have been transferred back to the **Contractor**.

62.5 The purchase by **Subcontractors** or **Materialmen** of tangible personal property to be sold hereunder shall be a purchase or procurement for resale to the **Contractor** (either directly or through other **Subcontractors**) and therefore not subject to the aforesaid sales and compensating use taxes, provided that the subcontracts and purchase agreements provide for the resale of such tangible personal property and that such subcontracts and purchase agreements are in a form similar to this **Contract** with respect to the separation of the sale of consumable supplies and tangible personal property that the

Contractor is required to remove from the **Site** during or upon completion of the **Work** from the **Work** and labor, services, and any other matters to be provided, and provided further that the subcontracts and purchase agreements provide separate prices for tangible personal property and all other services and matters. Such separation shall actually be followed in practice, including the separation of payments for tangible personal property from the payments for other **Work** and labor and other things to be provided.

62.6 The **Contractor** and its **Subcontractors** and **Materialmen** shall furnish a **Contractor** Exempt Purchase Certificate to all persons, firms or corporations from which they purchase tangible personal property for the performance of the **Work** covered by this **Contract**.

62.7 In the event any of the provisions of this Article 62 shall be deemed to be in conflict with any other provisions of this **Contract** or create any ambiguity, then the provisions of this Article 62 shall control.

ARTICLE 63. INVESTIGATION(S) CLAUSE

63.1 The parties to this **Contract** agree to cooperate fully and faithfully with any investigation, audit or inquiry conducted by a United States, a State of New York (State) or a **City** governmental agency or authority that is empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath, or conducted by the Inspector General of a governmental agency that is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit or license that is the subject of the investigation, audit or inquiry.

63.2 If any person who has been advised that his/her statement, and any information from such statement, will not be used against him/her in any subsequent criminal proceeding refuses to testify before a grand jury or other governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath concerning the award of or performance under any transaction, agreement, lease, permit, contract, or license entered into with the **City**, the State, or any political subdivision or public authority thereof, or the Port Authority of New York and New Jersey, or any local development corporation within the **City**, or any public benefit corporation organized under the **Laws** of the State of New York, or;

63.3 If any person refuses to testify for a reason other than the assertion of his/her privilege against self incrimination in an investigation, audit or inquiry conducted by a **City** or State governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to take testimony under oath, or by the Inspector General of the governmental agency that is a party in interest in, and is seeking testimony concerning the award of, or performance under any transaction, agreement, lease, permit, contract, or license entered into with the **City**, the State, or any political subdivision thereof or any local development corporation within the **City**, then;

63.4 The **Commissioner** whose **Agency** is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit, or license shall convene a hearing, upon not less than five (5) **Days'** written notice to the parties involved to determine if any penalties should attach for the failure of a person to testify.

63.5 If any non-governmental party to the hearing requests an adjournment, the **Commissioner** who convened the hearing may, upon granting the adjournment, suspend any contract, lease, permit, or license, pending the final determination pursuant to Article 63.7 without the **City** incurring any penalty or damages for delay or otherwise.

63.6 The penalties which may attach after a final determination by the **Commissioner** may include but shall not exceed:

63.6.1 The disqualification for a period not to exceed five (5) years from the date of an adverse determination for any person, or any entity of which such person was a member at the time the testimony was sought, from submitting bids for, or transacting business with, or entering into or obtaining any contract, lease, permit or license with or from the **City**; and/or

63.6.2 The cancellation or termination of any and all such existing **City** contracts, leases, permits or licenses that the refusal to testify concerns and that have not been assigned as permitted under this **Contract**, nor the proceeds of which pledged, to an unaffiliated and unrelated institutional lender for fair value prior to the issuance of the notice scheduling the hearing, without the **City** incurring any penalty or damages on account of such cancellation or termination; monies lawfully due for goods delivered, work done, rentals, or fees accrued prior to the cancellation or termination shall be paid by the **City**.

63.7 The **Commissioner** shall consider and address in reaching his/her determination and in assessing an appropriate penalty the factors in Articles 63.7.1 and 63.7.2. The **Commissioner** may also consider, if relevant and appropriate, the criteria established in Articles 63.7.3 and 63.7.4, in addition to any other information which may be relevant and appropriate:

63.7.1 The party's good faith endeavors or lack thereof to cooperate fully and faithfully with any governmental investigation or audit, including but not limited to the discipline, discharge, or disassociation of any person failing to testify, the production of accurate and complete books and records, and the forthcoming testimony of all other members, agents, assignees or fiduciaries whose testimony is sought.

63.7.2 The relationship of the person who refused to testify to any entity that is a party to the hearing, including but not limited to, whether the person whose testimony is sought has an ownership interest in the entity and/or the degree of authority and responsibility the person has within the entity.

63.7.3 The nexus of the testimony sought to the subject entity and its contracts, leases, permits or licenses with the **City**.

63.7.4 The effect a penalty may have on an unaffiliated and unrelated party or entity that has a significant interest in an entity subject to penalties under Article 63.6, provided that the party or entity has given actual notice to the **Commissioner** upon the acquisition of the interest, or at the hearing called for in Article 63.4, gives notice and proves that such interest was previously acquired. Under either circumstance the party or entity shall present evidence at the hearing demonstrating the potential adverse impact a penalty will have on such person or entity.

63.8 Definitions:

63.8.1 The term "license" or "permit" as used in this Article 63 shall be defined as a license, permit, franchise or concession not granted as a matter of right.

63.8.2 The term "person" as used in this Article 63 shall be defined as any natural person doing business alone or associated with another person or entity as a partner, director, officer, principal or employee.

63.8.3 The term "entity" as used in this Article 63 shall be defined as any firm, partnership, corporation, association, joint venture, or person that receives monies, benefits, licenses, leases, or permits from or through the **City** or otherwise transacts business with the **City**.

63.8.4 The term "member" as used in this Article 63 shall be defined as any person associated with another person or entity as a partner, director, officer, principal or employee.

63.9 In addition to and notwithstanding any other provision of this **Contract**, the **Commissioner** may in his/her sole discretion terminate this **Contract** upon not less than three (3) **Days'** written notice in the event the **Contractor** fails to promptly report in writing to the **Commissioner** of the Department of Investigations ("DOI") of the **City** any solicitation of money, goods, requests for future employment or other benefit or thing of value, by or on behalf of any employee of the **City** or other person, firm, corporation or entity for any purpose which may be related to the procurement or obtaining of this **Contract** by the **Contractor**, or affecting the performance of this **Contract**.

ARTICLE 64. TERMINATION BY THE CITY

64.1 In addition to termination pursuant to any other article of this **Contract**, the **Commissioner** may, at any time, terminate this **Contract** by written notice to the **Contractor**. In the event of termination, the **Contractor** shall, upon receipt of such notice, unless otherwise directed by the **Commissioner**:

64.1.1 Stop **Work** on the date specified in the notice;

64.1.2 Take such action as may be necessary for the protection and preservation of the **City's** materials and property;

64.1.3 Cancel all cancelable orders for material and equipment;

64.1.4 Assign to the **City** and deliver to the **Site** or another location designated by the **Commissioner**, any non-cancelable orders for material and equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract** and not incorporated in the **Work**;

64.1.5 Take no action which will increase the amounts payable by the **City** under this **Contract**.

64.2 In the event of termination by the **City** pursuant to this Article 64, payment to the **Contractor** shall be in accordance with Articles 64.2.1, 64.2.2 or 64.2.3, to the extent that each respective article applies.

64.2.1 Lump Sum Contracts or Items: On all lump sum **Contracts**, or on lump sum items in a **Contract**, the **City** will pay the **Contractor** the sum of the amounts described in Articles 64.2.1(a) and 64.2.1(b), less all payments previously made pursuant to this **Contract**. On lump sum **Contracts** only, the **City** will also pay the **Contractor** an additional sum as provided in Article 64.2.1(c).

64.2.1(a) For **Work** completed prior to the notice of termination, the **Contractor** shall be paid a pro rata portion of the lump sum bid amount, plus approved change orders, based upon the percent completion of the **Work**, as determined by the

Commissioner. For the purpose of determining the pro rata portion of the lump sum bid amount to which the **Contractor** is entitled, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be dispositive. The **Commissioner's** determination hereunder shall be final, binding, and conclusive.

64.2.1(b) For non-cancelable material and equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract**, but not yet incorporated in the **Work**, the **Contractor** shall be paid the lesser of the following, less salvage value:

64.2.1(b)(i) The Direct Cost, as defined in Article 64.2.4; or

64.2.1(b)(ii) The fair and reasonable value, if less than Direct Cost, of such material and equipment, plus necessary and reasonable delivery costs.

64.2.1(b)(iii) In addition, the **Contractor** shall be paid five (5%) percent of the amount described in Article 64.2.1(b)(i) or Article 64.2.1(b)(ii), whichever applies.

64.2.1(c) Except as otherwise provided in Article 64.2.1(d), on all lump sum **Contracts**, the **Contractor** shall be paid the percentage indicated below applied to the difference between the total lump sum bid amount and the total of all payments made prior to the notice of termination plus all payments allowed pursuant to Articles 64.2.1(a) and 64.2.1(b):

64.2.1(c)(i) Five (5%) percent of the first five million (\$5,000,000) dollars; and

64.2.1(c)(ii) Three (3%) percent of any amount between five million (\$5,000,000) dollars and fifteen million (\$15,000,000) dollars; plus

64.2.1(c)(iii) One (1%) percent of any amount over fifteen million (\$15,000,000) dollars.

64.2.1(d) In the event the **City** terminates a lump sum **Contract** pursuant to this Article 64 within ninety (90) **Days** after registration of the **Contract** with the **Comptroller**, the **Contractor** shall be paid one (1%) percent of the difference between the lump sum bid amount and the total of all payments made pursuant to this Article 64.2.

64.2.2 Unit Price Contracts or Items: On all unit price **Contracts**, or on unit price items in a **Contract**, the **City** will pay the **Contractor** the sum of the amounts described in Articles 64.2.2(a) and 64.2.2(b), less all payments previously made pursuant to this **Contract**:

64.2.2(a) For all completed units, the unit price stated in the **Contract**, and

64.2.2(b) For units that have been ordered but are only partially completed, the **Contractor** will be paid:

64.2.2(b)(i) A pro rata portion of the unit price stated in the **Contract** based upon the percent completion of the unit and

64.2.2(b)(ii) For non-cancelable material and equipment, payment will be made pursuant to Article 64.2.1(b).

64.2.3 Time and Materials Contracts or Items Based on Time and Material Records: On all **Contracts** or items in a **Contract** where payment for the **Work** is based on time and material records, the **Contractor** shall be paid in accordance with Article 26, less all payments previously made pursuant to this **Contract**.

64.2.4 Direct Costs: Direct Costs as used in this Article 64.2 shall mean:

64.2.4(a) The actual purchase price of material and equipment, plus necessary and reasonable delivery costs,

64.2.4(b) The actual cost of labor involved in construction and installation at the **Site**, and

64.2.4(c) The actual cost of necessary bonds and insurance purchased pursuant to requirements of this **Contract** less any amounts that have been or should be refunded by the **Contractor's** sureties or insurance carriers.

64.2.4(d) Direct Costs shall not include overhead.

64.3 In no event shall any payments under this Article 64 exceed the **Contract** price for such items.

64.4 All payments pursuant to Article 64 shall be in the nature of liquidated damages and shall be accepted by the **Contractor** in full satisfaction of all claims against the **City**.

64.5 The **City** may deduct or set off against any sums due and payable pursuant to this Article 64, any deductions authorized by this **Contract** or by **Law** (including but not limited to liquidated damages) and any claims it may have against the **Contractor**. The **City's** exercise of the right to terminate the **Contract** pursuant to this Article 64 shall not impair or otherwise effect the **City's** right to assert any claims it may have against the **Contractor** in a plenary action.

64.6 Where the **Work** covered by the **Contract** has been substantially completed, as determined in writing by the **Commissioner**, termination of the **Work** shall be handled as an omission of **Work** pursuant to Articles 29 and 33, in which case a change order will be issued to reflect an appropriate reduction in the **Contract** sum, or if the amount is determined after final payment, such amount shall be paid by the **Contractor**.

ARTICLE 65. CHOICE OF LAW, CONSENT TO JURISDICTION AND VENUE

65.1 This **Contract** shall be deemed to be executed in the **City** regardless of the domicile of the **Contractor**, and shall be governed by and construed in accordance with the **Laws** of the State of New York and the **Laws** of the United States, where applicable.

65.2 The parties agree that any and all claims asserted against the **City** arising under this **Contract** or related thereto shall be heard and determined in the courts of the State of New York ("New York State Courts") located in the **City** and County of New York. To effect this **Contract** and intent, the **Contractor** agrees:

65.2.1 If the **City** initiates any action against the **Contractor** in Federal court or in a New York State Court, service of process may be made on the **Contractor** either in person, wherever such **Contractor** may be found, or by registered mail addressed to the **Contractor** at its address as set forth in this **Contract**, or to such other address as the **Contractor** may provide to the **City** in writing; and

65.2.2 With respect to any action between the **City** and the **Contractor** in a New York State Court, the **Contractor** hereby expressly waives and relinquishes any rights it might otherwise have:

65.2.2(a) To move to dismiss on grounds of forum non conveniens;

65.2.2(b) To remove to Federal Court; and

65.2.2(c) To move for a change of venue to a New York State Court outside New York County.

65.2.3 With respect to any action brought by the **City** against the **Contractor** in a Federal Court located in the **City**, the **Contractor** expressly waives and relinquishes any right it might otherwise have to move to transfer the action to a Federal Court outside the **City**.

65.2.4 If the **Contractor** commences any action against the **City** in a court located other than in the **City** and County of New York, upon request of the **City**, the **Contractor** shall either consent to a transfer of the action to a New York State Court of competent jurisdiction located in the **City** and County of New York or, if the Court where the action is initially brought will not or cannot transfer the action, the **Contractor** shall consent to dismiss such action without prejudice and may thereafter reinstate the action in a New York State Court of competent jurisdiction in New York County.

65.3 If any provision(s) of this Article 65 is held unenforceable for any reason, each and all other provision(s) shall nevertheless remain in full force and effect.

ARTICLE 66. PARTICIPATION IN AN INTERNATIONAL BOYCOTT

66.1 The **Contractor** agrees that neither the **Contractor** nor any substantially owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the Federal Export Administration Act of 1979, as amended, or the regulations of the United States Department of Commerce (Commerce Department) promulgated thereunder.

66.2 Upon the final determination by the Commerce Department or any other agency of the United States as to, or conviction of the **Contractor** or a substantially-owned affiliated company thereof for participation in an international boycott in violation of the provisions of the Export Administration Act of 1979, as amended, or the regulations promulgated thereunder, the **Comptroller** may, at his/her option, render forfeit and void this **Contract**.

66.3 The **Contractor** shall comply in all respects, with the provisions of Section 6-114 of the Administrative Code and the rules and regulations issued by the **Comptroller** thereunder.

ARTICLE 67. LOCALLY BASED ENTERPRISE PROGRAM

67.1 This **Contract** is subject to the requirements of Section 6-108.1 of the Administrative Code and regulations promulgated thereunder. No construction contract shall be awarded unless and until these requirements have been complied with in their entirety; however, compliance with this Article 67 is not required if the Agency sets Subcontractor Participation Goals for Minority- and Women-Owned Business Enterprises (M/WBEs).

67.2 Unless specifically waived by the **Commissioner** with the approval of the Division of Economic and Financial Opportunity of the City Department of Business Services, if any portion of the **Contract** is subcontracted, not less than ten (10%) percent of the total dollar amount of the **Contract** shall be awarded to locally based enterprises (LBEs); except that where less than ten (10%) percent of the total dollar amount of the **Contract** is subcontracted, such lesser percentage shall be so awarded.

67.3 The **Contractor** shall not require performance and payment bonds from LBE **Subcontractors**.

67.4 If the **Contractor** has indicated prior to award that no **Work** will be subcontracted, no **Work** shall be subcontracted without the prior approval of the **Commissioner**, which shall be granted only if the **Contractor** makes a good faith effort beginning at least six (6) weeks before the **Work** is to be performed to obtain LBE **Subcontractors** to perform the **Work**.

67.5 If the **Contractor** has not identified sufficient LBE **Subcontractors** prior to award, it shall sign a letter of compliance stating that it complies with Section 6-108.1 of the Administrative Code, recognizes that achieving the LBE requirement is a condition of its **Contract**, and shall submit documentation demonstrating its good faith efforts to obtain LBEs. After award, the **Contractor** shall begin to solicit LBE's to perform subcontracted **Work** at least six (6) weeks before the date such **Work** is to be performed and shall demonstrate that a good faith effort has been made to obtain LBEs on each subcontract until it meets the required percentage.

67.6 Failure of the **Contractor** to comply with the requirements of Section 6-108.1 of the Administrative Code and the regulations promulgated thereunder shall constitute a material breach of this **Contract**. Remedy for such breach may include the imposition of any or all of the following sanctions:

67.6.1 Reducing the **Contractor's** compensation by an amount equal to the dollar value of the percentage of the LBE subcontracting requirement not complied with;

67.6.2 Declaring the **Contractor** in default;

67.6.3 If the **Contractor** is an LBE, de-certifying and declaring the **Contractor** ineligible to participate in the LBE program for a period of up to three (3) years.

ARTICLE 68. ANTITRUST

68.1 The **Contractor** hereby assigns, sells, and transfers to the **City** all right, title, and interest in and to any claims and causes of action arising under the antitrust **Laws** of New York State or of the United States relating to the particular goods or services purchased or procured by the **City** under this **Contract**.

ARTICLE 69. MacBRIDE PRINCIPLES PROVISIONS

69.1 Notice To All Prospective **Contractors**:

69.1.1 Local Law No. 34 of 1991 became effective on September 10, 1991 and added Section 6-115.1 of the Administrative Code. The local **Law** provides for certain restrictions on **City Contracts** to express the opposition of the people of the **City** to employment discrimination practices in Northern Ireland to promote freedom of work-place opportunity.

69.1.2 Pursuant to Section 6-115.1, prospective **Contractors** for **Contracts** to provide goods or services involving an expenditure of an amount greater than ten thousand (\$10,000.) dollars, or for construction involving an amount greater than fifteen thousand (\$15,000.) dollars, are asked to sign a rider in which they covenant and represent, as a material condition of their **Contract**, that any business operations in Northern Ireland conducted by the **Contractor** and any individual or legal entity in which the **Contractor** holds a ten (10%) percent or greater ownership interest in the **Contractor** will be conducted in accordance with the MacBride Principles of nondiscrimination in employment.

69.1.3 Prospective **Contractors** are not required to agree to these conditions. However, in the case of **Contracts** let by competitive sealed bidding, whenever the lowest responsible bidder has not agreed to stipulate to the conditions set forth in this notice and another bidder who has agreed to stipulate to such conditions has submitted a bid within five (5%) percent of the lowest responsible bid for a **Contract** to supply goods, services or 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**, that it is in the best interest of the **City** that the **Contract** be awarded to other than the lowest responsible pursuant to Section 313(b)(2) of the **City** Charter.

69.1.4 In the case of **Contracts** let by other than competitive sealed bidding, if a prospective **Contractor** does not agree to these conditions, no **Agency**, elected official or the **City** Council shall award the **Contract** to that bidder unless the **Agency** seeking to use the goods, services or construction certifies in writing that the **Contract** is necessary for the **Agency** to perform its functions and there is no other responsible **Contractor** who will supply goods, services or construction of comparable quality at a comparable price.

69.2 In accordance with Section 6-115.1 of the Administrative Code, the **Contractor** stipulates that such **Contractor** and any individual or legal entity in which the **Contractor** holds a ten (10%) percent or greater ownership interest in the **Contractor** either:

69.2.1 Have no business operations in Northern Ireland, or

69.2.2 Shall take lawful steps in good faith to conduct any business operations they have in Northern Ireland in accordance with the MacBride Principles, and shall permit independent monitoring of their compliance with such principles.

69.3 For purposes of this Article, the following terms shall have the following meanings:

69.3.1 "MacBride Principles" shall mean those principles relating to nondiscrimination in employment and freedom of work-place opportunity which require employers doing business in Northern Ireland to:

- 69.3.1(a) increase the representation of individuals from under-represented religious groups in the workforce, including managerial, supervisory, administrative, clerical and technical jobs;
- 69.3.1(b) take steps to promote adequate security for the protection of employees from under-represented religious groups both at the work-place and while traveling to and from **Work**;
- 69.3.1(c) ban provocative religious or political emblems from the workplace;
- 69.3.1(d) publicly advertise all job openings and make special recruitment efforts to attract applicants from under-represented religious groups;
- 69.3.1(e) establish layoff, recall, and termination procedures which do not in practice favor a particular religious group;
- 69.3.1(f) abolish all job reservations, apprenticeship restrictions and different employment criteria which discriminate on the basis of religion;
- 69.3.1(g) develop training programs that will prepare substantial numbers of current employees from under-represented religious groups for skilled jobs, including the expansion of existing programs and the creation of new programs to train, upgrade, and improve the skills of workers from under-represented religious groups;
- 69.3.1(h) establish procedures to assess, identify, and actively recruit employees from under-represented religious groups with potential for further advancement; and
- 69.3.1(i) appoint a senior management staff member to oversee affirmative action efforts and develop a timetable to ensure their full implementation.

69.4 The **Contractor** agrees that the covenants and representations in Article 69.2 are material conditions to this **Contract**. In the event the **Agency** receives information that the **Contractor** who made the stipulation required by this Article 69 is in violation thereof, the **Agency** shall review such information and give the **Contractor** an opportunity to respond. If the **Agency** finds that a violation has occurred, the **Agency** shall have the right to declare the **Contractor** in default and/or terminate this **Contract** for cause and procure supplies, services or **Work** from another source in the manner the **Agency** deems proper. In the event of such termination, the **Contractor** shall pay to the **Agency**, or the **Agency** in its sole discretion may withhold from any amounts otherwise payable to the **Contractor**, the difference between the **Contract** price for the uncompleted portion of this **Contract** and the cost to the **Agency** of completing performance of this **Contract** either itself or by engaging another **Contractor** or **Contractors**. In the case of a requirement **Contract**, the **Contractor** shall be liable for such difference in price for the entire amount of supplies required by the **Agency** for the uncompleted term of **Contractor's Contract**. In the case of a construction **Contract**, the **Agency** shall also have the right to hold the **Contractor** in partial or total default in accordance with the default provisions of this **Contract**, and/or may seek debarment or suspension of the **Contractor**. The rights and remedies of the **Agency** hereunder shall be in addition to, and not in lieu of, any rights and remedies the **Agency** has pursuant to this **Contract** or by operation of **Law**.

ARTICLE 70. ELECTRONIC FILING/NYC DEVELOPMENT HUB

70.1 The **Contractor** shall electronically file all alteration type-2 and alteration type-3 applications via the New York City Development Hub Web site, except applications for the following types of minor alterations: enlargements, curb cuts, legalizations, fire alarms, builders pavement plans, and jobs filed on Landmark Preservation Commission calendared properties. All such filings must be professionally certified. Information about electronic filing via the New York City Development Hub is available on the City Department of Buildings Web site at www.nyc.gov/buildings.

ARTICLE 71. PROHIBITION OF TROPICAL HARDWOODS

71.1 Tropical hardwoods, as defined in Section 165 of the New York State Finance Law (Finance Law), shall not be utilized in the performance of this **Contract** except as expressly permitted by Section 165 of the Finance Law.

ARTICLE 72. CONFLICTS OF INTEREST

72.1 Section 2604 of the City Charter and other related provisions of the City Charter, the Administrative Code, and the Penal Law are applicable under the terms of this **Contract** in relation to conflicts of interest and shall be extended to **Subcontractors** authorized to perform **Work**, labor and services pursuant to this **Contract** and further, it shall be the duty and responsibility of the **Contractor** to so inform its respective **Subcontractors**. Notice is hereby given that, under certain circumstances, penalties may be invoked against the donor as well as the recipient of any form of valuable gift.

ARTICLE 73. MERGER CLAUSE

73.1 The written **Contract** herein, contains all the terms and conditions agreed upon by the parties hereto, and no other agreement, oral or otherwise, regarding the subject matter of this **Contract** shall be deemed to exist or to bind any of the parties hereto, or to vary any of the terms contained herein.

ARTICLE 74. STATEMENT OF WORK

74.1 The **Contractor** shall furnish all labor and materials and perform all **Work** in strict accordance with the **Specifications** and **Addenda** thereto, numbered as shown in Schedule A.

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 shown in Schedule A, this said sum being the amount at which the **Contract** was awarded to the **Contractor** at a public letting thereof, based upon the **Contractor's** bid for the **Contract**.

ARTICLE 76. ELECTRONIC FUNDS TRANSFER

76.1 In accordance with Section 6-107.1 of the Administrative Code, the **Contractor** agrees to accept payments under this **Contract** from the City by electronic funds transfer (EFT). An EFT is any

transfer of funds, other than a transaction originated by check, draft or similar paper instrument, which is initiated through an electronic terminal, telephonic instrument or computer or magnetic tape so as to order, instruct or authorize a financial institution to debit or credit an account. Prior to the first payment made under this **Contract**, the **Contractor** shall designate one financial institution or other authorized payment agent and shall complete the attached "EFT Vendor Payment Enrollment Form" in order to provide the Commissioner of the **City** Department of Finance with information necessary for the **Contractor** to receive electronic funds transfer payments through a designated financial institution or authorized payment agent. The crediting of the amount of a payment to the appropriate account on the books of a financial institution or other authorized payment agent designated by the **Contractor** shall constitute full satisfaction by the **City** for the amount of the payment under this **Contract**. The account information supplied by the **Contractor** to facilitate the electronic funds transfer shall remain confidential to the fullest extent provided by **Law**.

76.2 The **Commissioner** may waive the application of the requirements of this Article 76 to payments on contracts entered into pursuant to Section 315 of the **City** Charter. In addition, the Commissioner of the Department of Finance and the Comptroller may jointly issue standards pursuant to which the **Agency** may waive the requirements of this Article 76 for payments in the following circumstances: (i) for individuals or classes of individuals for whom compliance imposes a hardship; (ii) for classifications or types of checks; or (iii) in other circumstances as may be necessary in the interest of the **City**.

ARTICLE 77. RECORDS RETENTION

77.1 The **Contractor** agrees to retain all books, records, and other documents relevant to this **Contract** for six years after the final payment or termination of this **Contract**, whichever is later. **City**, state, and federal auditors and any other persons duly authorized by the **City** shall have full access to and the right to examine any such books, records, and other documents during the retention period.

ARTICLE 78. EXAMINATION AND VIEWING OF SITE, CONSIDERATION OF OTHER SOURCES OF INFORMATION AND CHANGED SITE CONDITIONS

78.1 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 and hazards on, about or above the **Site** relating to or affecting in any way the performance of the **Work** to be done under the **Contract** that were or should have been known by a reasonably prudent bidder. To arrange a date for visiting the **Site**, bidders are to contact the **Agency** contact person specified in the bid documents.

78.2 Should the **Contractor** encounter during the progress of the **Work** site conditions or environmental hazards at the **Site** materially differing from any shown on the **Contract Drawings** or indicated in the **Specifications** or such conditions or environmental hazards as could not reasonably have been anticipated by the **Contractor**, which conditions or hazards 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 or hazards before they are disturbed. The **Commissioner** shall thereupon promptly investigate the conditions or hazards. If the **Commissioner** finds that they do so materially differ, and that they could not have been reasonably anticipated by the **Contractor**, the **Contract** may be modified with the **Commissioner**'s written approval.

**ARTICLE 79. PARTICIPATION BY MINORITY-OWNED AND WOMEN-OWNED
BUSINESS ENTERPRISES IN CITY PROCUREMENT**

NOTICE TO ALL PROSPECTIVE CONTRACTORS

ARTICLE I. M/WBE PROGRAM

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

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

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

PART A

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

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

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

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

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

A Contractor that is a qualified joint venture (as defined in Section 6-129(c)(30)) shall be permitted to count a percentage of its own participation toward fulfillment of the relevant **Participation Goal**. In accordance with Section 6-129, the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that Contractor pays to direct subcontractors, and then multiplying the remainder by the percentage to be applied to total profit to determine the amount to which an MBE or WBE is entitled pursuant to the joint venture agreement, provided that where a participant in a joint venture is certified as both an MBE and a WBE, such amount shall be counted either toward the goal for MBEs or the goal for WBEs, but not both.

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

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

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

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

5. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multiyear contracts, such list shall also be submitted every year thereafter. The Agency may also require the Contractor to report periodically about the contracts awarded by its direct subcontractors to indirect subcontractors (as defined in Section 6-129(c)(22)). **PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor must identify all those to which it intends to award construction subcontracts for any portion of the Wicks trade work at the time of bid submission, regardless of what point in the life of the contract such subcontracts will occur. In identifying intended subcontractors in the bid submission, bidders may satisfy any Participation Goals established for this Contract by proposing one or more subcontractors that are MBEs and/or WBEs for any portion of the Wicks trade work. In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.**

6. MBE and WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the **Participation Goals**. Such certification must occur prior to the

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PART B: MISCELLANEOUS

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

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

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

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

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

ARTICLE II. ENFORCEMENT

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

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

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

- (a) entering into an agreement with the Contractor allowing the Contractor to cure the violation;
- (b) revoking the Contractor's pre-qualification to bid or make proposals for future contracts;
- (c) making a finding that the Contractor is in default of the Contract;
- (d) terminating the Contract;
- (e) declaring the Contractor to be in breach of Contract;
- (f) withholding payment or reimbursement;
- (g) determining not to renew the Contract;
- (h) assessing actual and consequential damages;
- (i) assessing liquidated damages or reducing fees, provided that liquidated damages may be based on amounts representing costs of delays in carrying out the purposes of the M/WBE Program, or in meeting the purposes of the Contract, the costs of meeting utilization goals through additional procurements, the administrative costs of investigation and enforcement, or other factors set forth in the Contract;
- (j) exercising rights under the Contract to procure goods, services or construction from another contractor and charge the cost of such contract to the Contractor that has been found to be in noncompliance; or
- (k) taking any other appropriate remedy.

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

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

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

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

IN WITNESS WHEREOF, the Commissioner, on behalf of the City of New York, and the Contractor, have executed this agreement in quadruplicate, two parts of which are to remain with the Commissioner, another to be filed with the Comptroller of the City, and the fourth to be delivered to the Contractor.

THE CITY OF NEW YORK

By: *Lorraine G. Gault*
Commissioner

CONTRACTOR: *Ark Systems Electric Corp.*

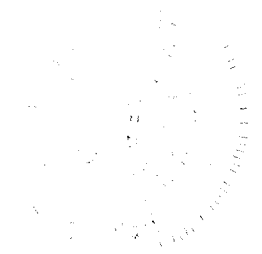
By: *[Signature]*
(Member of Firm or Officer of Corporation)

Title: *Vice President*

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

Secretary

(Seal)

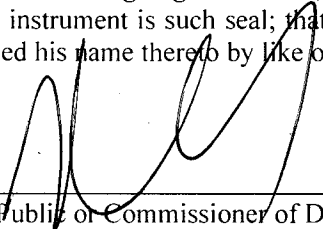


ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:

On this 24th day of December, 2018 before me personally came Rajiv Lodaga to me known who, being by me duly sworn did depose and say that he resides at New York Park New York that he is the Vice 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 there to by like order.

MARIA JOHNSTON
Notary Public, State of New York
No. 01JO6351081
Qualified in Queens County
Commission Expires Nov. 28, 2020



Notary Public or Commissioner of Deeds

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 or Commissioner of Deeds

ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

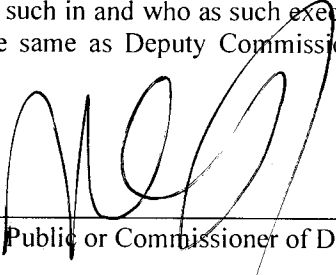
On this _____ day of _____, _____, before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

ACKNOWLEDGEMENT BY COMMISSIONER

State of New York County of Queens ss:

On this 27th day of December, 2015, before me personally came Lorraine Grillo to me known, and known to be the 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 acknowledged to me that he executed the same as Deputy Commissioner for the purposes therein mentioned.



Notary Public or Commissioner of Deeds

MARIA JOHNSTON
Notary Public, State of New York
No. 01JO6351081
Qualified in Queens County
Commission Expires Nov. 28, 2020

AUTHORITY

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

DATED
DATED

APPROPRIATION
COMMISSIONER'S CERTIFICATE

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

Sixteen Million, Two Hundred Thirty One Thousand,
Eight Hundred Forty-Five

Dollars (\$ 16,231,845.00)

is chargeable to the fund of the Department of Design and Construction entitled Code

NYC DEPARTMENT OF DESIGN AND CONSTRUCTION
OFFICE OF THE COMPTROLLER
100 NASSAU ST. 10TH FLOOR
NEW YORK, NY 10038
TEL: (212) 312-1234
WWW.DDC.NYC.GOV

Department of Design and Construction

I hereby certify that the specifications contained herein comply with the terms and conditions of the BUDGET.

Jonathan Gullto

Commissioner

COMPTROLLER'S CERTIFICATE

The City of New York _____

Pursuant to the provisions of Section 6-101 of the Administrative Code of the City of New York, I hereby certify that there remains unapplied and unexpended a balance of the above mentioned fund applicable to this Contract sufficient to pay the estimated expense of executing the same viz:

\$ _____

Comptroller

MAYOR'S CERTIFICATE OR
CERTIFICATE OF THE DIRECTOR
OF THE BUDGET

Performance Bond #1 (Pages 100 to 103): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 1)

PERFORMANCE BOND #1

KNOW ALL PERSONS BY THESE PRESENTS;

That we, _____

hereinafter referred to as the "Principal,"
and, _____

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

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

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

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

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

Performance Bond #1 (Pages 100 to 103): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 2)

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 100 to 103): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 3)

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

_____ day of _____, 20____.
(Seal)

_____(L.S.)
Principal

By: _____
(Seal) Surety

By: _____
(Seal) Surety

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 100 to 103): 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.m.

PERFORMANCE BOND #1 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____, 20 _____ before me personally came _____, to me known, who, being by me duly sworn did depose and say that he/she resides at _____

_____ ; that he/she is the _____ of the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name to the foregoing instrument by order of the directors of said corporation as the duly authorized and binding act thereof.

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.

Performance Bond #2 (Pages 104 to 107): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 1)

PERFORMANCE BOND #2

Bond No: PRF9288716

KNOW ALL PERSONS BY THESE PRESENTS:

That we, ARK Systems Electric Corp.

27-08 42nd Road

Long Island City, NY 11101

hereinafter referred to as the "Principal,"

and, Fidelity and Deposit Company of Maryland/Zurich American Insurance

Company, 300 Interpace Parkway, Morris Corporate I, Bldg. B/C

Parsippany, NJ 07054

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns in the penal sum of Sixteen Million Two Hundred Thirty-One Thousand Eight Hundred

Forty-Five Dollars and Zero Cents

(\$ 16,231,845.00) Dollars, lawful money of the United States for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

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

FMS ID: HH112BEES-G; E-PIN: 85018B0101001; DDC PIN: 8502018HR0009C;

Bellevue Men's Shelter-Electrical Upgrade and Generator-Manhattan, NY

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

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, 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

Performance Bond #2 (Pages 104 to 107): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 2)

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 104 to 107): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 3)

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

_____ 17th _____ day of _____ December _____ 20 18 _____

(Seal)

ARK Systems Electric Corp. _____ (L.S.)
Principal

By: _____

(Seal)

Angana Woodsey, Corp. Sec. / Treasurer
Surety
Fidelity and Deposit Company of Maryland

By: _____
Fern Perry, Attorney-In-Fact

(Seal)

Surety
Zurich American Insurance Company

By: _____
Fern Perry, Attorney-In-Fact
Surety

(Seal)

By: _____

(Seal)

Surety

By: _____

(Seal)

Surety

By: _____

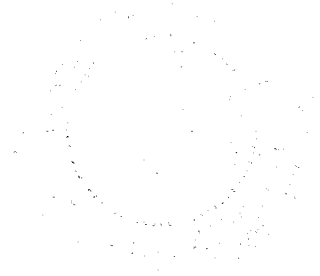
Bond Premium Rate _____

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 #2 (Pages 104 to 107): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL IF A CORPORATION

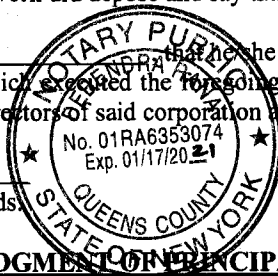
State of New York County of Queens ss:

On this 19th day of December, 20 18 before me personally came Anyana Woolsey, to me known, who, being by me duly sworn did depose and say that he resides at Storrs town, N.Y.

that he is the Corp. Sec. / Treasurer of the corporation described in and which executed the foregoing instrument; that he/she signed his/her name to the foregoing instrument by order of the directors of said corporation as the duly authorized and binding act thereof.

[Signature]

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

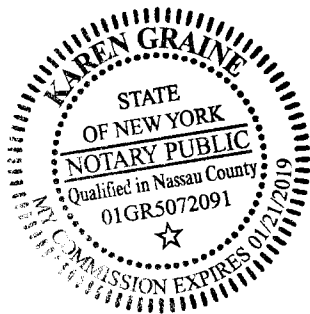
Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified 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.

ACKNOWLEDGEMENT OF SURETY

STATE OF NEW YORK }
COUNTY OF NASSAU } ss:

On December 17, 2018 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of Fidelity and Deposit Company of Maryland the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.



A handwritten signature in black ink, appearing to read "K. Graine".

Notary Public

ACKNOWLEDGEMENT OF SURETY

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

On December 17, 2018 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of Zurich American Insurance Company the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.



KCSC

Notary Public

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by **DAVID MCVICKER, Vice President**, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Peter HENRY, Rosanne CALLAHAN, Robert FINNELL, Janice R. FISCINA, Jennifer L. JOHNSTON, Deborah L. SEVERIN and Fern PERRY, all of Plainview, New York, EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.


The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

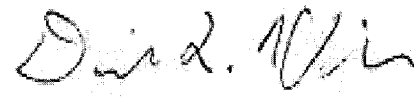
IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 1st day of October, A.D. 2018.

ATTEST:

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND**



By: 
Secretary
Michael McKibben


Vice President
David McVicker

State of Maryland
County of Baltimore

On this 1st day of October, A.D. 2018, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **DAVID MCVICKER, Vice President, and MICHAEL MCKIBBEN, Secretary**, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.





Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2019

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 17 day of December, 20 18.



Michael Bond, Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT ALL REQUIRED INFORMATION TO:

Zurich American Insurance Co.
Attn: Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056

THE FIDELITY AND DEPOSIT COMPANY

OF MARYLAND

600 Red Brook Blvd., Suite 600, Owings Mills, MD 21117

Statement of Financial Condition

As Of December 31, 2017

ASSETS

Bonds	\$ 131,463,323
Stocks	23,365,385
Cash and Short Term Investments	15,943,690
Reinsurance Recoverable	7,520,824
Federal Income Tax Recoverable	62,266
Other Accounts Receivable	35,672,323
TOTAL ADMITTED ASSETS	<u>\$ 214,027,811</u>

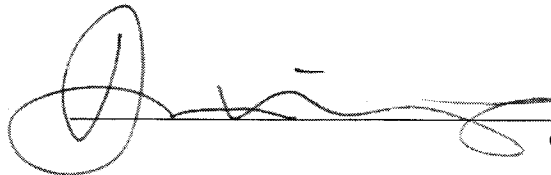
LIABILITIES, SURPLUS AND OTHER FUNDS

Reserve for Taxes and Expenses	\$ 580,990
Ceded Reinsurance Premiums Payable	42,235,595
Securities Lending Collateral Liability	0
TOTAL LIABILITIES	<u>\$ 42,816,584</u>
Capital Stock, Paid Up	\$ 5,000,000
Surplus	166,211,227
Surplus as regards Policyholders	171,211,226
TOTAL	<u>\$ 214,027,811</u>

Securities carried at \$62,198,396 in the above statement are deposited with various states as required by law.

Securities carried on the basis prescribed by the National Association of Insurance Commissioners. On the basis of market quotations for all bonds and stocks owned, the Company's total admitted assets at December 31, 2017 would be \$213,515,173 and surplus as regards policyholders \$170,698,588.

I, DENNIS F. KERRIGAN, Corporate Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company on the 31st day of December, 2017.


Corporate Secretary

State of Illinois }
City of Schaumburg } SS:

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 9th day of March, 2018.

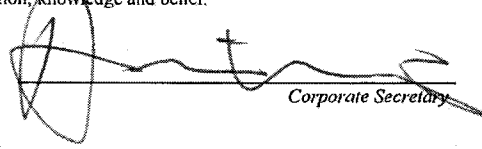

Notary Public



ZURICH AMERICAN INSURANCE COMPANY
COMPARATIVE BALANCE SHEET
4 WORLD TRADE CENTER, 150 GREENWICH STREET, NEW YORK, NY 10007
As of December 31, 2017 and December 31, 2016

	12/31/2017	12/31/2016
Assets		
Bonds	\$ 17,304,611,032	\$ 17,161,451,744
Preferred Stock	-	-
Common Stock	3,336,061,932	3,241,050,263
Real Estate	1,169,333,479	1,026,001,064
Other Invested Assets	1,398,151,991	1,948,564,541
Derivatives	34,100	15,084,953
Short-term Investments	122,752,224	655,803,775
Receivable for securities	216,911,554	119,469,175
Cash and cash equivalents	623,989,513	(66,647,236)
Securities lending reinvested collateral assets	142,251,002	112,477,509
Employee Trust for Deferred Compensation Plan	154,154,004	156,985,102
Total Cash and Invested Assets	\$ 24,468,250,829	\$ 24,370,240,890
Premiums Receivable	\$ 4,853,380,227	\$ 4,231,447,148
Funds Held with Reinsurers	289,784	1,783,310
Reinsurance Recoverable	648,465,014	623,035,654
Accrued Investment Income	132,373,174	123,371,546
Federal Income Tax Recoverable	477,481,846	947,211,719
Due from Affiliates	407,585,927	110,421,961
Other Assets	594,128,929	595,372,223
Total Assets	\$ 31,581,955,729	\$ 31,002,884,451
Liabilities and Policyholders' Surplus		
Liabilities:		
Loss and LAE Reserves	\$ 14,125,301,895	\$ 14,267,336,824
Unearned Premium Reserve	4,274,053,819	4,253,376,558
Funds Held with Reinsurers	637,809,938	215,284,071
Loss In Course of Payment	888,528,099	534,413,839
Commission Reserve	112,790,522	136,388,581
Federal Income Tax Payable	88,988,756	89,598,056
Remittances and Items Unallocated	161,295,880	142,307,982
Payable to parent, subs and affiliates	221,304,753	264,541,870
Provision for Reinsurance	169,995,451	56,323,818
Ceded Reinsurance Premiums Payable	1,000,276,567	934,904,370
Securities Lending Collateral Liability	142,251,002	112,477,509
Other Liabilities	2,140,323,174	2,144,252,359
Total Liabilities	\$ 23,962,919,856	\$ 23,151,205,837
Policyholders' Surplus:		
Common Capital Stock	\$ 5,000,000	\$ 5,000,000
Paid-In and Contributed Surplus	4,394,131,321	4,394,131,321
Surplus Notes	-	-
Special Surplus Funds	49,899,000	52,465,000
Cumulative Unrealized Gain	283,695,517	178,672,890
Unassigned Surplus	2,886,310,035	3,221,409,403
Total Policyholders' Surplus	\$ 7,619,035,873	\$ 7,851,678,614
Total Liabilities and Policyholders' Surplus	\$ 31,581,955,729	\$ 31,002,884,451

I, Dennis F. Kerrigan, Corporate Secretary of ZURICH AMERICAN INSURANCE COMPANY do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company, on the 31st day of December, 2017, according to the best of my information, knowledge and belief.




 Corporate Secretary

State of Illinois
 County of Cook

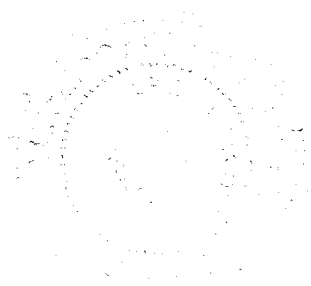
} SS:

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 9th day of March, 2018.





 Notary public



Payment Bond (Pages 108 to 111): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 1)

Bond No: PRF9288716

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

ARK Systems Electric Corp.

27-08 42nd Road

Long Island City, NY 11101

hereinafter referred to as the "Principal", and _____

Fidelity and Deposit Company of Maryland/Zurich American Insurance

Company, 300 Interpace Parkway, Morris Corporate I, Bldg. B/C

Parsippany, NJ 07054

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

Sixteen Million Two Hundred Thirty-One Thousand Eight Hundred

Forty-Five Dollars and Zero Cents

(\$16,231,845.00) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

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

FMS ID: HH112BEES-G; E-PIN: 85018B0101001; DDC PIN: 8502018HR0009C;

Bellevue Men's Shelter-Electrical Upgrade and Generator-Manhattan, NY

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

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so engaged who perform the work of laborers or mechanics at or in the vicinity of the site

Payment Bond (Pages 108 to 111): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 2)

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 108 to 111): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 3)

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this 17th day of December, 2018.

(Seal)

ARK Systems Electric Corp. (L.S.)

Principal

By: _____

Angela Webster, Conf. Sec. / Treasurer

(Seal)

Fidelity and Deposit Company of Maryland

Surety

By: _____

Fern Perry, Attorney-In-Fact

(Seal)

Zurich American Insurance Company

Surety

By: _____

Fern Perry, Attorney-In-Fact

(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 108 to 111): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 4)

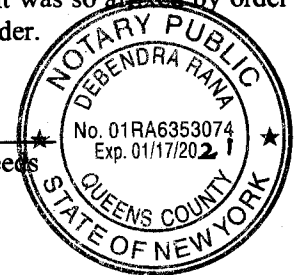
ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:

On this 19th day of December, 2018, before me personally came Angana Woolser to me known, who, being by me duly sworn did depose and say that he resides at Staringtown, N.Y. that he is the Corp. Sec. / Treasurer 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.

[Handwritten Signature]

Notary Public or Commissioner of Deeds



ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

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

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

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

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

Affix Acknowledgments and Justification of Sureties.

ACKNOWLEDGEMENT OF SURETY

STATE OF NEW YORK }
COUNTY OF NASSAU } ss:

On December 17, 2018 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of Fidelity and Deposit Company of Maryland the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.





Notary Public

ACKNOWLEDGEMENT OF SURETY

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

On December 17, 2018 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of Zurich American Insurance Company the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.





Notary Public

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by **DAVID MCVICKER, Vice President**, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Peter HENRY, Rosanne CALLAHAN, Robert FINNELL, Janice R. FISCINA, Jennifer L. JOHNSTON, Deborah L. SEVERIN and Fern PERRY, all of Plainview, New York, EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.


The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

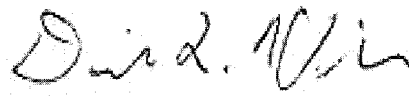
IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 1st day of October, A.D. 2018.

ATTEST:

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND**



By: 
Secretary
Michael McKibben


Vice President
David McVicker

State of Maryland
County of Baltimore

On this 1st day of October, A.D. 2018, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **DAVID MCVICKER, Vice President, and MICHAEL MCKIBBEN, Secretary**, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposed and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.





Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2019

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 15th day of December, 20 98.



Michael Bond, Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT ALL REQUIRED INFORMATION TO:

Zurich American Insurance Co.
Attn: Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056

THE FIDELITY AND DEPOSIT COMPANY

OF MARYLAND

600 Red Brook Blvd., Suite 600, Owings Mills, MD 21117

Statement of Financial Condition

As Of December 31, 2017

ASSETS

Bonds	\$ 131,463,323
Stocks	23,365,385
Cash and Short Term Investments.....	15,943,690
Reinsurance Recoverable	7,520,824
Federal Income Tax Recoverable.....	62,266
Other Accounts Receivable.....	35,672,323
TOTAL ADMITTED ASSETS	\$ 214,027,811

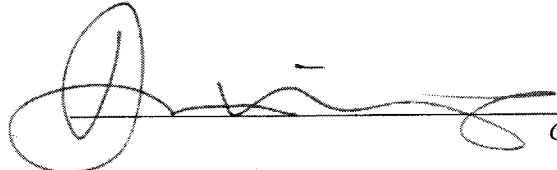
LIABILITIES, SURPLUS AND OTHER FUNDS

Reserve for Taxes and Expenses	\$ 580,990
Ceded Reinsurance Premiums Payable	42,235,595
Securities Lending Collateral Liability	0
TOTAL LIABILITIES	\$ 42,816,584
Capital Stock, Paid Up	\$ 5,000,000
Surplus	166,211,227
Surplus as regards Policyholders.....	171,211,226
TOTAL	\$ 214,027,811

Securities carried at \$62,198,396 in the above statement are deposited with various states as required by law.

Securities carried on the basis prescribed by the National Association of Insurance Commissioners. On the basis of market quotations for all bonds and stocks owned, the Company's total admitted assets at December 31, 2017 would be \$213,515,173 and surplus as regards policyholders \$170,698,588.

I, DENNIS F. KERRIGAN, Corporate Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company on the 31st day of December, 2017.


Corporate Secretary

State of Illinois }
City of Schaumburg } SS:

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 9th day of March, 2018.

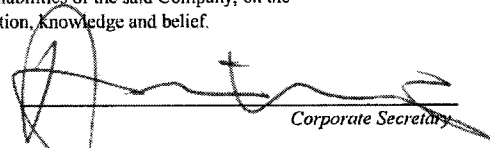

Notary Public



ZURICH AMERICAN INSURANCE COMPANY
COMPARATIVE BALANCE SHEET
4 WORLD TRADE CENTER, 150 GREENWICH STREET, NEW YORK, NY 10007
As of December 31, 2017 and December 31, 2016

	12/31/2017	12/31/2016
Assets		
Bonds	\$ 17,304,611,032	\$ 17,161,451,744
Preferred Stock	-	-
Common Stock	3,336,061,932	3,241,050,263
Real Estate	1,169,333,479	1,026,001,064
Other Invested Assets	1,398,151,991	1,948,564,541
Derivatives	34,100	15,084,953
Short-term Investments	122,752,224	655,803,775
Receivable for securities	216,911,554	119,469,175
Cash and cash equivalents	623,989,513	(66,647,236)
Securities lending reinvested collateral assets	142,251,002	112,477,509
Employee Trust for Deferred Compensation Plan	154,154,004	156,985,102
Total Cash and Invested Assets	\$ 24,468,250,829	\$ 24,370,240,890
Premiums Receivable	\$ 4,853,380,227	\$ 4,231,447,148
Funds Held with Reinsurers	289,784	1,783,310
Reinsurance Recoverable	648,465,014	623,035,654
Accrued Investment Income	132,373,174	123,371,546
Federal Income Tax Recoverable	477,481,846	947,211,719
Due from Affiliates	407,585,927	110,421,961
Other Assets	594,128,929	595,372,223
Total Assets	\$ 31,581,955,729	\$ 31,002,884,451
Liabilities and Policyholders' Surplus		
Liabilities:		
Loss and LAE Reserves	\$ 14,125,301,895	\$ 14,267,336,824
Unearned Premium Reserve	4,274,053,819	4,253,376,558
Funds Held with Reinsurers	637,809,938	215,284,071
Loss In Course of Payment	888,528,099	534,413,839
Commission Reserve	112,790,522	136,388,581
Federal Income Tax Payable	88,988,756	89,598,056
Remittances and Items Unallocated	161,295,880	142,307,982
Payable to parent, subs and affiliates	221,304,753	264,541,870
Provision for Reinsurance	169,995,451	56,323,818
Ceded Reinsurance Premiums Payable	1,000,276,567	934,904,370
Securities Lending Collateral Liability	142,251,002	112,477,509
Other Liabilities	2,140,323,174	2,144,252,359
Total Liabilities	\$ 23,962,919,856	\$ 23,151,205,837
Policyholders' Surplus:		
Common Capital Stock	\$ 5,000,000	\$ 5,000,000
Paid-In and Contributed Surplus	4,394,131,321	4,394,131,321
Surplus Notes	-	-
Special Surplus Funds	49,899,000	52,465,000
Cumulative Unrealized Gain	283,695,517	178,672,890
Unassigned Surplus	2,886,310,035	3,221,409,403
Total Policyholders' Surplus	\$ 7,619,035,873	\$ 7,851,678,614
Total Liabilities and Policyholders' Surplus	\$ 31,581,955,729	\$ 31,002,884,451

I, Dennis F. Kerrigan, Corporate Secretary of ZURICH AMERICAN INSURANCE COMPANY do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company, on the 31st day of December, 2017, according to the best of my information, knowledge and belief.



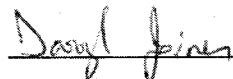
 Corporate Secretary

State of Illinois
 County of Cook

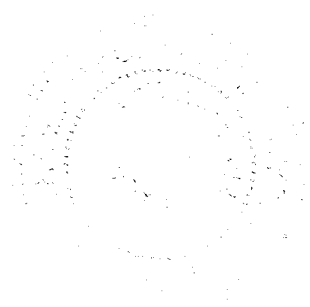
} SS:

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 9th day of March, 2018.





 Notary public





CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

12/19/2018

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 Keevily Spero Whitelaw, Inc. 500 Mamaroneck Ave Harrison NY 10528		CONTACT NAME: Kyle McEvily PHONE (A/C, No, Ext): (914) 381-5511 E-MAIL ADDRESS: kmcevily@keevily.com FAX (A/C, No): (914) 381-1134	
INSURED ARK Systems Electric Corp. 27-08 42nd Road Long Island City NY 11101		INSURER(S) AFFORDING COVERAGE INSURER A: Harleysville Insurance Company NAIC # 23582 INSURER B: Harleysville Worcester Insurance Co 26182 INSURER C: Travelers Indemnity Company 25658 INSURER D: INSURER E: INSURER F:	

COVERAGES

CERTIFICATE NUMBER: CL18121923700

REVISION NUMBER:

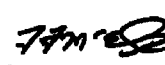
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR	X		MPA00000038443H	1/1/2019	1/1/2020	EACH OCCURRENCE \$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:						DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS			BA 00000038894H	1/1/2019	1/1/2020	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000
	<input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS						BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE			CMB00000039352J	1/1/2019	1/1/2020	EACH OCCURRENCE \$ 5,000,000
	DED <input checked="" type="checkbox"/> RETENTION \$ 10,000						AGGREGATE \$ 5,000,000
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						<input type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
A	Business Personal Property			MPA00000038443H	1/1/2019	1/1/2020	Limit \$3,400
C	Excess Liability			ZUP-15T65403-19-NF	1/1/2019	1/1/2020	Limit \$5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: Job Location: Bellevue Men's Shelter - Electrical Upgrade and Generator - Manhattan. FMS ID: HH112BEES-G, E-PIN: 85018B0101001, DDC Pin: 8502018HR0009C. NYC Dept. of Design and Construction and The City of New York including its officials and employees, are included as additional insured with respects to the General Liability when required by written contract.

CERTIFICATE HOLDER**CANCELLATION**

New York City Dept of Design & Construction ACCO's Office, Insurance Unit 30-30 Thomson Avenue Long Island City, NY 11101	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 T McEvily III, CPCU/K 
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**CITY OF NEW YORK
CERTIFICATION BY BROKER**

The undersigned insurance broker or agent represents to the City of New York that the attached Certificate of Liability Insurance is accurate in all material respects

Keevily Spero Whitelaw, Inc.

[Name of broker or agent (typewritten)]

500 Mamaroneck Ave., Harrison, NY 10528

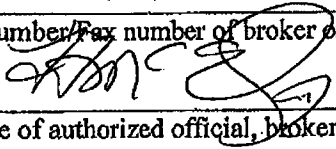
[Address of broker or agent (typewritten)]

tmcevily@keevily.com

[Email address of broker or agent (typewritten)]

(914)381-5511 / (914) 381-1134

[Phone number/Fax number of broker or agent (typewritten)]


[Signature of authorized official, broker or agent]

Thomas F. McEvily III - President

[Name and title of authorized official, broker, or agent (typewritten)].

State of New York.....)

Westchester) ss.:
County of

Sworn to before me this 14th day of December 20 18


NOTARY PUBLIC FOR THE STATE OF New York

Frank Marioni
Notary Public - State of New York
No. 01MA6125765
Qualified in Westchester County
Commission Expires 04 / 25 / 20 19

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – AUTOMATIC STATUS WHEN
REQUIRED IN CONSTRUCTION AGREEMENT WITH YOU**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

A. Section II – Who is An Insured is amended to include as an additional insured any person or organization for whom you are performing operations when you and such person or organization have agreed in writing in a contract or agreement that such person or organization be added as an additional insured on your policy. Such person or organization is an additional insured 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.

A person's or organization's status as an additional insured under this endorsement ends when your operations for that additional insured are completed.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to:

1. "Bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of, or the failure to render, any professional architectural, engineering or surveying services, including:
 - a. The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or
 - b. Supervisory, inspection, architectural or engineering activities.
2. "Bodily injury" or "property damage" occurring after:
 - a. 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
 - b. 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

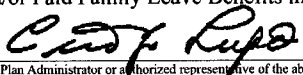
Name Of Additional Insured Person(s) Or Organization(s):	Location And Description Of Completed Operations
Blanket when required by written contract.	
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

Section 11 — 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".

STATE OF NEW YORK
WORKERS' COMPENSATION BOARD

CERTIFICATE OF PARTICIPATION
DISABILITY OR DISABILITY AND PAID FAMILY LEAVE BENEFITS GROUP SELF-INSURANCE

PART 1. To be completed by Disability or Disability and PFL Benefits Self-Insured Plan Administrator

<p>1a. Legal Name and Address of Insured: (use street address only) ARK SYSTEMS ELECTRIC CORP. 27-08 42ND ROAD LONG ISLAND CITY, NY 11101</p>	<p>1b. Telephone Number of Insured: (718) 482-3922</p> <p>1c. Federal Employer Identification Number of Insured: (if no FEIN then use Social Security Number) 11-3405991</p>
<p>2. Name and Address of the entity requesting proof of coverage: (Entity Being Listed as the Certificate Holder) NYC Department of Design and Construction 30-30 Thomson Avenue, 1st Floor Long Island, NY 11101</p> <p>LOC: Bellevue Men's Shelter Electrical Upgrade and Generator E-Pin:85018B0101/ DDC PIN 8502018HR0009C 400 East 30th Street New York, NY 10016</p>	<p>3a. Name of Self-Insured Plan (Association, Union or Trust): #4349 Electrical Employers Self Insurance Safety Plan 158-11 Harry Van Arsdale Jr. Avenue Flushing, NY 11365</p> <p>3b. Insurer Identification Number: B-B48</p> <p>3c. Coverage effective period: 11-11-2010 through 12-18-2019</p>
<p>4. Group self-insurance provides: <input checked="" type="checkbox"/> a. Both disability and paid family leave benefits. <input type="checkbox"/> b. Disability benefits only.</p> <p>5. Group self-insurance covers: <input checked="" type="checkbox"/> a. All of the employer's employees eligible under the New York State Disability and Paid Family Leave Benefits Law. <input type="checkbox"/> b. Only the following class or classes of employer's employees: _____</p> <p>Under penalty of perjury, I certify that I am an authorized Plan Administrator or authorized representative of the Self-Insured Plan referenced above and that the named insured has NYS Disability and/or Paid Family Leave Benefits insurance coverage as described above.</p> <p>Date Signed: <u>12-18-2018</u> By: <u></u> <small>(Signature of Plan Administrator or authorized representative of the above named plan)</small></p> <p>Telephone Number: <u>(718) 591-2800</u> Name and Title: <u>Chairman</u></p> <p>IMPORTANT: If box "4a" and "5a" are checked, and this form is signed by the Plan Administrator or authorized representative of that plan, this certificate is COMPLETE. Mail it directly to the certificate holder. If box "4b" or "5b" is checked, this certificate is INCOMPLETE for purposes of Section 220, Subd. 8 of the Disability and Paid Family Leave Benefits Law. It must be mailed for completion to the Workers' Compensation Board, Plans Acceptance Unit, PO Box 5200, Binghamton, NY 13902-5200.</p>	

PART 2. To be completed by NYS Workers' Compensation Board (Only if box "4b" or "5b" of Part 1 has been checked)

<p style="text-align: center;">State of New York Workers' Compensation Board</p> <p>According to information maintained by the NYS Workers' Compensation Board, the above-named employer has complied with the NYS Disability and Paid Family Leave Benefits Law with respect to all of his/her employees.</p> <p>Date Signed: _____ By: _____ <small>(Signature of NYS Workers' Compensation Board Employee)</small></p> <p>Telephone Number: _____ Name and Title: _____</p>	
--	--

Please Note: Only Plan Administrators or their representatives are authorized to issue form DB-120.2

Additional Instructions for Form DB-120.2

By signing this form, the Plan Administrator identified in box "3" on this form is certifying that it is insuring the business referenced in box "1a" for disability or disability and PFL benefits under the New York State Disability and Paid Family Leave Benefits Law. The Plan Administrator or representative will send this Certificate of Compliance to the entity listed as the certificate holder in box "2". *This Certificate is valid for one year after this form is approved by the Plan Administrator or authorized representative or the expiration date listed in Box 3c, whichever is earlier.*

Please Note: Upon the cancellation of the disability or disability and PFL 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 and/or Paid Family Leave Benefits Coverage or other authorized proof that the business is complying with the mandatory coverage requirements of the New York State Disability and Paid Family Leave Benefits Law.

Disability and Paid Family Leave Benefits Law

§ 220. Subd. 8

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

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

STATE OF NEW YORK
WORKERS' COMPENSATION BOARD

**CERTIFICATE OF PARTICIPATION IN WORKERS' COMPENSATION
GROUP SELF-INSURANCE**

<p>1a. Legal Name and Address of Business Participating in Group Self-Insurance (Use Street Address Only): ARK SYSTEMS ELECTRIC CORP. 27-08 42ND ROAD LONG ISLAND CITY, NY 11101</p>	<p>1d. Business Telephone Number of Business referenced in box "1a": (718) 482-3922</p>
<p>1b. Effective Date of Membership in the Group: 11-11-2010 to 12-18-2019 Policy Number: B48</p>	<p>1e. NYS Unemployment Insurance Employer Registration Number of Business referenced in box "1a": 58-26722-8</p>
<p>1c. The Proprietor, Partners, or Executive Officers are: <input type="checkbox"/> included (only check box if all partners/officers are included) <input type="checkbox"/> all excluded or certain partners/officers are excluded</p>	<p>1f. Federal Employer Identification Number of Business referenced in box "1a": 11-3405991</p>
<p>2. Name and Address of the Entity Requesting Proof of Coverage (Entity Being Listed as Certificate Holder): NYC Department of Design and Construction 30-30 Thomson Avenue, 1st Floor Long Island, NY 11101</p> <p>LOC: Bellevue Men's Shelter Electrical Upgrade and Generator E-Pin:85018B0101/ DDC PIN 8502018HR0009C 400 East 30th Street New York, NY 10016</p>	<p>3. Name and Address of Group Self-Insurer: Electrical Employers Self Ins. Safety Plan 158-11 Harry Van Arsdale Jr. Avenue Flushing, NY 11365</p>

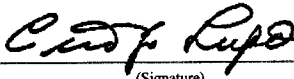
This certifies that the business referenced above in box "1a" is complying with the mandatory coverage requirements of the New York State Workers' Compensation Law as a participating member of the Group Self-Insurer listed above in box "3" and participation in such group self-insurance is still in force. The Group Self-Insurer's Administrator will send this Certificate of Participation to the entity listed above as the certificate holder in box "2".

The Group Self-Insurer's Administrator will notify the above certificate holder within 10 days if the membership of the participant listed in box "1a" terminated. (These notices may be sent by regular mail.) Otherwise, this Certificate is valid for a maximum of one year from the date certified by the group self-insurer.

If this certificate is no longer valid according to the above guidelines and the business referenced in box "1a" continues to be named on a permit, license or contract issued by the certificate holder, the business must provide the certificate holder either with a new certificate or other authorized proof the business is complying with the mandatory coverage requirements of the New York State Workers' Compensation Law.

Under penalty of perjury, I certify that I am an authorized representative of the Group Self-Insurer referenced above and that the business referenced in box "1a" has the coverage as depicted on this form.

Certified by: Ciro J. Lupo
(Print name of authorized representative of the Group Self-Insurer)

Certified by:  12-18-2018
(Signature) (Date)

Title: Chairman

Telephone Number: (718) 591-2800

WORKERS' COMPENSATION LAW

Section 57 Restriction on issue of permits and the entering into contracts unless compensation is secured.

1. The head of a state or municipal department, board, commission, or office authorized or required by law to issue any permit for or in connection with any work involving the employment of employees in a hazardous employment defined by this chapter, 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 compensation for all employees has been secured as provided by the chapter. Nothing herein, however, shall be constructed as creating any liability on the part of such state or municipal department, board, commission or office to pay any compensation to any such employee if so employed.
2. The head of a state or municipal department, board, commission or office authorized or required by law to enter into any contract for or in connection with any work involving the employment of employees in a hazardous employment defined by the chapter, 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 compensation for all employees has been secured as provided by the chapter.

This is to certify that the Workers' Compensation and Employer's Liability Insurance issued to the named insured is in force at this time and affords the following coverage:

Limits of Liability

Workers' Compensation Coverage "A":	Statutory
Employer's Liability Coverage "B":	Unlimited

The policy includes a waiver of subrogation endorsement under which E.E.S.I.S.P. agrees to waive its right of subrogation to bring an action against the certificate holder to recover amounts we paid in Workers' Compensation and/or medical benefits to or on behalf of an employee of our insured in the event that, prior to the date of the accident, the certificate holder has entered into a written contract with our insured that requires that such right of subrogation be waived.

Please note: This certificate is valid only through the policy dates indicated above, OR a maximum of one year after this form is approved by the authorized representatives of the Group Self-Insurer. At the expiration of those dates, if the business continues to be named on a permit or contract issued by the above government entity, the business must provide that government entity with a new Certificate. The business must also provide a new Certificate upon notice of cancellation or change in status of the policy.

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

<u>CLASSIFICATION</u>	<u>PAGE</u>
ASBESTOS HANDLER	3
BOILERMAKER.....	3
BRICKLAYER.....	4
CARPENTER.....	5
CARPENTER - HIGH RISE CONCRETE FORMS	6
CEMENT MASON.....	7
CEMENT AND CONCRETE WORKER.....	7
DERRICKPERSON & RIGGER (STONE).....	8
DOCKBUILDER/PILE DRIVER.....	9
ELECTRICIAN	10
ELEVATOR CONSTRUCTOR	12
ELEVATOR REPAIR & MAINTENANCE	13
ENGINEER	14
ENGINEER - OPERATING	15
FLOOR COVERER	16
GLAZIER	16
HEAT & FROST INSULATOR	17
HOUSE WRECKER	18
IRON WORKER - ORNAMENTAL.....	18
IRON WORKER - STRUCTURAL.....	19
LABORER (FOUNDATION, CONCRETE, EXCAVATING, STREET PIPE LAYER & COMMON).....	20
MARBLE MECHANICS	21
MASON TENDER.....	22
METALLIC LATHER.....	23
MILLWRIGHT	23
PAVER AND ROADBUILDER	24
PAINTER	24
PAINTER - METAL POLISHER	25
PAINTER - STRUCTURAL STEEL.....	26
PLASTERER	26
PLASTERER - TENDER.....	27
PLUMBER	28
POINTER, WATERPROOFER, CAULKER, SANDBLASTER, STEAMBLASTER.....	29
ROOFER.....	30
SHEET METAL WORKER.....	30
SIGN ERECTOR.....	32
STEAMFITTER.....	33
STONE MASON - SETTER.....	34
TAPER.....	35
TILE LAYER - SETTER	35
TIMBERPERSON	36

ASBESTOS HANDLER

(Ratio of Apprentice Journeyperson: 1 to 1, 1 to 3)

Asbestos Handler (First 1000 Hours)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 78% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$14.25

Asbestos Handler (Second 1000 Hours)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$14.25

Asbestos Handler (Third 1000 Hours)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 83% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$14.25

Asbestos Handler (Fourth 1000 Hours)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 89% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$14.25

(Local #78)

BOILERMAKER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Boilermaker (First Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$30.84

Effective 1/1/2018 - Supplemental Benefit Rate Per Hour: \$31.26

Boilermaker (Second Year: 1st Six Months)

Effective Period: 7/1/2017 - 6/30/2018

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$32.57
Effective 1/1/2018 - Supplemental Benefit Rate Per Hour: \$33.02

Boilermaker (Second Year: 2nd Six Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$34.29
Effective 1/1/2018 - Supplemental Benefit Rate Per Hour: \$34.78

Boilermaker (Third Year: 1st Six Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$36.03
Effective 1/1/2018 - Supplemental Benefit Rate Per Hour: \$36.56

Boilermaker (Third Year: 2nd Six Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 85% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$37.76
Effective 1/1/2018 - Supplemental Benefit Rate Per Hour: \$38.32

Boilermaker (Fourth Year: 1st Six Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$39.51
Effective 1/1/2018 - Supplemental Benefit Rate Per Hour: \$40.09

Boilermaker (Fourth Year: 2nd Six Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$41.22
Effective 1/1/2018 - Supplemental Benefit Rate Per Hour: \$41.84

(Local #5)

BRICKLAYER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Bricklayer (First 750 Hours)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$18.80

Bricklayer (Second 750 Hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$18.80

Bricklayer (Third 750 Hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$18.80

Bricklayer (Fourth 750 Hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$18.80

Bricklayer (Fifth 750 Hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$18.80

Bricklayer (Sixth 750 Hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$18.80

(Bricklayer District Council)

CARPENTER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Carpenter (First Year)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Benefit Rate Per Hour For Building Apprentice: \$31.34

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$33.03

Carpenter (Second Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Benefit Rate Per Hour For Building Apprentice: \$31.34

Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$33.03

Carpenter (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Benefit Rate Per Hour For Building Apprentice: \$31.34

Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$33.03

Carpenter (Fourth Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Benefit Rate Per Hour For Building Apprentice: \$31.34

Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$33.03

(Carpenters District Council)

CARPENTER - HIGH RISE CONCRETE FORMS
(Ratio of Apprentice to Journeyperson: 1 to 1, 2 to 5)

Carpenter - High Rise (First Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$16.86

Supplemental Benefit Rate per Hour: \$16.20

Carpenter - High Rise (Second Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$23.16

Supplemental Benefit Rate per Hour: \$16.33

Carpenter - High Rise (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$29.61

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$16.46

Carpenter - High Rise (Fourth Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$37.07

Supplemental Benefit Rate per Hour: \$16.61

(Carpenters District Council)

CEMENT MASON

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Cement Mason (First Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 50% of Journeyman's Rate

Cement Mason (Second Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 60% of Journeyman's Rate

Cement Mason (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 70% of Journeyman's Rate

(Local #780)

CEMENT AND CONCRETE WORKER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Cement & Concrete Worker (First 1333 hours)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 50% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$17.75

Cement & Concrete Worker (Second 1333 hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$23.03

Cement & Concrete Worker (Last 1334 hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$24.30

Cement & Concrete Worker (Hired after 2/6/2016 - First 1334 hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: \$16.96
Supplemental Benefit Rate Per Hour: \$11.80

Cement & Concrete Worker (Hired after 2/6/2016 - Second 1334 hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: \$22.08
Supplemental Benefit Rate Per Hour: \$16.49

Cement & Concrete Worker (Hired after 2/6/2016 - Last 1334 hours)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: \$27.20
Supplemental Benefit Rate Per Hour: \$17.33

(Cement Concrete Workers District Council)

DERRICKPERSON & RIGGER (STONE)
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Derrickperson & Rigger (stone) - First Year

Effective Period: 7/1/2017 - 6/30/2018
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: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 70% of Journeyperson's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

Derrickperson & Rigger (stone) - Second Year: 2nd Six Months

Effective Period: 7/1/2017 - 6/30/2018

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: 7/1/2017 - 6/30/2018

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: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 40% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$33.03

Dockbuilder/Pile Driver (Second Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$33.03

Dockbuilder/Pile Driver (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$33.03

Dockbuilder/Pile Driver (Fourth Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$33.03

(Carpenters District Council)

ELECTRICIAN

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Electrician (First Term: 0-6 Months)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: **\$14.00**

Supplemental Benefit Rate per Hour: **\$12.37**

Overtime Supplemental Rate Per Hour: **\$13.29**

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: **\$14.50**

Supplemental Benefit Rate per Hour: **\$12.63**

Overtime Supplemental Rate Per Hour: **\$13.58**

Electrician (First Term: 7-12 Months)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: **\$15.00**

Supplemental Benefit Rate per Hour: **\$12.88**

Overtime Supplemental Rate Per Hour: **\$13.87**

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: **\$15.50**

Supplemental Benefit Rate per Hour: **\$13.14**

Overtime Supplemental Rate Per Hour: **\$14.16**

Electrician (Second Term: 0-6 Months)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: **\$16.00**

Supplemental Benefit Rate per Hour: **\$13.39**

Overtime Supplemental Rate Per Hour: **\$14.44**

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: **\$16.50**

Supplemental Benefit Rate per Hour: **\$13.64**

Overtime Supplemental Rate Per Hour: **\$14.73**

Electrician (Second Term: 7-12 Months)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: **\$17.00**

Supplemental Benefit Rate per Hour: **\$13.90**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Overtime Supplemental Rate Per Hour: \$15.02

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: \$17.50

Supplemental Benefit Rate per Hour: \$14.15

Overtime Supplemental Rate Per Hour: \$15.31

Electrician (Third Term: 0-6 Months)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: \$18.00

Supplemental Benefit Rate per Hour: \$14.41

Overtime Supplemental Rate Per Hour: \$15.59

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: \$18.50

Supplemental Benefit Rate per Hour: \$14.66

Overtime Supplemental Rate Per Hour: \$15.88

Electrician (Third Term: 7-12 Months)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: \$19.00

Supplemental Benefit Rate per Hour: \$14.92

Overtime Supplemental Rate Per Hour: \$16.17

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: \$19.50

Supplemental Benefit Rate per Hour: \$15.17

Overtime Supplemental Rate Per Hour: \$16.45

Electrician (Fourth Term: 0-6 Months)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: \$20.00

Supplemental Benefit Rate per Hour: \$15.43

Overtime Supplemental Rate Per Hour: \$16.74

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: \$20.50

Supplemental Benefit Rate per Hour: \$15.68

Overtime Supplemental Rate Per Hour: \$17.03

Electrician (Fourth Term: 7-12 Months)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: \$22.00

Supplemental Benefit Rate per Hour: \$16.44

Overtime Supplemental Rate Per Hour: \$17.89

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 5/10/2018 - 6/30/2018
Wage Rate per Hour: \$22.50
Supplemental Benefit Rate per Hour: \$16.70
Overtime Supplemental Rate Per Hour: \$18.18

Electrician (Fifth Term: 0-12 Months)

Effective Period: 7/1/2017 - 5/9/2018
Wage Rate per Hour: \$24.00
Supplemental Benefit Rate per Hour: \$19.80
Overtime Supplemental Rate Per Hour: \$21.30

Effective Period: 5/10/2018 - 6/30/2018
Wage Rate per Hour: \$24.50
Supplemental Benefit Rate per Hour: \$20.30
Overtime Supplemental Rate Per Hour: \$21.84

Electrician (Fifth Term: 13-18 Months)

Effective Period: 7/1/2017 - 5/9/2018
Wage Rate per Hour: \$28.50
Supplemental Benefit Rate per Hour: \$22.10
Overtime Supplemental Rate Per Hour: \$23.89

Effective Period: 5/10/2018 - 6/30/2018
Wage Rate per Hour: \$29.00
Supplemental Benefit Rate per Hour: \$22.65
Overtime Supplemental Rate Per Hour: \$24.47

Overtime Description

Overtime Wage paid at time and one half the regular rate

(Local #3)

ELEVATOR CONSTRUCTOR

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)

Elevator (Constructor) - First Year

Effective Period: 7/1/2017 - 3/16/2018
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$29.88

Effective Period: 3/17/2018 - 6/30/2018

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: \$31.35

Elevator (Constructor) - Second Year

Effective Period: 7/1/2017 - 3/16/2018
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.31

Effective Period: 3/17/2018 - 6/30/2018
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: \$31.80

Elevator (Constructor) - Third Year

Effective Period: 7/1/2017 - 3/16/2018
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: \$31.19

Effective Period: 3/17/2018 - 6/30/2018
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: \$32.70

Elevator (Constructor) - Fourth Year

Effective Period: 7/1/2017 - 3/16/2018
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: \$32.07

Effective Period: 3/17/2018 - 6/30/2018
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: \$33.60

(Local #1)

ELEVATOR REPAIR & MAINTENANCE

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Elevator Service/Modernization Mechanic (First Year)

Effective Period: 7/1/2017 - 3/16/2018
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Per Hour: \$29.80

Effective Period: 3/17/2018 - 6/30/2018
Wage Rate Per Hour: 50% of Journeyperson's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Per Hour: \$31.28

Elevator Service/Modernization Mechanic (Second Year)

Effective Period: 7/1/2017 - 3/16/2018
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Benefit Per Hour: \$30.23

Effective Period: 3/17/2018 - 6/30/2018
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Benefit Per Hour: \$31.72

Elevator Service/Modernization Mechanic (Third Year)

Effective Period: 7/1/2017 - 3/16/2018
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Per Hour: \$31.09

Effective Period: 3/17/2018 - 6/30/2018
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Per Hour: \$32.60

Elevator Service/Modernization Mechanic (Fourth Year)

Effective Period: 7/1/2017 - 3/16/2018
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Per Hour: \$31.95

Effective Period: 3/17/2018 - 6/30/2018
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Per Hour: \$33.49

(Local #1)

ENGINEER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 5)

Engineer - First Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$24.77
Supplemental Benefit Rate per Hour: \$24.62

Engineer - Second Year

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$30.97**
Supplemental Benefit Rate per Hour: **\$24.62**

Engineer - Third Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$34.06**
Supplemental Benefit Rate per Hour: **\$24.62**

Engineer - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$37.16**
Supplemental Benefit Rate per Hour: **\$24.62**

(Local #15)

ENGINEER - OPERATING
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 5)

Operating Engineer - First Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour 40% of Journeyman's Rate
Supplemental Benefit Per Hour: **\$20.85**

Operating Engineer - Second Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 50% of Journeyman's Rate
Supplemental Benefit Per Hour: **\$20.85**

Operating Engineer - Third Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 60% of Journeyman's Rate
Supplemental Benefit Per Hour: **\$20.85**

(Local #14)

FLOOR COVERER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Floor Coverer (First Year)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 40% of Journeyman's rate
Supplemental Rate Per Hour: \$31.14

Floor Coverer (Second Year)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$31.14

Floor Coverer (Third Year)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Rate Per Hour: \$31.14

Floor Coverer (Fourth Year)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Rate Per Hour: \$31.14

(Carpenters District Council)

GLAZIER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Glazier (First Year)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 40% of Journeyman's rate
Supplemental Rate Per Hour: \$15.26

Glazier (Second Year)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 50% of Journeyman's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Rate Per Hour: \$25.36

Glazier (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 60% of Journeyperson's rate

Supplemental Rate Per Hour: \$28.62

Glazier (Fourth Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: \$34.67

(Local #1281)

HEAT & FROST INSULATOR

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Heat & Frost Insulator (First Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Heat & Frost Insulator (Second Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Heat & Frost Insulator (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 70% of Journeyperson's rate

Heat & Frost Insulator (Fourth Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #12)

**HOUSE WRECKER
(TOTAL DEMOLITION)
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

House Wrecker - First Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$21.17

Supplemental Benefit Rate per Hour: \$18.54

House Wrecker - Second Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$22.32

Supplemental Benefit Rate per Hour: \$18.54

House Wrecker - Third Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$23.97

Supplemental Benefit Rate per Hour: \$18.54

House Wrecker - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$26.53

Supplemental Benefit Rate per Hour: \$18.54

(Mason Tenders District Council)

**IRON WORKER - ORNAMENTAL
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)**

Iron Worker (Ornamental) - 1st Ten Months

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 50% of Journeyman's rate

Supplemental Rate Per Hour: \$39.40

Iron Worker (Ornamental) - 11 -16 Months

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: \$40.62

Iron Worker (Ornamental) - 17 - 22 Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: \$41.83

Iron Worker (Ornamental) - 23 - 28 Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: \$44.27

Iron Worker (Ornamental) - 29 - 36 Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$46.70

(Local #580)

IRON WORKER - STRUCTURAL
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Iron Worker (Structural) - 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$26.12
Supplemental Benefit Rate per Hour: \$50.22

Iron Worker (Structural) - 7- 18 Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$26.72
Supplemental Benefit Rate per Hour: \$50.22

Iron Worker (Structural) - 19 - 36 months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$27.32

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$50.22

(Local #40 and #361)

**LABORER (FOUNDATION, CONCRETE, EXCAVATING, STREET PIPE
LAYER & COMMON)**

(Ratio Apprentice to Journeyman: 1 to 1, 1 to 3)

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - First
1000 hours**

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$40.63

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) -
Second 1000 hours**

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 60% of Journeyman's rate
Supplemental Rate Per Hour: \$40.63

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) -
Third 1000 hours**

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Rate Per Hour: \$40.63

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) -
Fourth 1000 hours**

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 90% of Journeyman's rate
Supplemental Rate Per Hour: \$40.63

(Local #731)

MARBLE MECHANICS

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Cutters & Setters - First 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Cutters & Setters - Second 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 55% of Journeyman's rate

Cutters & Setters - Third 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 65% of Journeyman's rate

Cutters & Setters - Fourth 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 75% of Journeyman's rate

Cutters & Setters - Fifth 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 85% of Journeyman's rate

Cutters & Setters - Sixth 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 95% of Journeyman's rate

Polishers & Finishers - First 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Polishers & Finishers - Second 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

Polishers & Finishers - Third 750 Hours

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Polishers & Finishers - Fourth 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$21.39

Supplemental Benefit Rate per Hour: \$19.65

Mason Tender - Second Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$22.54

Supplemental Benefit Rate per Hour: \$19.65

Mason Tender - Third Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$24.29

Supplemental Benefit Rate per Hour: \$19.70

Mason Tender - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$26.95

Supplemental Benefit Rate per Hour: \$19.70

(Local #79)

METALLIC LATHER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Metallic Lather (First Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$28.38

Supplemental Benefit Rate per Hour: \$10.96

Metallic Lather (Second Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$32.38

Supplemental Benefit Rate per Hour: \$12.96

Metallic Lather (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$35.38

Supplemental Benefit Rate per Hour: \$17.12

Metallic Lather (Fourth Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$37.38

Supplemental Benefit Rate per Hour: \$17.92

(Local #46)

MILLWRIGHT

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Millwright (First Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$28.33

Supplemental Benefit Rate per Hour: \$34.28

Millwright (Second Year)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$33.48

Supplemental Benefit Rate per Hour: \$37.88

Millwright (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$38.63

Supplemental Benefit Rate per Hour: \$42.13

Millwright (Fourth Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$48.93

Supplemental Benefit Rate per Hour: \$48.69

(Local #740)

PAVER AND ROADBUILDER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Paver and Roadbuilder - First Year (Minimum 1000 hours)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$27.86

Supplemental Benefit Rate per Hour: \$19.25

Paver and Roadbuilder - Second Year (Minimum 1000 hours)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$29.50

Supplemental Benefit Rate per Hour: \$19.25

(Local #1010)

PAINTER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Painter - Brush & Roller - First Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$17.00
Supplemental Benefit Rate per Hour: \$13.42

Painter - Brush & Roller - Second Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$21.25
Supplemental Benefit Rate per Hour: \$17.43

Painter - Brush & Roller - Third Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$25.50
Supplemental Benefit Rate per Hour: \$20.50

Painter - Brush & Roller - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$34.00
Supplemental Benefit Rate per Hour: \$26.20

(District Council of Painters)

PAINTER - METAL POLISHER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Metal Polisher (First Year)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$11.75
Supplemental Benefit Rate per Hour: \$5.13

Metal Polisher (Second Year)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$13.00
Supplemental Benefit Rate per Hour: \$5.13

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Metal Polisher (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$15.75

Supplemental Benefit Rate per Hour: \$5.13

(Local 8A-28)

PAINTER - STRUCTURAL STEEL

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Painters - Structural Steel (First Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 40% of Journeyman's rate

Painters - Structural Steel (Second Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

Painters - Structural Steel (Third Year)

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

(Local #806)

PLASTERER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Plasterer - First Year: 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 40% of Journeyman's rate

Supplemental Rate Per Hour: \$13.59

Plasterer - First Year: 2nd Six Months

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: \$14.07

Plasterer - Second Year: 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: \$16.04

Plasterer - Second Year: 2nd Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: \$17.12

Plasterer - Third Year: 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: \$19.29

Plasterer - Third Year: 2nd Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: \$20.37

(Local #530)

PLASTERER - TENDER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Plasterer Tender - First Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$21.39
Supplemental Benefit Rate per Hour: \$19.65

Plasterer Tender - Second Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$22.54

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: **\$19.65**

Plasterer Tender - Third Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$24.29**

Supplemental Benefit Rate per Hour: **\$19.70**

Plasterer Tender - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$26.95**

Supplemental Benefit Rate per Hour: **\$19.70**

(Local #79)

PLUMBER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Plumber - First Year: 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$16.28**

Supplemental Benefit Rate per Hour: **\$5.43**

Plumber - First Year: 2nd Six Months

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$19.28**

Supplemental Benefit Rate per Hour: **\$6.43**

Plumber - Second Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$26.35**

Supplemental Benefit Rate per Hour: **\$17.10**

Plumber - Third Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$28.45**

Supplemental Benefit Rate per Hour: **\$17.10**

Plumber - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$31.30**
Supplemental Benefit Rate per Hour: **\$17.10**

Plumber - Fifth Year: 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$32.70**
Supplemental Benefit Rate per Hour: **\$17.10**

Plumber - Fifth Year: 2nd Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$44.77**
Supplemental Benefit Rate per Hour: **\$17.10**

(Plumbers Local #1)

**POINTER, WATERPROOFER, CAULKER, SANDBLASTER,
STEAMBLASTER**

(Exterior Building Renovation)
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - First Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$25.89**
Supplemental Benefit Rate per Hour: **\$13.64**

Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - Second Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$28.97**
Supplemental Benefit Rate per Hour: **\$18.15**

Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - Third Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$34.12**
Supplemental Benefit Rate per Hour: **\$20.90**

Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$41.33

Supplemental Benefit Rate per Hour: \$21.60

(Bricklayer District Council)

ROOFER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)

Roofer - First Year

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 35% of Journeyman's Rate

Roofer - Second Year

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 50% of Journeyman's Rate

Roofer - Third Year

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 60% of Journeyman's Rate

Roofer - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 75% of Journeyman's Rate

(Local #8)

SHEET METAL WORKER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Sheet Metal Worker (0-6 Months)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 25% of Journeyperson's rate
Supplemental Rate Per Hour: \$6.35

Sheet Metal Worker (7-18 Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 35% of Journeyperson's rate
Supplemental Rate Per Hour: \$17.12

Sheet Metal Worker (19-30 Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: \$23.54

Sheet Metal Worker (31-36 Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: \$27.70

Sheet Metal Worker (37-42 Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: \$29.11

Sheet Metal Worker (43-48 Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: \$33.96

Sheet Metal Worker (49-54 Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: \$36.07

Sheet Metal Worker (55-60 Months)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$38.15

(Local #28)

SIGN ERECTOR

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Sign Erector - First Year: 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 35% of Journeyman's rate
Supplemental Rate Per Hour: \$14.72

Sign Erector - First Year: 2nd Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 40% of Journeyman's rate
Supplemental Rate Per Hour: \$16.71

Sign Erector - Second Year: 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 45% of Journeyman's rate
Supplemental Rate Per Hour: \$18.68

Sign Erector - Second Year: 2nd Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$20.68

Sign Erector - Third Year: 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Rate Per Hour: \$27.72

Sign Erector - Third Year: 2nd Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 60% of Journeyman's rate
Supplemental Rate Per Hour: \$30.57

Sign Erector - Fourth Year: 1st Six Months

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Rate Per Hour: \$33.31

Sign Erector - Fourth Year: 2nd Six Months

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: \$35.83

Sign Erector - Fifth Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: \$38.32

Sign Erector - Sixth Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$40.81

(Local #137)

STEAMFITTER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Steamfitter - First Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate and Supplemental Per Hour: 40% of Journeyperson's rate

Steamfitter - Second Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate and Supplemental Rate Per Hour: 50% of Journeyperson's rate.

Steamfitter - Third Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate and Supplemental Rate per Hour: 65% of Journeyperson's rate.

Steamfitter - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate and Supplemental Rate Per Hour: 80% of Journeyperson's rate.

Steamfitter - Fifth Year

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate and Supplemental Rate Per Hour: 85% of Journeyperson's rate.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

(Local #638)

STONE MASON - SETTER
(Ratio Apprentice of Journeyman: 1 to 1, 1 to 2)

Stone Mason - Setters - First 750 Hours

Effective Period: 7/1/2017 - 6/30/2018
Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Second 750 Hours

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 60% of Journeyman's rate
Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Third 750 Hours

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 70% of Journeyman's rate
Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Fourth 750 Hours

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Fifth 750 Hours

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 90% of Journeyman's rate
Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Sixth 750 Hours

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate Per Hour: 100% of Journeyman's rate
Supplemental Rate Per Hour: 50% of Journeyman's rate

(Bricklayers District Council)

TAPER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Drywall Taper - First Year

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 40% of Journeyman's rate

Drywall Taper - Second Year

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

Drywall Taper - Third Year

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

(Local #1974)

TILE LAYER - SETTER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Tile Layer - Setter - First 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

Tile Layer - Setter - Second 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 55% of Journeyman's rate

Tile Layer - Setter - Third 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 65% of Journeyman's rate

Tile Layer - Setter - Fourth 750 Hours

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Tile Layer - Setter - Fifth 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

Tile Layer - Setter - Sixth 750 Hours

Effective Period: 7/1/2017 - 6/30/2018

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: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 40% of Journeyperson's rate

Supplemental Rate Per Hour: \$32.79

Timberperson - Second Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Rate Per Hour: \$32.79

Timberperson - Third Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Rate Per Hour: \$32.79

Timberperson - Fourth Year

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: \$32.79

(Local #1536)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

LABOR LAW §220 PREVAILING WAGE SCHEDULE

Workers, Laborers and Mechanics employed on a public work project must receive not less than the prevailing rate of wage and benefits for the classification of work performed by each upon such public work. Pursuant to Labor Law §220 the Comptroller of the City of New York has promulgated this schedule solely for Workers, Laborers and Mechanics engaged by private contractors on New York City public work contracts.

This schedule is a compilation of separate determinations of the prevailing rate of wage and supplements made by the Comptroller for each trade classification listed herein pursuant to New York State Labor Law section 220 (5). The source of the wage and supplement rates, whether a collective bargaining agreement, survey data or other, is listed at the end of each classification.

Agency Chief Contracting Officers should contact the Bureau of Labor Law's Classification Unit with any questions concerning trade classifications, prevailing rates or prevailing practices with respect to procurement on New York City public works contracts. Contractors are advised to review the Comptroller's Prevailing Wage Schedule before bidding on public works contracts. Contractors with questions concerning trade classifications, prevailing rates or prevailing practices with respect to public works contracts in the procurement stage must contact the contracting agency responsible for the procurement.

Any error as to compensation under the prevailing wage law or other information as to trade classification, made by the contracting agency in the contract documents or in any other communication, will not preclude a finding against the contractor of prevailing wage violation.

Any questions concerning trade classifications, prevailing rates or prevailing practices on New York City public works contracts that have already been awarded may be directed to the Bureau of Labor Law's Classification Unit by calling (212) 669-4443. All callers must have the agency name and contract registration number available when calling with questions on public works contracts. Please direct all other compliance issues to: Bureau of Labor Law, Attn: Wasyl Kinach, P.E., Office of the Comptroller, 1 Centre Street, Room 651, New York, N.Y. 10007; Fax (212) 669-4002.

The appropriate schedule of prevailing wages and benefits must be posted at all public work sites pursuant to Labor Law §220 (3-a) (a).

This schedule is applicable to work performed during the effective period, unless otherwise noted. Changes to this schedule are published on our web site www.comptroller.nyc.gov. Contractors must pay the wages and supplements in effect when the worker, laborer, mechanic performs the work. Preliminary schedules for future one-year periods appear in the City Record on or about June 1 each succeeding year. Final schedules appear on or about July 1 in the City Record and on our web site www.comptroller.nyc.gov.

The Comptroller's Office has attempted to include all overtime, shift and night differential, Holiday, Saturday, Sunday or other premium time work. However, this schedule does not set forth every prevailing practice with respect to such rates with which employers must comply. All such practices are nevertheless part of the employer's prevailing wage obligation and contained in the collective bargaining agreements of the prevailing wage unions. These collective bargaining agreements are available for inspection by appointment. Requests for appointments may be made by calling (212) 669-4443, Monday through Friday between the hours of 9 a.m. and 5 p.m.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Prevailing rates and ratios for apprentices are attached to this schedule in the Appendix. Pursuant to Labor Law §220 (3-e), only apprentices who are individually registered in a bona fide program to which the employer contractor is a participant, registered with the New York State Department of Labor, may be employed on a public work project. Workers who are not journey persons or not registered apprentices pursuant to Labor Law §220 (3-e) may not be substituted for apprentices and must be paid as journey persons.

Public Work construction, reconstruction, demolition, excavation, rehabilitation, repair, renovation, alteration, or improvement contracts awarded pursuant to a Project Labor Agreement ("PLA") in accordance with Labor Law section 222 may have different labor standards for shift, premium and overtime work. Please refer to the PLA's pre-negotiated labor agreements for wage and benefit rates applicable to work performed outside of the regular workday. More information is available at the Mayor's Office of Contract Services (MOCS) web page at <http://www.nyc.gov/html/mocs/html/vendors/pla.shtml>.

All the provisions of Labor Law section 220 remain applicable to PLA work including, but not limited to, the enforcement of prevailing wage requirements by the Comptroller; however, we will enforce shift, premium, overtime and other non-standard rates as they appear in a project's pre-negotiated labor agreement.

In order to meet their obligation to provide prevailing supplemental benefits to each covered employee, employers must either:

- 1) Provide bona fide fringe 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 fringe benefits and wage supplements which cost the employer no less than the prevailing supplemental benefits rate in total.

Although prevailing wage laws do not require employers to provide bona fide fringe benefits (as opposed to wage supplements) to their employees, other laws may. For example, the Employee Retirement Income Security Act, 29 U.S.C. § 1001 et seq., the Patient Protection and Affordable Care Act, 42 U.S.C. § 18001 et seq., and the New York City Paid Sick Leave Law, N.Y.C. Admin. Code § 20-911 et seq., require certain employers to provide certain benefits to their employees. Labor agreements to which employers are a party may also require certain benefits. The Comptroller's Office does not enforce these laws or agreements.

Employers must provide prevailing supplemental benefits at the straight time rate for each hour worked unless otherwise noted in the classification.

Wasył Kinach, P.E.
Director of Classifications
Bureau of Labor Law

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
 §220 PREVAILING WAGE SCHEDULE

TABLE OF CONTENTS

<u>CLASSIFICATION</u>	<u>PAGE</u>
ASBESTOS HANDLER	5
BLASTER	5
BOILERMAKER.....	7
BRICKLAYER.....	8
CARPENTER - BUILDING COMMERCIAL	9
CARPENTER - HEAVY CONSTRUCTION WORK.....	10
CARPENTER - HIGH RISE CONCRETE FORMS	11
CARPENTER - SIDEWALK SHED, SCAFFOLD AND HOIST.....	12
CEMENT & CONCRETE WORKER.....	13
CEMENT MASON.....	14
CORE DRILLER	15
DERRICKPERSON AND RIGGER	16
DIVER.....	17
DOCKBUILDER - PILE DRIVER.....	18
DRIVER: TRUCK (TEAMSTER)	19
ELECTRICIAN	21
ELECTRICIAN - ALARM TECHNICIAN.....	24
ELECTRICIAN-STREET LIGHTING WORKER	25
ELEVATOR CONSTRUCTOR	26
ELEVATOR REPAIR & MAINTENANCE.....	27
ENGINEER	28
ENGINEER - CITY SURVEYOR AND CONSULTANT.....	33
ENGINEER - FIELD (BUILDING CONSTRUCTION)	34
ENGINEER - FIELD (HEAVY CONSTRUCTION)	35
ENGINEER - FIELD (STEEL ERECTION)	36
ENGINEER - OPERATING	37
FLOOR COVERER	45
GLAZIER	46
GLAZIER - REPAIR & MAINTENANCE	47
HEAT AND FROST INSULATOR	48
HOUSE WRECKER.....	49
IRON WORKER - ORNAMENTAL.....	49
IRON WORKER - STRUCTURAL.....	50
LABORER	51
LANDSCAPING.....	52

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

MARBLE MECHANIC.....	54
MASON TENDER.....	55
MASON TENDER (INTERIOR DEMOLITION WORKER).....	56
METALLIC LATHER.....	56
MILLWRIGHT.....	57
MOSAIC MECHANIC.....	58
PAINTER.....	59
PAINTER - METAL POLISHER.....	60
PAINTER - STRIPER.....	61
PAINTER - STRUCTURAL STEEL.....	62
PAPERHANGER.....	63
PAVER AND ROADBUILDER.....	64
PLASTERER.....	66
PLASTERER - TENDER.....	67
PLUMBER.....	67
PLUMBER (MECHNICAL EQUIPMENT AND SERVICE).....	68
PLUMBER (RESIDENTIAL RATES FOR 1, 2 AND 3 FAMILY HOME CONSTRUCTION).....	69
PLUMBER: PUMP & TANK.....	70
POINTER, WATERPROOFER, CAULKER, SANDBLASTER, STEAMBLASTER.....	71
ROOFER.....	72
SHEET METAL WORKER.....	72
SHEET METAL WORKER - SPECIALTY.....	73
SHIPYARD WORKER.....	74
SIGN ERECTOR.....	76
STEAMFITTER.....	76
STEAMFITTER - REFRIGERATION AND AIR CONDITIONER.....	78
STONE MASON - SETTER.....	80
TAPER.....	81
TELECOMMUNICATION WORKER.....	82
TILE FINISHER.....	83
TILE LAYER - SETTER.....	84
TIMBERPERSON.....	84
TUNNEL WORKER.....	85
WELDER.....	87

ASBESTOS HANDLER

(Hazardous Material; Disturbs, removes, encapsulates, repairs, or encloses friable asbestos material)

Asbestos Handler

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$36.00**

Supplemental Benefit Rate per Hour: **\$16.45**

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Sunday.

Time and one half the regular hourly rate after 40 hours in any work week.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Easter

Paid Holidays

None

(Local #78 and Local #12A)

BLASTER

Blaster

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$46.27**

Supplemental Benefit Rate per Hour: **\$47.99**

Blaster (Hydraulic)

Effective Period: 7/1/2017 - 6/30/2018

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$47.15
Supplemental Benefit Rate per Hour: \$47.99

Blaster - Trac Drill Hydraulic

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$41.29
Supplemental Benefit Rate per Hour: \$47.99

Blaster - Wagon: Air Trac: Quarry Bar: Drillrunners

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$40.46
Supplemental Benefit Rate per Hour: \$47.99

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: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$39.34
Supplemental Benefit Rate per Hour: \$47.99

Blaster - Powder Carriers

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$35.17
Supplemental Benefit Rate per Hour: \$47.99

Blaster - Hydraulic Trac Drill Chuck Tender

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$33.81
Supplemental Benefit Rate per Hour: \$47.99

Blaster - Chuck Tender & Nipper

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$33.00
Supplemental Benefit Rate per Hour: \$47.99

Blaster - Magazine Keepers: (Watch Person)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$18.22
Supplemental Benefit Rate per Hour: \$47.99

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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 two hours of overtime Monday through Friday, the first ten hours, the first ten hours of work on Saturday and for Make-up Time. Double time for all hours over ten Monday through Saturday (except make-up hours) and for all hours worked on Sunday and Holidays.

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

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: 7/1/2017 - 12/31/2017

Wage Rate per Hour: **\$55.23**

Supplemental Benefit Rate per Hour: **\$42.96**

Supplemental Note: For time and one half overtime - \$63.82 For double overtime - \$84.68

Effective Period: 1/1/2018 - 6/30/2018

Wage Rate per Hour: **\$57.17**

Supplemental Benefit Rate per Hour: **\$43.62**

Supplemental Note: For time and one half overtime - \$64.81 For double overtime - \$86.00

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$55.10

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$31.20

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

President'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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$52.50

Supplemental Benefit Rate per Hour: \$46.28

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$52.63

Supplemental Benefit Rate per Hour: \$49.66

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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)

CARPENTER - HIGH RISE CONCRETE FORMS
(Excludes Engineering Structures and Building Foundations)

Carpenter High Rise A

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$50.78**

Supplemental Benefit Rate per Hour: **\$41.49**

Carpenter High Rise B

Carpenter High Rise B worker is excluded from high risk operations such as erection decking, perimeter debris netting, leading edge work, self-climbing form systems, and the installation of cocoon systems unless directly supervised by a Carpenter High Rise A worker.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$39.07**

Supplemental Benefit Rate per Hour: **\$16.65**

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

Time and one half 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

The second shift wage rate shall be 113% of the straight time hourly wage rate. There must be a first shift in order to work a second shift.

(Carpenters District Council)

CARPENTER - SIDEWALK SHED, SCAFFOLD AND HOIST

Carpenter - Hod Hoist

(Assisted by Mason Tender)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$50.50**

Supplemental Benefit Rate per Hour: **\$39.46**

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

Day after Thanksgiving

Christmas Day

Paid Holidays

None

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

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)

CEMENT & CONCRETE WORKER

Cement & Concrete Worker

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$42.48**

Supplemental Benefit Rate per Hour: **\$26.00**

Supplemental Note: \$29.50 on Saturdays; \$33.00 on Sundays & Holidays

Cement & Concrete Worker - (Hired after 2/6/2016)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$32.00**

Supplemental Benefit Rate per Hour: **\$18.00**

Supplemental Note: \$19.50 on Saturdays; \$21.00 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$42.62**

Supplemental Benefit Rate per Hour: **\$38.96**

Supplemental Note: For time and one half overtime - \$48.21; For double overtime - \$57.46

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) (BCA)

CORE DRILLER

Core Driller

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$38.82**

Supplemental Benefit Rate per Hour: **\$24.66**

Core Driller Helper

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$30.96**

Supplemental Benefit Rate per Hour: **\$24.66**

Core Driller Helper(Third year in the industry)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$27.86**

Supplemental Benefit Rate per Hour: **\$24.66**

Core Driller Helper (Second year in the industry)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$24.77**

Supplemental Benefit Rate per Hour: **\$24.66**

Core Driller Helper (First year in the industry)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$21.67**

Supplemental Benefit Rate per Hour: **\$24.66**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$46.86**

Supplemental Benefit Rate per Hour: **\$51.40**

Supplemental Note: The above supplemental rate applies for work performed in Manhattan, Bronx, Brooklyn and Queens. \$52.82 - For work performed in Staten Island.

Derrick Person & Rigger - Site Work

Assists the Stone Mason-Setter in the setting of stone

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$40.29**

Supplemental Benefit Rate per Hour: **\$39.23**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$66.66**

Supplemental Benefit Rate per Hour: **\$49.66**

Diver Tender (Marine)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$47.34**

Supplemental Benefit Rate per Hour: **\$49.66**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$52.63

Supplemental Benefit Rate per Hour: \$49.66

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 - Dump Truck

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$41.18**

Supplemental Benefit Rate per Hour: **\$44.79**

Supplemental Note: Over 40 hours worked: at time and one half rate - \$19.94; at double time rate - \$26.58

Driver - Tractor Trailer

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$42.22**

Supplemental Benefit Rate per Hour: **\$45.40**

Supplemental Note: Over 40 hours worked: at time and one half rate - \$17.55; at double time rate - \$23.40

Driver - Euclid & Turnapull Operator

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$42.78**

Supplemental Benefit Rate per Hour: **\$45.40**

Supplemental Note: Over 40 hours worked: at time and one half rate - \$17.55 at double time rate - \$23.40

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Off single shift work commencing between 6:00 P.M. and 5:00 A.M. shall work eight and one half hours allowing for one half hour for lunch and receive 9 hours pay for 8 hours of work.

Driver Redi-Mix (Sand & Gravel)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$38.40

Supplemental Benefit Rate per Hour: \$42.12

Supplemental Note: Over 40 hours worked: time and one half rate \$15.99, double time rate \$21.33

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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 / Day Shift)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: **\$56.00**

Supplemental Benefit Rate per Hour: **\$54.35**

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: **\$56.00**

Supplemental Benefit Rate per Hour: **\$55.72**

Electrician "A" (Regular Day Overtime after 7 hrs / Day Shift Overtime after 8 hrs)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: **\$84.00**

Supplemental Benefit Rate per Hour: **\$57.86**

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: **\$84.00**

Supplemental Benefit Rate per Hour: **\$59.23**

Electrician "A" (Swing Shift)

Effective Period: 7/1/2017 - 5/9/2018

Wage Rate per Hour: **\$65.71**

Supplemental Benefit Rate per Hour: **\$61.94**

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: **\$65.71**

Supplemental Benefit Rate per Hour: **\$63.52**

Electrician "A" (Swing Shift Overtime After 7.5 hours)

Effective Period: 7/1/2017 - 5/9/2018

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$98.57**
Supplemental Benefit Rate per Hour: **\$66.05**

Effective Period: 5/10/2018 - 6/30/2018
Wage Rate per Hour: **\$98.57**
Supplemental Benefit Rate per Hour: **\$67.64**

Electrician "A" (Graveyard Shift)

Effective Period: 7/1/2017 - 5/9/2018
Wage Rate per Hour: **\$73.60**
Supplemental Benefit Rate per Hour: **\$68.33**

Effective Period: 5/10/2018 - 6/30/2018
Wage Rate per Hour: **\$73.60**
Supplemental Benefit Rate per Hour: **\$70.09**

Electrician "A" (Graveyard Shift Overtime After 7 hours)

Effective Period: 7/1/2017 - 5/9/2018
Wage Rate per Hour: **\$110.40**
Supplemental Benefit Rate per Hour: **\$72.95**

Effective Period: 5/10/2018 - 6/30/2018
Wage Rate per Hour: **\$110.40**
Supplemental Benefit Rate per Hour: **\$74.70**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

When so elected by the Employer, one or more shifts of at least five days duration may be scheduled as follows:
Day Shift: 8:00 am to 4:30 pm, Swing Shift 4:30 pm to 12:30 am, Graveyard Shift: 12:30 am to 8:00 am.

For multiple shifts of temporary light and/or power, the temporary light and/or power employee shall be paid for 8 hours at the straight time rate. For three or less workers performing 8 hours temporary light and/or power the supplemental benefit rate is \$25.67 and effective 5/10/18 \$25.92.

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: 7/1/2017 - 5/9/2018

Wage Rate per Hour: **\$28.50**

Supplemental Benefit Rate per Hour: **\$22.10**

First and Second Year "M" Wage Rate Per Hour: \$24.00

First and Second Year "M" Supplemental Rate: \$19.80

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: **\$29.00**

Supplemental Benefit Rate per Hour: **\$22.65**

First and Second Year "M" Wage Rate Per Hour: \$24.50

First and Second Year "M" Supplemental Rate: \$20.30

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: 7/1/2017 - 5/9/2018

Wage Rate per Hour: **\$42.75**

Supplemental Benefit Rate per Hour: **\$23.89**

First and Second Year "M" Wage Rate Per Hour: \$36.00

First and Second Year "M" Supplemental Rate: \$21.30

Effective Period: 5/10/2018 - 6/30/2018

Wage Rate per Hour: **\$43.50**

Supplemental Benefit Rate per Hour: **\$24.47**

First and Second Year "M" Wage Rate Per Hour: \$36.75

First and Second Year "M" Supplemental Rate: \$21.84

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day
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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$32.40

Supplemental Benefit Rate per Hour: \$16.10

Supplemental Note: \$14.60 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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. Up to 4 vacation days may be used as sick days.

(Local #3)

ELECTRICIAN-STREET LIGHTING WORKER

Electrician - Electro Pole Electrician

Effective Period: 7/1/2017 - 5/15/2018
Wage Rate per Hour: **\$56.00**
Supplemental Benefit Rate per Hour: **\$56.26**

Effective Period: 5/16/2018 - 6/30/2018
Wage Rate per Hour: **\$56.00**
Supplemental Benefit Rate per Hour: **\$57.63**

Electrician - Electro Pole Foundation Installer

Effective Period: 7/1/2017 - 5/15/2018
Wage Rate per Hour: **\$41.54**
Supplemental Benefit Rate per Hour: **\$41.02**

Effective Period: 5/16/2018 - 6/30/2018
Wage Rate per Hour: **\$42.16**
Supplemental Benefit Rate per Hour: **\$42.19**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Electrician - Electro Pole Maintainer

Effective Period: 7/1/2017 - 5/16/2018

Wage Rate per Hour: **\$35.58**

Supplemental Benefit Rate per Hour: **\$36.89**

Effective Period: 5/17/2018 - 6/30/2018

Wage Rate per Hour: **\$36.11**

Supplemental Benefit Rate per Hour: **\$37.93**

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: 7/1/2017 - 3/16/2018

Wage Rate per Hour: **\$62.64**

Supplemental Benefit Rate per Hour: **\$34.25**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 3/17/2018 - 6/30/2018
Wage Rate per Hour: **\$64.48**
Supplemental Benefit Rate per Hour: **\$35.85**

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: 7/1/2017 - 3/16/2018
Wage Rate per Hour: **\$49.14**
Supplemental Benefit Rate per Hour: **\$34.11**

Effective Period: 3/17/2018 - 6/30/2018
Wage Rate per Hour: **\$50.49**
Supplemental Benefit Rate per Hour: **\$35.71**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime Description

For Scheduled Service Work: Double time - work scheduled in advance by two or more workers 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

Afternoon shift - regularly hourly rate plus a (15%) fifteen percent differential. Graveyard shift - time and one half the regular rate.

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$67.32**

Supplemental Benefit Rate per Hour: **\$36.87**

Supplemental Note: \$66.34 on overtime

Shift Wage Rate: **\$107.71**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$65.31**

Supplemental Benefit Rate per Hour: **\$36.87**

Supplemental Note: \$66.34 on overtime

Shift Wage Rate: **\$104.50**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$61.93**

Supplemental Benefit Rate per Hour: **\$36.87**

Supplemental Note: \$66.34 on overtime

Shift Wage Rate: **\$99.09**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$65.00**

Supplemental Benefit Rate per Hour: **\$36.87**

Supplemental Note: \$66.34 on overtime

Shift Wage Rate: **\$104.00**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Engineer - Heavy Construction Maintenance Engineer II

On Base Mounted Tower Cranes

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$85.53**

Supplemental Benefit Rate per Hour: **\$36.87**

Supplemental Note: \$66.34 on overtime

Shift Wage Rate: **\$136.85**

Engineer - Heavy Construction Maintenance Engineer III

On Generators, Light Towers

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$42.73**

Supplemental Benefit Rate per Hour: **\$36.87**

Supplemental Note: \$66.34 on overtime

Shift Wage Rate: **\$68.37**

Engineer - Heavy Construction Maintenance Engineer IV

On Pumps and Mixers including mud sucking

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$43.86**

Supplemental Benefit Rate per Hour: **\$36.87**

Supplemental Note: \$66.34 on overtime

Shift Wage Rate: **\$70.18**

Engineer - Heavy Construction Oilers I

Gradalls, Cold Planer Grader, Concrete Pumps, Driving Truck Cranes, Driving and Operating Fuel and Grease Trucks.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$58.57**

Supplemental Benefit Rate per Hour: **\$36.87**

Supplemental Note: \$66.34 on overtime

Shift Wage Rate: **\$93.71**

Engineer - Heavy Construction Oilers II

All gasoline, electric, diesel or air operated Shovels, Draglines, Backhoes, Keystones, Pavers, Gunitite Machines, Battery of Compressors, Crawler Cranes, two-person Trenching Machines.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$40.36**

Supplemental Benefit Rate per Hour: **\$36.87**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Note: \$66.34 on overtime
Shift Wage Rate: \$64.58

Engineer - Steel Erection Maintenance Engineers

Derrick, Travelers, Tower, Crawler Tower and Climbing Cranes

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$61.13
Supplemental Benefit Rate per Hour: \$35.41
Supplemental Note: \$63.67 on overtime
Shift Wage Rate: \$97.81

Engineer - Steel Erection Oiler I

On a Truck Crane

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$57.21
Supplemental Benefit Rate per Hour: \$35.41
Supplemental Note: \$63.67 on overtime
Shift Wage Rate: \$91.54

Engineer - Steel Erection Oiler II

On a Crawler Crane

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$43.54
Supplemental Benefit Rate per Hour: \$35.41
Supplemental Note: \$63.67 on overtime
Shift Wage Rate: \$69.66

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Engineer - Building Work Maintenance Engineers I

Installing, repairing, maintaining, dismantling (of all equipment including: Steel Cutting and Bending Machines, Mechanical Heaters, Mine Hoists, Climbing Cranes, Tower Cranes, Linden Peine, Lorain, Liebherr, Mannes, or machines of a similar nature, Well Point Systems, Deep Well Pumps, Concrete Mixers with loading Device, Concrete Plants, Motor Generators when used for temporary power and lights), skid steer machines of a similar nature including bobcat.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$58.30**

Supplemental Benefit Rate per Hour: **\$35.41**

Supplemental Note: \$63.67 on overtime

Engineer - Building Work Maintenance Engineers II

On Pumps, Generators, Mixers and Heaters

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$45.28**

Supplemental Benefit Rate per Hour: **\$35.41**

Supplemental Note: \$63.67 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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$55.42**

Supplemental Benefit Rate per Hour: **\$35.41**

Supplemental Note: \$63.67 on overtime

Engineer - Building Work Oilers II

Oilers on Crawler Cranes, Backhoes, Trenching Machines, Gunite Machines, Compressors (three or more in Battery).

Effective Period: 7/1/2017 - 6/30/2018

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$41.16**
Supplemental Benefit Rate per Hour: **\$35.41**
Supplemental Note: \$63.67 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: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$38.18**
Supplemental Benefit Rate per Hour: **\$20.15**
Supplemental Note: Overtime Benefit Rate - \$27.65 per hour (time & one half) \$35.15 per hour (double time).

Instrument Person

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$31.47**
Supplemental Benefit Rate per Hour: **\$20.15**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Note: Overtime Benefit Rate - \$27.65 per hour (time & one half) \$35.15 per hour (double time).

Rodperson

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$27.24

Supplemental Benefit Rate per Hour: \$20.15

Supplemental Note: Overtime Benefit Rate - \$27.65 per hour (time & one half) \$35.15 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
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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$60.10

Supplemental Benefit Rate per Hour: \$32.15

Supplemental Note: Overtime Benefit Rate - \$44.90 per hour (time & one half) \$57.65 per hour (double time).

Field Engineer - BC Instrument Person

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$46.69

Supplemental Benefit Rate per Hour: \$32.15

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Note: Overtime Benefit Rate - \$44.90 per hour (time & one half) \$57.65 per hour (double time).

Field Engineer - BC Rodperson

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$30.20

Supplemental Benefit Rate per Hour: \$32.15

Supplemental Note: Overtime Benefit Rate - \$44.90 per hour (time & one half) \$57.65 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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$70.25

Supplemental Benefit Rate per Hour: \$34.18

Supplemental Note: Overtime benefit rate - \$47.82 per hour (time & one half), \$61.46 per hour (double time).

Field Engineer - HC Instrument Person

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$51.64

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: **\$34.18**

Supplemental Note: Overtime benefit rate - \$47.82 per hour (time & one half), \$61.46 per hour (double time).

Field Engineer - HC Rodperson

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$43.37**

Supplemental Benefit Rate per Hour: **\$34.18**

Supplemental Note: Overtime benefit rate - \$47.82 per hour (time & one half), \$61.46 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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$63.64**

Supplemental Benefit Rate per Hour: **\$33.04**

Supplemental Note: Overtime benefit rate - \$46.11 per hour (time & one half), \$59.18 per hour (double time).

Field Engineer - Steel Erection Instrument Person

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$49.59**

Supplemental Benefit Rate per Hour: **\$33.04**

Supplemental Note: Overtime benefit rate - \$46.11 per hour (time & one half), \$59.18 per hour (double time).

Field Engineer - Steel Erection Rodperson

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$33.20**

Supplemental Benefit Rate per Hour: **\$33.04**

Supplemental Note: Overtime benefit rate - \$46.11 per hour (time & one half), \$59.18 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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$76.60**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$122.56**

Operating Engineer - Road & Heavy Construction II

Backhoes, Power Shovels, Hydraulic Clam Shells, Steel Erection, Moles and machines of a similar nature.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$79.28**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$126.85**

Operating Engineer - Road & Heavy Construction III

Mine Hoists, Cranes, etc. (Used as Mine Hoists)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$81.80**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$130.88**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$79.85**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$127.76**

Operating Engineer - Road & Heavy Construction V

Pile Drivers & Rigs (employing Dock Builder foreperson): Derrick Boats, Tunnel Shovels.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$78.29**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$125.26**

Operating Engineer - Road & Heavy Construction VI

Mixers (Concrete with loading attachment), Concrete Pavers, Cableways, Land Derricks, Power Houses (Low Air Pressure Units).

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$74.42**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$119.07**

Operating Engineer - Road & Heavy Construction VII

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Barrier Movers , Barrier Transport and Machines of a Similar Nature.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$60.22**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$96.35**

Operating Engineer - Road & Heavy Construction VIII

Utility Compressors

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$46.88**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$58.92**

Operating Engineer - Road & Heavy Construction IX

Horizontal Boring Rig

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$70.79**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$113.26**

Operating Engineer - Road & Heavy Construction X

Elevators (manually operated as personnel hoist).

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$65.12**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$104.19**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$50.73**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$81.17**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Operating Engineer - Road & Heavy Construction XII

All Drills and Machines of a similar nature.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$75.19

Supplemental Benefit Rate per Hour: \$31.10

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: \$120.30

Operating Engineer - Road & Heavy Construction XIII

Concrete Pumps, Concrete Plant, Stone Crushers, Double Drum Hoist, Power Houses (other than above).

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$72.84

Supplemental Benefit Rate per Hour: \$31.10

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: \$116.54

Operating Engineer - Road & Heavy Construction XIV

Concrete Mixer

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$69.67

Supplemental Benefit Rate per Hour: \$31.10

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: \$111.47

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$47.18

Supplemental Benefit Rate per Hour: \$31.10

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: \$75.49

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$66.56

Supplemental Benefit Rate per Hour: \$31.10

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Note: \$56.50 overtime hours
Shift Wage Rate: \$106.50

Operating Engineer - Road & Heavy Construction XVII

On-Site concrete plant engineer, On-site Asphalt Plant Engineer, and Vibratory console.

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$67.07
Supplemental Benefit Rate per Hour: \$31.10
Supplemental Note: \$56.50 overtime hours
Shift Wage Rate: \$107.31

Operating Engineer - Road & Heavy Construction XVIII

Tower Crane

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$95.98
Supplemental Benefit Rate per Hour: \$31.10
Supplemental Note: \$56.50 overtime hours
Shift Wage Rate: \$153.57

Operating Engineer - Paving I

Asphalt Spreaders, Autogrades (C.M.I.), Roto/Mil

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$74.42
Supplemental Benefit Rate per Hour: \$31.10
Supplemental Note: \$56.50 overtime hours
Shift Wage Rate: \$119.07

Operating Engineer - Paving II

Asphalt Roller

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$72.50
Supplemental Benefit Rate per Hour: \$31.10
Supplemental Note: \$56.50 overtime hours
Shift Wage Rate: \$116.00

Operating Engineer - Paving III

Asphalt Plants

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$61.43

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: **\$31.10**
Supplemental Note: \$56.50 overtime hours
Shift Wage Rate: **\$98.29**

Operating Engineer - Concrete I

Cranes

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$79.50**
Supplemental Benefit Rate per Hour: **\$31.10**
Supplemental Note: \$56.50 overtime hours

Operating Engineer - Concrete II

Compressors

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$47.54**
Supplemental Benefit Rate per Hour: **\$31.10**
Supplemental Note: \$56.50 overtime hours

Operating Engineer - Concrete III

Micro-traps (Negative Air Machines), Vac-All Remediation System.

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$63.66**
Supplemental Benefit Rate per Hour: **\$31.10**
Supplemental Note: \$56.50 overtime hours

Operating Engineer - Steel Erection I

Three Drum Derricks

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$82.23**
Supplemental Benefit Rate per Hour: **\$31.10**
Supplemental Note: \$56.50 overtime hours
Shift Wage Rate: **\$131.57**

Operating Engineer - Steel Erection II

Cranes, 2 Drum Derricks, Hydraulic Cranes, Fork Lifts and Boom Trucks.

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$79.04**
Supplemental Benefit Rate per Hour: **\$31.10**
Supplemental Note: \$56.50 overtime hours
Shift Wage Rate: **\$126.46**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Operating Engineer - Steel Erection III

Compressors, Welding Machines.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$47.14**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$75.42**

Operating Engineer - Steel Erection IV

Compressors - Not Combined with Welding Machine.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$44.91**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Shift Wage Rate: **\$71.86**

Operating Engineer - Building Work I

Forklifts, Plaster (Platform machine), Plaster Bucket, Concrete Pump and all other equipment used for hoisting material.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$62.87**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$47.01**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Operating Engineer - Building Work III

Double Drum

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$71.60**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Operating Engineer - Building Work IV

Stone Derrick, Cranes, Hydraulic Cranes Boom Trucks.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$75.87**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Operating Engineer - Building Work V

Dismantling and Erection of Cranes, Relief Engineer.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$69.88**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Operating Engineer - Building Work VI

4 Pole Hoist, Single Drum Hoists.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$69.14**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

Operating Engineer - Building Work VII

Rack & Pinion and House Cars

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$54.92**

Supplemental Benefit Rate per Hour: **\$31.10**

Supplemental Note: \$56.50 overtime hours

For New House Car projects Wage Rate per Hour \$43.77

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).

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$50.50**

Supplemental Benefit Rate per Hour: **\$45.88**

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$44.70**
Supplemental Benefit Rate per Hour: **\$40.99**
Supplemental Note: Supplemental Benefit Overtime Rate: \$50.09

Overtime Description

An optional 8th hour can be worked at straight time rate. If 9th hour is worked, then both hours or more (8th & 9th or more) will be at the double time rate of pay.

Overtime

Double time the regular rate after a 7 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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 \$127,628. 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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$24.13**

Supplemental Benefit Rate per Hour: **\$21.12**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$58.38

Supplemental Benefit Rate per Hour: \$39.46

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) (BCA)

HOUSE WRECKER (TOTAL DEMOLITION)

House Wrecker - Tier A

On all work sites the first, second, eleventh and every third House Wrecker thereafter will be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). Other House Wreckers may be Tier B House Wreckers.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$36.33**

Supplemental Benefit Rate per Hour: **\$29.22**

House Wrecker - Tier B

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$25.56**

Supplemental Benefit Rate per Hour: **\$21.63**

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: 7/1/2017 - 6/30/2018

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$44.20**

Supplemental Benefit Rate per Hour: **\$51.57**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$50.05**

Supplemental Benefit Rate per Hour: **\$72.53**

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Overtime Description

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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
President's Day
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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$41.50**

Supplemental Benefit Rate per Hour: **\$40.63**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

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
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: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$28.75**
Supplemental Benefit Rate per Hour: **\$15.55**

Landscaper (3 - 6 years experience)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$27.75**
Supplemental Benefit Rate per Hour: **\$15.55**

Landscaper (up to 3 years experience)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$25.25**
Supplemental Benefit Rate per Hour: **\$15.55**

Groundperson

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$25.25**
Supplemental Benefit Rate per Hour: **\$15.55**

Tree Remover / Pruner

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$33.75**
Supplemental Benefit Rate per Hour: **\$15.55**

Landscaper Sprayer (Pesticide Applicator)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$23.75**
Supplemental Benefit Rate per Hour: **\$15.55**

Watering - Plant Maintainer

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$18.72**
Supplemental Benefit Rate per Hour: **\$15.55**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$52.74**

Supplemental Benefit Rate per Hour: **\$38.67**

Marble Finisher

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$41.46**

Supplemental Benefit Rate per Hour: **\$36.64**

Marble Polisher

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$37.93**

Supplemental Benefit Rate per Hour: **\$28.33**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Christmas Day

Paid Holidays

None

(Local #7)

MASON TENDER

Mason Tender

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$37.90**

Supplemental Benefit Rate per Hour: **\$30.59**

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)

Mason Tender Tier A

Tier A Interior Demolition Worker performs all burning, chopping, and other technically skilled tasks related to interior demolition work.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$36.19**

Supplemental Benefit Rate per Hour: **\$24.25**

Mason Tender Tier B

Tier B Interior Demolition Worker performs manual work and work incidental to demolition work, such as loading and carting of debris from the work site to an area where it can be loaded in to bins/trucks for removal. Also performs clean-up of the site when demolition is completed.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$25.38**

Supplemental Benefit Rate per Hour: **\$18.57**

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: 7/1/2017 - 6/30/2018

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$46.28**

Supplemental Benefit Rate per Hour: **\$42.92**

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

Memorial Day

Independence Day

Labor Day

Columbus 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 will be no shift differential paid on the first shift if more than one shift is employed. The shift differential will remain \$12/hour on the second and third shift for the first eight (8) hours if worked. There will be no pyramiding on overtime worked on second and third shifts. The time and one half (1.5x) rate will be against the base wage rate, not the shift differential

(Local #46)

MILLWRIGHT

Millwright

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$51.50**

Supplemental Benefit Rate per Hour: **\$52.41**

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Double time the regular rate for Sunday.
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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$46.86**

Supplemental Benefit Rate per Hour: **\$40.65**

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$51.67 per hour.

Mosaic Mechanic - Mosaic & Terrazzo Finisher

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$45.26**

Supplemental Benefit Rate per Hour: **\$40.63**

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$51.65 per hour.

Mosaic Mechanic - Machine Operator Grinder

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$45.26**

Supplemental Benefit Rate per Hour: **\$40.63**

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$51.65 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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$42.50**

Supplemental Benefit Rate per Hour: **\$28.62**

Supplemental Note: \$ 33.25 on overtime

Spray & Scaffold / Decorative / Sandblast

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$45.50**

Supplemental Benefit Rate per Hour: **\$28.62**

Supplemental Note: \$ 33.25 on overtime

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
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 - METAL POLISHER

METAL POLISHER

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$29.73
Supplemental Benefit Rate per Hour: \$7.06

METAL POLISHER - NEW CONSTRUCTION

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$30.68
Supplemental Benefit Rate per Hour: \$7.06

METAL POLISHER - SCAFFOLD OVER 34 FEET

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$33.23
Supplemental Benefit Rate per Hour: \$7.06

Overtime Description

All work performed on Saturdays shall be paid at time-in-a half. The exception being; for suspended scaffold work and work deemed as a construction project; an eight (8) hour shift lost during the week due to

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

circumstances beyond the control of the employer, up to a maximum of eight (8) hours per week, may be worked on Saturday at the straight time 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.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Triple 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

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Shift Rates

Four Days a week at Ten (10) hours straight a day.

Local 8A-28A

PAINTER - STRIPER

Striper (paint)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$35.00**

Supplemental Benefit Rate per Hour: **\$12.37**

Supplemental Note: Overtime Supplemental Benefit rate - \$8.02; New Hire Rate (0-3 months) - \$0.00

Lineperson (thermoplastic)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$39.00**

Supplemental Benefit Rate per Hour: **\$12.37**

Supplemental Note: Overtime Supplemental Benefit rate - \$8.02; New Hire Rate (0-3 months) - \$0.00

Overtime

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
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: 7/1/2017 - 9/30/2017

Wage Rate per Hour: **\$49.50**

Supplemental Benefit Rate per Hour: **\$37.08**

Effective Period: 10/1/2017 - 6/30/2018

Wage Rate per Hour: **\$50.00**

Supplemental Benefit Rate per Hour: **\$38.33**

Painter - Power Tool

Effective Period: 7/1/2017 - 9/30/2017

Wage Rate per Hour: **\$55.50**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: **\$37.08**
Overtime Wage Rate: \$6.00 above the "Painters on Structural Steel" overtime rate.

Effective Period: 10/1/2017 - 6/30/2018
Wage Rate per Hour: **\$56.00**
Supplemental Benefit Rate per Hour: **\$38.33**
Overtime Wage Rate: \$6.00 above the "Painters on Structural Steel" overtime rate.

Overtime Description

Supplemental Benefits shall be paid for each hour worked, up to forty (40) hours per week for the period of May 1st to November 15th or up to fifty (50) hours per week for the period of November 16th to April 30th.

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Regular hourly rates plus a ten per cent (10%) differential

(Local #806)

PAPERHANGER

Paperhanger

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$44.89**
Supplemental Benefit Rate per Hour: **\$31.13**
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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$45.85**

Supplemental Benefit Rate per Hour: **\$40.98**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$41.98**

Supplemental Benefit Rate per Hour: **\$40.98**

Production Paver & Roadbuilder - Screed Person

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

(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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$46.45**

Supplemental Benefit Rate per Hour: **\$40.98**

Production Paver & Roadbuilder - Raker

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$45.85**

Supplemental Benefit Rate per Hour: **\$40.98**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$42.37**

Supplemental Benefit Rate per Hour: **\$40.98**

Overtime Description

If an employee works New Year's Day or Christmas Day, they receive the single time rate plus 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).

Memorial Day

Independence Day

Labor Day

Columbus 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 10% over the single time rate for the screed person, rakers and shovelers directly involved only. This differential is to be paid when there is only one shift and the shift works at night. 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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

(Local #1010)

PLASTERER

Plasterer

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$44.93**

Supplemental Benefit Rate per Hour: **\$25.15**

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

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 #262)

PLASTERER - TENDER

Plasterer - Tender

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$37.90

Supplemental Benefit Rate per Hour: \$30.59

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$67.25

Supplemental Benefit Rate per Hour: \$31.80

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Plumber - Temporary Services

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Temporary Services - When there are no Plumbers on the job site, there may be three shifts designed to cover the entire twenty-four hour period, including weekends if necessary, at the following rate straight time.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$53.88**

Supplemental Benefit Rate per Hour: **\$25.36**

Overtime Description

Double time the regular rate after a 7 hour day - unless for new construction site work where the plumbing contract price is \$1.5 million or less, the hours of labor can be 8 hours per day at the employers option. On Alteration jobs when other mechanical trades at the site are working an eighth hour at straight time, then the plumber shall also work an eighth hour at straight time.

Overtime

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Shift Rates

Shift work, when directly specified in public agency or authority documents where plumbing contract is \$8 million or less, will be permitted. 30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

PLUMBER (MECHANICAL EQUIPMENT AND SERVICE)

(Mechanical Equipment and Service work shall include any repair and/or replacement of the present plumbing system.)

Plumber

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$41.20

Supplemental Benefit Rate per Hour: \$15.41

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$46.66

Supplemental Benefit Rate per Hour: \$22.95

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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

Oil Trades (Installation and Maintenance)

Plumber - Pump & Tank

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$64.22

Supplemental Benefit Rate per Hour: \$23.21

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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, SANDBLASTER,
STEAMBLASTER
(Exterior Building Renovation)**

Journey person

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$52.57**

Supplemental Benefit Rate per Hour: **\$25.80**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$41.50**

Supplemental Benefit Rate per Hour: **\$32.27**

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

Memorial Day

Independence Day

Labor 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)

SHEET METAL WORKER

Sheet Metal Worker

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$48.90**

Supplemental Benefit Rate per Hour: **\$48.00**

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Sheet Metal Worker - Fan Maintenance

(The temporary operation of fans or blowers in new or existing buildings for heating and/or ventilation, and/or air conditioning prior to the completion of the project.)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$39.12
Supplemental Benefit Rate per Hour: \$48.00

Sheet Metal Worker - Duct Cleaner

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$12.90
Supplemental Benefit Rate per Hour: \$8.07

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
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

Work that can only be performed outside regular working hours (eight 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.

(Local #28)

**SHEET METAL WORKER - SPECIALTY
(Decking & Siding)**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$44.57**

Supplemental Benefit Rate per Hour: **\$25.02**

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)

SHIPYARD WORKER

Shipyard Mechanic - First Class

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$28.12**

Supplemental Benefit Rate per Hour: **\$3.03**

Shipyard Mechanic - Second Class

Effective Period: 7/1/2017 - 6/30/2018

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$23.35**
Supplemental Benefit Rate per Hour: **\$2.85**

Shipyard Laborer - First Class

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$20.96**
Supplemental Benefit Rate per Hour: **\$2.76**

Shipyard Laborer - Second Class

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$15.24**
Supplemental Benefit Rate per Hour: **\$2.54**

Shipyard Dockhand - First Class

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$22.89**
Supplemental Benefit Rate per Hour: **\$2.83**

Shipyard Dockhand - Second Class

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$16.51**
Supplemental Benefit Rate per Hour: **\$2.58**

Overtime Description

Work performed on holiday is paid double time the regular hourly wage rate plus holiday pay.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Based on Survey Data

SIGN ERECTOR

(Sheet Metal, Plastic, Electric, and Neon)

Sign Erector

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$47.67**

Supplemental Benefit Rate per Hour: **\$50.67**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$55.50**

Supplemental Benefit Rate per Hour: **\$55.29**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Supplemental Note: Overtime supplemental benefit rate: \$109.84

Steamfitter -Temporary Services

The steamfitters shall not do any other work and shall not be permitted to work more than one shift in a twenty-four hour day. When steamfitters are present during the regular working day, no temporary services steamfitter will be required

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$42.18

Supplemental Benefit Rate per Hour: \$44.84

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$55.50

Supplemental Benefit Rate per Hour: \$55.29

Supplemental Note: Overtime supplemental benefit rate: \$109.84

Steamfitter -Temporary Services

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

The steamfitters shall not do any other work and shall not be permitted to work more than one shift in a twenty-four hour day. When steamfitters are present during the regular working day, no temporary services steamfitter will be required.

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$42.18

Supplemental Benefit Rate per Hour: \$44.84

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$39.50
Supplemental Benefit Rate per Hour: \$15.81

Refrigeration and Air Conditioner Service Person V

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$32.46
Supplemental Benefit Rate per Hour: \$14.16

Refrigeration and Air Conditioner Service Person IV

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$26.89
Supplemental Benefit Rate per Hour: \$12.80

Refrigeration and Air Conditioner Service Person III

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$23.08
Supplemental Benefit Rate per Hour: \$11.79

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: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$19.14
Supplemental Benefit Rate per Hour: \$10.85

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: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$14.00
Supplemental Benefit Rate per Hour: \$9.76

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
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 - Setter

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$53.62**

Supplemental Benefit Rate per Hour: **\$41.65**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$47.82**

Supplemental Benefit Rate per Hour: **\$22.68**

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.

(Local #1974)

TELECOMMUNICATION WORKER **(Voice Installation Only)**

Telecommunication Worker

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$40.35**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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: 7/1/2017 - 6/30/2018
Wage Rate per Hour: **\$41.13**
Supplemental Benefit Rate per Hour: **\$31.18**

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)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

TILE LAYER - SETTER

Tile Layer - Setter

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$53.19**

Supplemental Benefit Rate per Hour: **\$35.35**

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: **\$48.00**

Supplemental Benefit Rate per Hour: **\$49.16**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

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: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$62.37

Supplemental Benefit Rate per Hour: \$52.39

Tunnel Workers (Compressed Air Rates)

Effective Period: 7/1/2017 - 6/30/2018

Wage Rate per Hour: \$60.21

Supplemental Benefit Rate per Hour: \$50.65

Top Nipper (Compressed Air Rates)

Effective Period: 7/1/2017 - 6/30/2018

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$59.11
Supplemental Benefit Rate per Hour: \$49.74

Outside Lock Tender, Outside Gauge Tender, Muck Lock Tender (Compressed Air Rates)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$58.04
Supplemental Benefit Rate per Hour: \$48.81

Bottom Bell & Top Bell Signal Person: Shaft Person (Compressed Air Rates)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$58.04
Supplemental Benefit Rate per Hour: \$48.81

Changehouse Attendant: Powder Watchperson (Compressed Air Rates)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$50.87
Supplemental Benefit Rate per Hour: \$46.11

Blasters (Free Air Rates)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$59.52
Supplemental Benefit Rate per Hour: \$50.03

Tunnel Workers (Free Air Rates)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$56.97
Supplemental Benefit Rate per Hour: \$47.89

All Others (Free Air Rates)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$52.63
Supplemental Benefit Rate per Hour: \$44.29

Microtunneling (Free Air Rates)

Effective Period: 7/1/2017 - 6/30/2018
Wage Rate per Hour: \$45.58
Supplemental Benefit Rate per Hour: \$38.31

Overtime Description

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Issue Date - June 01, 2013
Revised - January 15, 2015

**DDC STANDARD GENERAL CONDITIONS
FOR SINGLE CONTRACT PROJECTS**



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Issue Date - June 01, 2013
Revised - January 15, 2015

No Text



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Issue Date - June 01, 2013
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**DIVISION 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
TABLE OF CONTENTS**

SECTION NO.	SECTION TITLE
01 10 00	SUMMARY
01 31 00	PROJECT MANAGEMENT AND COORDINATION
01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
01 32 33	PHOTOGRAPHIC DOCUMENTATION
01 33 00	SUBMITTAL PROCEDURES
01 35 03	GENERAL MECHANICAL REQUIREMENTS
01 35 06	GENERAL ELECTRICAL REQUIREMENTS
01 35 26	SAFETY REQUIREMENTS PROCEDURES
01 35 91	HISTORIC TREATMENT PROCEDURES
01 40 00	QUALITY REQUIREMENTS
01 42 00	REFERENCES
01 50 00	TEMPORARY FACILITIES, SERVICES AND CONTROLS
01 54 11	TEMPORARY ELEVATORS AND HOISTS
01 54 23	TEMPORARY SCAFFOLDING AND PLATFORMS
01 73 00	EXECUTION
01 74 19	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
01 77 00	CLOSEOUT PROCEDURES
01 78 39	CONTRACT RECORD DOCUMENTS
01 79 00	DEMONSTRATION AND OWNERS PRE-ACCEPTANCE ORIENTATION
01 81 13	SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS
01 81 13.13	VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS
01 81 19	INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS
01 91 13	GENERAL COMMISSIONING REQUIREMENTS



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Issue Date - June 01, 2013
Revised - January 15, 2015

NO TEXT

**SECTION 01 10 00
SUMMARY**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. Addendum to the General Conditions: These General Conditions include and are supplemented by the Addendum to the General Conditions (the "Addendum"). The Addendum includes the following: (1) schedules referred to in these General Conditions (Schedule A through F), (2) information regarding the applicability of various articles, and (3) amended articles, if any.

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-NC 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

- 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 Contractor 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

Revised - January 15, 2015

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 Contractor 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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

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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 appropriateShould 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 1.5 herein.
- C. Number of Copies: Submit FOUR (4) copies of LEED submittals, in accordance with procedure described in Article 1.5 herein, unless otherwise indicated.
- D. Material Safety Data Sheets (MSDSs) for LEED Certification: Submit information necessary to show compliance with LEED certification requirements, which will be the limit of the Design Consultant's review for LEED compliance.
 - 1. Designated LEED submittals that include non-LEED MSDS data will not be reviewed. The entire submittal will be returned for re-submission.
- 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 33 00



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
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**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 Contractor shall submit, as directed, Mechanical Shop Drawings, roughing drawings, manufacturer's Shop Drawings, field drawings, cuts, bulletins, etc., of all materials, equipment and methods of installation shown or specified in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.



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. See General Comments regarding problems with specifying items required for substantial completion.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 35 03



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

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No Text

GENERAL MECHANICAL REQUIREMENTS

01 35 03 - 4



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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



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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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
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GENERAL ELECTRICAL REQUIREMENTS
01 35 06 - 16

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 "*The City of New York Department of Design and Construction Safety Requirements*". This document is included in the Information for Bidders.

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Safety and Health Requirements, including:
 - 1. Definitions
 - 2. Required Safety Meeting
 - 3. Compliance with Regulations
 - 4. Submittals
 - 5. Personnel Protective Equipment
 - 6. Hazardous Materials
 - 7. Emergency Suspension of Work
 - 8. Protection of Personnel
 - 9. Environmental Protection

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 REQUIRED SAFETY MEETINGS:

- A. Prior to commencing construction, the Resident Engineer will schedule and hold a preconstruction kick-off meeting either at DDC's main office or at the Project site with representatives of 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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

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**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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

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**SECTION 01 40 00
QUALITY REQUIREMENTS**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes the following:
- 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

Revised - January 15, 2015

No Text



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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 adopts a different or earlier dated version of such standard.
- B. APPLICABILITY OF STANDARDS: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect, to the extent referenced, as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- C. CONFLICTING REQUIREMENTS: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantity or quality, comply with the most stringent requirements. Immediately refer uncertainties, and requirements that are different but apparently equal, to the Commissioner in writing for a decision before proceeding.
- D. STANDARD SPECIFICATIONS - When no reference is made to a code, standard or specification, the Standard Specifications of the ASTM or the AIEE, as the case may be, shall govern.
- E. REFERENCES - Reference to a technical society, organization or body may be made in the Specifications by abbreviations. Abbreviations and acronyms used in the Specifications and other Contract Documents mean the associated name. The following names are subject to change and are



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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)

REFERENCES
01 42 00 -3



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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)

REFERENCES
01 42 00 -4



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

BICSI	BICSI
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
BISSC	Baking Industry Sanitation Standards Committee
CIBSE	Chartered Institute of Building Services Engineers
CCC	Carpet Cushion Council
CDA	Copper Development Association
CEA	Canadian Electricity Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CGSB	Canadian General Standards Board
CIMA	Cellulose Insulation Manufacturers Association
CIPRA	Cast Iron Pipe Research Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CPPA	Corrugated Polyethylene Pipe Association
CPSC	Consumer Product Safety Commission
CRI	Carpet & Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSA	Canadian Standards Association
CSI	Cast Stone Institute
CSI	Construction Specifications Institute (The)
CSSB	Cedar Shake & Shingle Bureau
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)

REFERENCES
01 42 00 -5



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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
FEMA	Federal Emergency Management Agency
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation)
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation)
FMG	FM Global (Formerly: FM - Factory Mutual System)
FMRC	Factory Mutual Research (Now FMG)
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
FSA	Fluid Sealing Association
FSC	Forest Stewardship Council
GA	Gypsum Association
GANA	Glass Association of North America
GRI	(Now GSI)
GS	Green Seal
GSI	Geosynthetic Institute

REFERENCES
01 42 00 -6



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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

REFERENCES
01 42 00 -7



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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

REFERENCES
01 42 00 -8



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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)



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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

REFERENCES
01 42 00 -10



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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

REFERENCES
01 42 00 -11



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

Revised - January 15, 2015

No Text

REFERENCES
01 42 00 -12



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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 permanent facility and service during its use as a construction facility 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 recirculation, 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 Contractor 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 Sub-Section 3.5 C herein.
 - b. The provision of Temporary Heat shall include the provision of: 1) all fuel necessary and required, 2) all equipment necessary and required, and 3) all operating labor necessary and required. Operating labor shall mean that minimum force required for the safe day to day operation of the system for the provision of Temporary Heat and shall include, without limitation, heating maintenance labor and/or Fire Watch as required by NYC Fire Department regulations. Operating labor may be required seven (7) days per week and during other than normal working hours, for the period of time required by seasonal weather conditions.
 - c. In the event the building, or any portion thereof, is occupied and the Project involves the replacement, modification and/or shut down of the permanent heating system, or any key component thereof; and such system is a combined system which furnishes domestic hot water for the building occupants, the provision of Temporary Heat shall include the provision of domestic hot water at the same temperature as the system which is being replaced. Domestic hot water shall be provided in accordance with the phasing requirements set forth in the Contract Documents.
2. Responsibility: The Contractor'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) minimum 10 mil. Plastic 2) minimum 12 ounce waterproof canvas tarpaulins, or 3) a minimum three-eighths (3/8) inch thickness exterior grade plywood.
- d. Temporary covers for openings shall be the responsibility of the Contractor 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 (ccds). At a minimum, a full heating season shall extend from October 15th to April 15th.

Contract Duration	Full Heating Seasons Required
up to 360 ccds	1 full heating season
360 to 720 ccds	2 full heating seasons
more than 720 ccds	3 full heating seasons

E. METHOD OF TEMPORARY HEAT:

- 1. The method of temporary heat shall be in conformance with 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

- c. Portable fueled heating devices or equipment SHALL NOT BE ALLOWED for use as temporary heat other than construction-related curing or drying in conformance with the NYC Fire Code.
3. No open fires will be permitted.

F. TEMPORARY HEATING SYSTEM:

1. The temporary system for the provision of Temporary Heat provided by the 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 the duration the Contractor is required to provide Temporary Heat, as set forth in Sub-section 3.5 D herein.
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 1/2"D x 18"W.
 - b. One (1) 9000 B.T.U air conditioner or as directed by Commissioner. Wiring for the air conditioner shall be minimum No. 12 AWG fed from individual circuits in the fuse box.
 - c. One (1) folding conference table, 96" x 30" and ten (10) folding chairs.
 - d. Two (2) metal wastebaskets.
 - e. One (1) fire extinguisher, one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
 - f. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the project as required.
3. The 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.
5. Computer Workstation quantities shall be provided as specified in Sub-Section 3.8 B 3-a for DDC Managed Projects, or Sub-Section 3.8 B 3-b for CM Managed Projects.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 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 Sub-Section 3.8 B 1 herein, the temporary water and drainage connections and piping to the DDC Field Office trailer shall be removed by the 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

- 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 D in quantities required as specified in Sub-Section 3.8 B 3 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' warranties. 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.3, as specified herein:
 - a. **Hardware/Software Specification:**
 - 1) Computer Equipment - Computers shall be provided for all contracts that have a Total Consecutive Calendar Days for construction duration as set forth in Schedule "A" of 180 CCD's or greater. Contracts of lesser duration shall not require computers.
 - 2) Computers furnished by the 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 (Minimum)
1 – 5	5 Mbps
6 – 10	10 Mbps
11 – 15	15 Mbps
16 – 20 ...	20 Mbps

This account will be active for the life of the project. The e-mail name for the account shall be the DDC Field Office/project Id (e.g. FLD K HWK666 McGuinness@earthlink.com).

- b) One (1) 600 DPI HP Laser Jet Printer (twelve (12) pages per minute or faster) with one (1) Extra Paper (Legal Size)
 - c) All necessary cabling for equipment specified herein.
 - d) Storage Boxes for Blank CD's
 - e) Printer Table
 - f) UPS/Surge Suppressor combo
- 5) All computers required for use in the 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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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 1/2" below edge of panel and 8" on center. The U-shaped aluminum channel shall be applied over the wood frame edge and fastened with cadmium plated no. 8 sheet metal screws at 12" on center around the entire perimeter.
- 6 Sign Graphics:
- a. 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-SECTION 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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

Revised - January 15, 2015

No Text

TEMPORARY FACILITIES, SERVICES AND CONTROLS

01 50 00 -28



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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

No Text



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

SECTION 01 73 00
EXECUTION

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes general procedural requirements governing execution of the Work including without limitation the following:
1. Delivery of Materials
 2. Contractor's Superintendent
 3. Surveys
 4. Borings
 5. Examination
 6. Environmental Assessment
 7. Preparation
 8. Deferred Construction
 9. Installation
 10. Permits
 11. Transportation
 12. Sleeves and Hangers
 13. Sleeve and Hanger Drawings
 14. Cutting and Patching
 15. Location of Partitions
 16. Furniture and Equipment
 17. Removal of Rubbish and Surplus Material
 18. Cleaning
 19. Security And Protection of Work Site
 20. Maintenance of Site and Adjoining Property
 21. Maintenance of Project Site
 22. Safety Precautions for Control Circuits
 23. 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
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- 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 materials 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. A standard Construction and Demolition Waste Management Log form is 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 Credit 2.2, 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. 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. Instruction: 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITION
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

3. Comply with the General Conditions for controlling dust and dirt, environmental protection, and noise control.

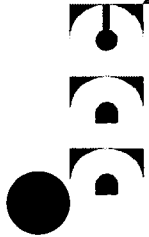
3.2 ADDITIONAL DEMOLITION AND SALVAGE REQUIREMENTS:

- 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: _____ Contractor: _____

Project I.D.: _____ Prepared by: _____

For Month: _____

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	
			Monthly Totals	*Total		*Diverted	*Landfilled
			% 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





NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

- 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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

CLOSEOUT PROCEDURES
01 77 00 -6



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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.

CLOSEOUT PROCEDURES
01 77 00 -7



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

Revised - January 15, 2015

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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 (1) complete set of marked-up Mylar (reproducible) As-Built Contract Record Drawings, in ink indicating all of the work and locations as actually installed, plus one (1) set of paper prints which will be furnished to the sponsoring agency by DDC.
 3. As-Built Contract Record Drawings shall be of the same size as that of the Contract Drawings, with a one (1) inch margin on three (3) sides and a two (2) inch margin on the left side for binding.
 4. Each As-Built Contract Record Drawing shall bear the legend "AS-BUILT CONTRACT RECORD DRAWING" in heavy block lettering, one half (1/2) inch high, and contain the following data:

AS-BUILT CONTRACT RECORD DRAWING

Contractor's Name _____
 Contractor's Address _____
 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 contain permanently attached labels displaying the following:



1. Heading:
The City of New York
Department of Design and Construction
Division of Public Buildings
 2. Capital Budget Project Number (FMS ID)
 3. Name and Location of Project
 4. Contractor's name and Address
 5. 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

- 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

No Text



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

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.

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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
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7. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from opposite the corresponding narration segment.

B. Commissioned Projects:

Refer to the Addendum to determine if the project is to be Commissioned.

1. The Commissioning Authority/Agent (CxA) under separate contract with the City of New York will assess and comment on the adequacy of the Orientation Instruction sessions by reviewing the Orientation and Instruction program and agenda provided by each contractor. The provider of the Orientation program will videotape the sessions and provide a copy to the CxA for final review and comments. If necessary, Contractor shall edit the DVD recording per CxA comments.

END OF SECTION 01 79 00



SECTION 01 81 13
SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS 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 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.1 through 1.6 C.3 below defines the information and documents to be provided for each type of LEED BUILDING Submittal as identified in the LEED Submittal Requirements of each specification section:
1. ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM (EBMCF)[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 ($1/2 \times \text{pre-consumer percentage} \times \text{product value} + 1 \times \text{post-consumer percentage} \times \text{product value} = \text{total recycled content value}$).
 2. See additional requirements for concrete below.
 - c. Identification (Yes/No) of materials manufactured within 500 miles of the project site AND containing raw materials harvested or extracted within 500 miles of the project site.
 - 1) Indicate the percentage by weight, relative to the total weight of the product that meets these criteria.
 - 2) Indicate the point of harvest/extraction/recovery of regional raw materials, the point of final assembly of regional manufactured products, and the distance from each point to the project site.
 - d. Volatile Organic Compound (VOC) content of all field-applied adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon, less water.
 - 1) For detailed requirements refer to Section 01 81 13.13 VOC LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
 - e. The amount of "Forest Stewardship Council (FSC) Certified" wood products if used in the Project.
 - 1) Record only new FSC-certified wood products. Do not record reclaimed, salvaged, or recycled FSC-certified wood products.



- 2) Reclaimed, salvaged, or recycled FSC-certified wood may be recorded as post-consumer recycled content.
 - f. The amount of Rapidly Renewable materials if used in the Project.
 - 1) Indicate the type of rapidly renewable material used, and the percentage by weight, relative to the total weight of the product, that consists of rapidly renewable material.
 - g. The percentage (by weight), relative to the total weight of cementitious materials, of supplementary cementitious materials or pozzolans such as fly ash used in each concrete mix used in the Project.
 - 1) For each concrete mix, provide a complete breakdown of all components, by weight and by cost.
 - h. Identification (Yes/No) of composite wood or agrifiber products used in the project that are free of added urea-added formaldehyde resins.
 - i. Identification (Yes/No) of flooring products used in the project that have Carpet and Rug Institute (CRI) Green Label or Green Label Plus certification, or Resilient Floor Covering Institute FloorScore certification.
 - 1) Untreated solid wood flooring, and mineral-based flooring products such as tile, masonry, terrazzo, and cut stone that have no organic-based coatings or sealants, are excluded from this requirement.
 - j. The EBMCF shall record the above information only for those materials or products permanently installed in the project. The EBMCF shall record VOC content, composite and agrifiber products, and CRI or FloorScore ratings only for those materials or products permanently installed within the weather barrier of the LEED building.
2. **EBMCF BACK-UP DOCUMENTATION:** These documents are used to validate the information provided on the EBMCF (except cost data). For each material listed on the EBMCF, provide documentation to certify the material's LEED BUILDING attributes, as applicable:
- a. **RECYCLED CONTENT:** Provide published product literature or letter of certification on the manufacturer's letterhead certifying the amounts of post-consumer and/or post-industrial content.
 - b. **REGIONAL MANUFACTURING AND REGIONAL RAW MATERIALS (WITHIN 500 MILES):** Provide published product literature or letter of certification on the manufacturer's letterhead indicating the city/state where the manufacturing plant is located, where each of the raw materials in the product were extracted, harvested or recovered and the distance in miles from the project site.
 - 1) If only some of the raw materials for a particular product or assembly originate within 500 miles of the project site, provide the percentage (by weight) that these materials comprise in the complete product.
 - c. **VOC CONTENT:** Provide Material Safety Data Sheets (MSDS) certifying the Volatile Organic Compound (VOC) content of the adhesive, sealant, paint, or coating products. VOC content is to be reported in grams/liter or lbs./gallon, less water. If the MSDS does not show the product's VOC content, this information must be provided through other published product literature from the manufacturer, or stated in a letter of certification from the product manufacturer on the manufacturer's letterhead.
 - d. **RAPIDLY RENEWABLE MATERIALS:** If used in the project, provide published literature or letter of certification on the manufacturer's letterhead certifying the percentage of each product that is rapidly renewable (by weight).
3. **PRODUCT CUT SHEETS:** Provide product cut sheets with 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 the products do not contain added urea-formaldehyde resins.
6. **CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER LAMINATING ADHESIVES:** For all laminating adhesives used with composite wood, engineered wood and agrifiber products (e.g., adhesives used to laminate wood veneers to an engineered wood substrate), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the adhesive products do not contain urea-formaldehyde.
7. **FSC-CERTIFIED WOOD:**
 - a. If used in the project, provide chain of custody documents and copies of invoices regarding wood products, including whether or not such wood product is FSC-certified.
 - b. If used in the project, for assemblies, provide the percentage (by cost and by weight) of the assembly that is FSC-certified wood.
 - c. If used in the project, for assemblies, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the percentage that is FSC-certified wood.
8. **GREEN SEAL COMPLIANCE:** Provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the following product types comply with the VOC limits and chemical component restrictions developed by the Green Seal organization of Washington, DC:
 - a. Interior Architectural Paints and Coatings: refer to Green Seal standard GS-11 (1st edition, May 1993)
 - b. Anti-corrosive and Anti-rust paints: refer to Green Seal standard GC-03 (2nd Edition, January 1997)
 - c. Aerosol Adhesives: refer to Green Seal standard GS-36 (1st edition, October 2000)
9. **HIGH ALBEDO PAVING AND WALKWAY MATERIALS:** For paving and walkway materials made from concrete or brick provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying a minimum Solar Reflectance Index (SRI) value of 29. SRI values shall be calculated according to ASTM E 1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.
10. **HIGH ALBEDO ROOFING MATERIALS:** For exposed roofing membranes, pavers, and ballast products, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the following minimum Solar Reflectance Index (SRI) values:
 - a. 78 for low-sloped roofing applications (slope \leq 2:12)
 - b. 29 for steep-sloped roofing applications (slope $>$ 2:12)SRI values shall be calculated according to ASTM E 1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.
Vegetated roof surfaces are exempt from the SRI criteria.
11. **LOW MERCURY LAMPS:** For all fluorescent, compact fluorescent, and HID lamps installed in the project, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying:
 - a. The mercury content or content range per lamp in milligrams or picograms;
 - b. The design light output per lamp (light at 40% of a lamp's useful life) in lumens; and
 - c. The rated average life of the lamp in hours.



In addition, provide the total number of each lamp type installed in the project.

12. **FLOORSCORE CERTIFICATION:** For all hard surface flooring, including vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, and wall base, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the current FloorScore standard requirements.
13. **CONCRETE:** Provide concrete mix design for each mix, designated by a distinct identifying code or number and signed by a Professional Engineer licensed in the state in which the concrete manufacturer or supplier is located.
14. **INTERIOR LIGHTING FIXTURES:** For each lighting fixture type installed within the building's weather barrier, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Dimming capability, in range of percentages.
15. **EXTERIOR LIGHTING FIXTURES:** For each lighting fixture type installed on site, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Range of field adjustability, if any.
 - e. Warranty of suitability for exterior use.
16. **ALTERNATIVE TRANSPORTATION:** Provide manufacturer's cut sheets and/or shop drawings for the following items installed on site:
 - a. Bike racks, including total number of bicycle slots provided.
 - b. Signage indicating parking spaces reserved for electric or low-emitting vehicles and for carpools/vanpools, including total number of signs.
17. **WATER CONSERVING FIXTURES:** For all water consuming plumbing fixtures and fittings, provide manufacturer's cut sheets showing maximum flow rates and/or flush rates.
18. **ENERGY SAVING APPLIANCES:** Provide manufacturer's cut sheets and published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the product's rating under the U.S. EPA/DOE Energy Star program, for all of the following:
 - a. Appliances (i.e., refrigerators, dishwashers, microwave ovens, televisions, clothes washers, clothes dryers, chilled water dispensers).
 - b. Office equipment (i.e., copy machines, fax machines, plotters/printers, scanners, binding and publishing equipment).
 - c. Electronics (i.e., servers, desktop computers, computer monitor displays, laptop computers, network equipment).
 - d. Commercial food service equipment
19. **GLAZING:** For glazing in any windows, doors, storefront and window wall systems, curtainwall systems, skylights, and partitions, provide manufacturer's cut sheets indicating the following:
 - a. Glazed area.
 - b. Visible light transmittance.
 - c. Solar heat gain coefficient.
 - d. Fenestration assembly u-factor.



20. VENTILATION: Provide manufacturer's cut sheets for the following:
- a. Carbon dioxide monitoring systems, if any, installed to measure outside air delivery.
 - b. Air filters: for detailed requirements refer to Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS.
21. REFRIGERATION: For all refrigeration equipment, provide manufacturer's cut sheets indicating the following:
- a. Equipment type.
 - b. Equipment life. Default values specified by the 2007 ASHRAE Applications Handbook will be used unless otherwise demonstrated by the manufacturer's guarantee and an equivalent long-term service contract.
 - c. Refrigerant type.
 - d. Refrigerant charge in pounds of refrigerant per ton of gross cooling capacity.
 - e. Tested refrigerant leakage rate, in percent per year. A default rate of 2% will be used unless otherwise demonstrated by test data.
 - f. Tested end-of-life refrigerant loss, in percent. A default rate of 10% will be used unless otherwise demonstrated by test data.

1.7 LEED BUILDING SUBMITTAL REQUIREMENTS:

- A. The LEED BUILDING Submittal information shall be assembled into one package per 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 the rejection of products or assemblies. Incomplete or inaccurate LEED BUILDING Submittals may be used as the basis for rejecting the submitted 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 State Department of Environmental Conservation (NYSDEC) or the 2003 EPA Construction General Permit, whichever is more stringent.
 2. The Plan shall be submitted in accordance with Section 01 33 00, SUBMITTAL 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.

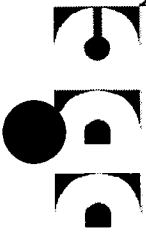
1.9 QUALITY ASSURANCE:

- 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

Contractor Name: _____ Project Name: _____
 Contractor Contact: _____ Project I.D.: _____
 Telephone Number: _____

Product/Manufacturer	Recycled Content		Regional ⁴		Rapidly Renewable ⁷		*VOC content listed	*VOC content allowed	*Green Label or FloorScore	*Added urea formaldehyde (Yes/No) ¹⁰	FSC Certified ¹¹ (% by wt)
	Material Cost ¹	Pre-Consumer (% by wt) ²	Post-Consumer (% by wt) ³	Total % (½ Pre + Post)	Location & Distance to Manufacture ⁵	Location & Distance to Manufacture ⁶					

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/unreated 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



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

SECTION 01 81 13.13

VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.13

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes requirements for volatile organic compound (VOC) content in adhesives, sealants, paints and coatings used for the project.
- B. All sections in the Project Specifications with adhesives, sealant or sealant primer applications, paints and coatings shall follow all requirements of this section. In the event of any conflict or inconsistency between this section and the Specifications regarding adhesives, sealant or sealant applications, paints and coatings, the requirements set forth in this Section shall prevail.
- C. This Section includes:
1. General Requirements
 2. References
 3. VOC Requirements for Interior Adhesives
 4. VOC Requirements for Interior Sealants
 5. VOC requirements for Interior Paints
 6. VOC requirements for Interior Coatings
 7. Submittals

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|--|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 31 00 | PROJECT MANAGEMENT AND COORDINATION |
| C. | Section 01 32 00 | CONSTRUCTION PROGRESS DOCUMENTATION |
| D. | Section 01 33 00 | SUBMITTAL PROCEDURES |
| E. | Section 01 73 00 | EXECUTION |
| F. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| G. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |
| H. | Section 01 81 13 | SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS |
| I. | Section 01 81 19 | INDOOR AIR QUALITY FOR LEED BUILDINGS |

1.4 DEFINITIONS:

- A. **ADHESIVE:** Any substance used to bond one surface to another by attachment. Includes adhesive primers and adhesive bonding primers.
1. **Aerosol Adhesive:** Any adhesive packaged as an aerosol with a spray mechanism permanently housed in a non-refillable can designed for hand-held application without the need for ancillary equipment.
- B. **CARCINOGEN:** A chemical listed as a known, probable, reasonably anticipated, or possible human

VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES,
SEALANTS, PAINTS & COATINGS FOR LEED BUILDINGS

01 81 13.13 - 1



carcinogen by the International Agency for Research on Cancer (IARC) (Groups 1, 2A, and 2B), the National Toxicology Program (NTP) (Groups 1 and 2), the U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS) (weight-of-evidence classifications A, B1, B2, and C, carcinogenic, likely to be carcinogenic, and suggestive evidence of carcinogenicity or carcinogen potential), or the Occupational Safety and Health Administration (OSHA).

- C. **CLEAR WOOD FINISH:** Clear/semi-transparent coating applied to wood substrates to provide a transparent or translucent solid film.
 - 1. **Lacquer:** Clear/semi-transparent coating formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and provide a solid, protective film.
 - 2. **Sanding Sealer:** A sanding sealer that also meets the definition of a lacquer.
 - 3. **Varnish:** Clear/semi-transparent coating, excluding lacquers and shellacs, formulated to dry by chemical reaction on exposure to air. May contain small amounts of pigment.
- D. **COATING:** Liquid, liquefiable, or mastic composition that is converted to a solid adherent film after application to a substrate as a thin layer; and is used for decorating, protecting, identifying or to serve some functional purpose such as the filling or concealing of surface irregularities or the modification of light and heat radiation characteristics; and is intended for on-site application to interior or exterior surfaces of buildings. Does not include stains, clear finishes, recycled latex paint, specialty (industrial, marine or automotive) coatings or paint sold in aerosol cans.
- E. **FLOOR COATING:** Opaque coating applied to flooring. Excludes industrial maintenance coatings.
- F. **HAZARDOUS AIR POLLUTANT:** Any compound listed by the U.S. EPA in the Clean Air Act Section 112(b)(1) as a hazardous air pollutant.
- G. **MUTAGEN:** A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification of Chemicals Which Cause Mutations in Germ Cells (United Nations Economic Commission for Europe, Globally Harmonized System of Classification and Labeling of Chemicals).
- H. **OZONE-DEPLETING COMPOUNDS:** A compound with an ozone-depletion potential greater than 0.1 (CFC 11=1) according to the U.S. EPA list of Class I and Class II Ozone-Depleting Substances.
- I. **PAINT:** A pigmented coating. For the purposes of this specification, paint primers are considered to be paints.
 - 1. **Flat Coating or Paint:** Has a gloss of less than 15 (using an 85-degree meter) or less than 5 (using a 60-degree meter).
 - 2. **Non-Flat Coating or Paint:** Has a gloss of greater than or equal to 15 (using an 85-degree meter) or greater than or equal to 5 (using a 60-degree meter).
 - 3. **Non-Flat High-Gloss Coating or Paint:** Has a gloss of greater than or equal to 70 (using a 60-degree meter).
 - 4. **Anti-Corrosive / Rust Preventative Paint:** Coating formulated and recommended for use in preventing the corrosion of ferrous metal substrates.
- J. **PRIMER:** Coating that is formulated and recommended for one or more of the following purposes: to provide a firm bond between the substrate and a subsequent coating; to prevent a subsequent coating from being absorbed into the substrate; to prevent harm to a subsequent coating from materials in the substrate; or to provide a smooth surface for application of a subsequent coating.
- K. **REPRODUCTIVE TOXIN:** A chemical listed as a reproductive toxin (including developmental, female, and male toxins) by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Code of Regulations, Title 22, Division 2, Subdivision 1, Chapter 3, Sections 1200, et. Seq.).
- L. **SANDING SEALER:** Clear/semi-transparent coating formulated to seal bare wood. Can be abraded to create a smooth surface for subsequent coatings. Does not include sanding sealers that are lacquers (see Clear Wood Finish above).
- M. **SEALANT:** Any material with adhesive properties, formulated primarily to fill, seal, or waterproof gaps or joints



between surfaces. Includes sealant primers and caulks.

- N. SHELLAC: Clear or pigmented coating formulated solely with the resinous secretions of the lac beetle, thinned with alcohol and formulated to dry by evaporation without chemical reaction. Excludes floor applications.
- O. STAIN: Clear semi-transparent/opaque coating formulated to change the color but not conceal the grain pattern or texture of the substrate.
- P. VOLATILE AROMATIC COMPOUND: Any hydrocarbon compound containing one or more 6-carbone benzene rings, and having an initial boiling point less than or equal to 280 degrees Celsius measured at standard conditions of temperature and pressure.
- Q. VOLATILE ORGANIC COMPOUND: Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.
- R. WATERPROOFING SEALER: A coating that prevents the penetration of water into porous substrates.

1.5 GENERAL REQUIREMENTS:

- A. The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED Green building rating. Specific project requirements related to this goal which may impact this area of work are listed in the applicable paragraphs of this specification section. 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

1.6 VOC REQUIREMENTS FOR INTERIOR ADHESIVES, SEALANTS, PAINTS AND COATINGS:

- A. GENERAL: Unless otherwise specified herein, the VOC content of all interior adhesives, sealants, paints and coatings (herein referred to as “products”) shall not be in excess of **250 grams per liter**.
- B. No product shall contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bioaccumulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which shall be less than or equal to 1% by weight of the product.
- C. No product shall contain the following:
 - 1. methylene chloride
 - 2. 1,1,1-trichloroethane
 - 3. benzene



4. toluene
5. ethylbenzene
6. vinyl chloride
7. naphthalene
8. 1,2-dichlorobenzene
9. di (2-ethylhexyl) phthalate
10. butyl benzyl phthalate
11. di-n-butyl phthalate
12. di-n-octyl phthalate
13. diethyl phthalate
14. dimethyl phthalate
15. isophorone
16. antimony
17. cadmium
18. hexavalent chromium
19. lead
20. mercury
21. formaldehyde
22. methyl ethyl ketone
23. methyl isobutyl ketone
24. acrolein
25. acrylonitrile

D. No product shall contain more than 1.0% by weight of sum total of volatile aromatic compounds.

1.8 VOC REQUIREMENTS FOR INTERIOR ADHESIVES:

- A. The volatile organic compound (VOC) content of adhesives, adhesive bonding primers, or adhesive primers used in this project shall not exceed the limits defined in Rule 1168 – “Adhesive and Sealant Applications” of the South Coast Air Quality Management District (SCAQMD), of the State of California.
- B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.
- C. For specified building construction related applications, the allowable VOC content is as follows:

1. Architectural Applications:
 - a. Indoor carpet adhesive 50
 - b. Carpet pad adhesive 50
 - c. Wood flooring adhesive 100
 - d. Rubber floor adhesive 60
 - e. Subfloor adhesive 50
 - f. Ceramic tile adhesive 65
 - g. VCT and asphalt tile adhesive 50
 - h. Drywall and panel adhesive 50
 - i. Cove base adhesive 50
 - j. Multipurpose construction adhesive 70
 - k. Structural glazing adhesive 100
2. 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
3. Substrate Specific Applications:		
a.	Metal to metal	30
b.	Plastic foams	50
c.	Porous material (except wood)	50
d.	Wood	30
e.	Fiberglass	80
4. 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:
5. 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) as referenced in Section 01 81 13 SUSTAINABLE REQUIREMENTS FOR LEED BUILDINGS: For each field-applied adhesive, sealant, paint, and coating product, provide the VOC requirement, as provided in this Specification, for the relevant material category indicated on the documentation noted above.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 13.13



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
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**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.

INDOOR AIR QUALITY
REQUIREMENTS FOR LEED BUILDINGS
01 81 19- 1



- 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 PROCEDURE. The Construction IAQ Management Plan shall meet the following criteria:
 - 1. Construction activities shall be planned to meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors’ Association (SMACNA) “IAQ Guidelines for Occupied Buildings under Construction”, 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:

OPTION 1 — Flush-Out

- After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%.

OR

- If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cu.ft. of outdoor air per sq.ft. of floor area to the space. Once a space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14,000 cu.ft./sq.ft. of outside air has been delivered to the space.

OR



OPTION 2 — Air Testing

- Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the United States Environmental Protection Agency Compendium of Methods for the Determination of Air Pollutants in Indoor Air and as additionally detailed in the LEED-NC Reference Guide.
- Demonstrate that the contaminant maximum concentrations listed below are not exceeded.

CONTAMINANT	MAXIMUM CONCENTRATION
Formaldehyde	27 parts per billion
Particulates (PM10)	50 micrograms per cubic meter
Total Volatile Organic Compounds (TVOC)	500 micrograms per cubic meter
* 4-Phenylcyclohexene (4-PCH)	6.5 micrograms per cubic meter
Carbon Monoxide (CO)	9 part per million and no greater than 2 parts per million above outdoor levels
* This test is only required if carpets and fabrics with styrene butadiene rubber (SBR) latex backing material are installed as part of the base building systems.	

- For each sampling point where the maximum concentration limits are exceeded, conduct additional flush-out with outside air and retest the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from the same locations as in the first test.
- The air sample testing shall be conducted as follows:
 - a. All measurements shall be conducted prior to occupancy, but during normal occupied hours and with the building ventilation system starting at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.
 - b. The building shall have all interior finishes installed, including but not limited to millwork, doors, paint, carpet and acoustic tiles. Non-fixed furnishings such as workstations and partitions are encouraged, but not required, to be in place for the testing.
 - c. The number of sampling locations will vary depending upon the size of the building and number of ventilation systems. For each portion of the building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq.ft., or for each contiguous floor area, whichever is larger, and include areas with the least ventilation and greatest presumed source strength.
 - d. Air samples shall be collected between 3 feet and 6 feet from the floor to represent the breathing zone of occupants, and over a minimum 4-hour period.
- 6. Implementation and Coordination: Implement the Construction IAQ Management Plan, and coordinate the Plan with all affected trades. 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 1.07 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 Contractor's or Subcontractor's 'approved' stamp as confirmation that the products are the products installed on the project.
- C. Provide the Commissioner with a minimum of 18 photographs as required under the provision for Special Photographs, in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION, comprised of at least six photographs taken on three different occasions during construction. The photographs shall document the implementation of the Construction IAQ Management Plan throughout the course of the project construction. Examples include photographs of ductwork sealing and protection, temporary ventilation measures, and conditions of on-site materials storage (to prevent moisture damage). Photographs shall include integral date stamping, and shall be submitted with brief descriptions of the Construction IAQ Management Plan measure documented, or be referenced to project meeting minutes or similar project documents which reference to the Construction IAQ Management Plan measure documented.
- D. A copy of the project's TAQ Testing report if applicable.

1.9 QUALITY ASSURANCE:

- A. The 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 OWNERS PRE-ACCEPTANCE ORIENTATION
 - 6. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.



- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Commissioner: The Commissioner of the Department of Design and Construction of the City of New York, his/her successors, or duly authorized representative(s).
- D. BoD: Basis of Design: A document, prepared by the 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 Commissioning Agent (CxA) 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 orientation 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 (Design Consultant and BMS subcontractor)
 - c. Operating instructions for integrated building systems (mechanical and BMS subcontractors).
 - d. Recommended schedule of maintenance requirements and frequency (subcontractors).
 - e. Recommended schedule for calibrating sensors and actuators (BMS subcontractor)

3.2 DEMONSTRATION AND INSTRUCTION

- A. 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.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

3.4 RECORD DRAWINGS

- A. The CxA shall review the as built contract documents to verify incorporation of both design changes and as built construction details. Discrepancies noted shall be corrected by the appropriate party.

END OF SECTION 01 91 13



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013

Revised - January 15, 2015

NO TEXT

GENERAL COMMISSIONING REQUIREMENTS

01 91 13 - 8





Department of
Design and
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____



FMS ID: HH112BEES-G



Department of Design and 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 ELECTRICAL WORK

Bellevue Men's Shelter - Electrical Upgrade and Generator

LOCATION: 400 East 30th Street
BOROUGH: New York, 10016
CITY OF NEW YORK

Ark Systems Electric Corp.
Contractor

Dated December 24, 2018

Approved as to Form
Certified as to Legal Authority

[Signature]
Acting Corporation Counsel

CL
3/15/18

Dated March 15 2018

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____, 20____





Department of
Design and
Construction

PROJECT ID:

HH112BEES-G

**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:

**Bellevue Men's Shelter - Electrical
Upgrade and Generator**

LOCATION:
BOROUGH:
CITY OF NEW YORK

400 East 30th Street
New York, 10016

CONTRACT NO. 1

GENERAL ELECTRICAL WORK

Department of Homeless Services

WSP

Date: January 11, 2018



8-095



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 #: **HH112BEES-G**

PROJECT NAME: Bellevue Men's Shelter Emergency Generator and Electrical Service Upgrade

PROJECT DESCRIPTION: This Project consists of installation of a 480-277V, 750KW emergency generator on the roof bulkhead with modification to existing bulk head exterior louver and door. Provide structure support to new generator and provide fire protection to the room. Run new emergency feeder down to the basement level within existing shaft to be further modified to meet the new emergency feeder and fuel oil riser requirement. Install a new 4,000 gallon tank on the cellar floor for the generator fuel supply and provide fire protection to the fuel oil tank room. Replacing all existing emergency panels with new feeders. Upgrade normal electrical service switchgear and replace two existing normal electrical distribution switchboards and relocated to the basement and above the flood level. Replace all existing panelboard and electrical feeders.

PROJECT LOCATION: 400-430 30th street, New York
BOROUGH: Manhattan
CITY OF NEW YORK
ZIP CODE: 10016
COMMUNITY BOARD #: 6

LANDMARK STATUS:

DESIGNATED LANDMARK STRUCTURE OR SITE: NO

If this is a Designated Landmark Structure or Site, Section 01 3591, Historic Treatment Procedures applies to this project.

LANDMARK QUALITY STRUCTURE: YES

If this is a Landmark Quality Structure, Section 01 3591, Historic Treatment Procedures applies to this project.

II. LEED GREEN BUILDING REQUIREMENTS

Not Used.

III. COMMISSIONING REQUIREMENTS

Not Used.

IV. PROJECT MANAGEMENT

- DDC shall publicly bid and enter into all contracts for the Project. DDC shall manage the Project using its own personnel.
- DDC shall publicly bid and enter into all contracts for the Project. A Construction Management firm (the "CM") hired by DDC shall manage the Project. The Contractor is advised that the CM shall serve as the representative of the Commissioner at the site and shall, subject to review by the Commissioner, be responsible for the inspection, management, coordination and administration of the required construction work, as delineated in the article of the Standard Construction Contract entitled "The Resident Engineer".

V. CONTRACTS FOR THE PROJECT

The Project consists of a single contract, the Contract for General Construction Work. The Contractor for General Construction Work is responsible for the performance of all required work for the Project as set forth in the Contract Documents (General Conditions, Drawings and Specifications), including all responsibilities and obligations assigned to separate Contractors for the following subdivisions of the work: Plumbing Work, HVAC Work, and Electrical Work. All responsibilities and obligations in the Contract Documents assigned to separate Contractors for such subdivisions of the work are the responsibility of the Contractor for General Construction Work.

VI. SCHEDULES

The Contractor is advised that Schedules A through F are attached to, and incorporated as part of, this Addendum to the General Conditions. These schedules contain important information that is specific to this Project. The Contractor is advised to carefully review these schedules.

VII. APPLICABILITY OF SECTIONS/SUB-SECTIONS AND AMENDED SUB-SECTIONS

The Contractor is advised that various Sections/Sub-Sections in the General Conditions may not apply to this Project or may apply as amended. Such Sections/Sub-Sections advise the Contractor to "Refer to the Addendum for the applicability of this Section/Sub-Section." Such Sections/Sub-Sections are set forth below. A check mark indicates whether the Section/Sub-Section (1) applies to the Project, (2) does not apply to the Project, or (3) applies to the Project as amended. If no box is checked, the Section/Sub-Section, as set forth in the General Conditions, applies to the Project. Amended Sections/Sub-Sections, if any, are set forth following this list of Sections.

<u>X</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 1000	1.4 (B)	Scope and Intent / LEED		X	
	1.4(C)	Scope and Intent / Commissioning		X	
01 3233		Photographic Documentation	X		
01 3300	1.7 (A-D)	LEED Submittals		X	
01 3503		General Mechanical Requirements	X		
01 3506	3.2 (A-B)	Electrical Conduit System Including Boxes (Pull, Junction and Outlet)	X		
	3.3 (A-E)	Electrical Wiring Devices	X		
	3.4 (A-I)	Electrical Conductors and Terminations	X		
	3.5 (A-B)	Circuit Protective Devices	X		
	3.6 (A-J)	Distribution Centers	X		
	3.7 (A-I)	Motors	X		
	3.8 (A-I)	Motor Control Equipment	X		
01 3591		Historic Treatment Procedures	X		
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water		X	
	3.2 (B)	Temporary Water Facilities / Temporary Water – Work in Existing Facilities		X	
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained Toilet Units		X	
	3.3 (C)	Temporary Sanitary Facilities / Existing Toilets	X		
	3.4 (B) 1	Temporary Power, Lighting, and Site Lighting / Connection to Utility Lines	X		

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 5000	3.4 (B) 2	Temporary Power, Lighting, and Site Lighting / Connection to Existing Electrical Power Service		X	
	3.4 (B) 3	Temporary Power, Lighting, and Site Lighting / Electrical Generator Power Service		X	
	3.4 (D)	Temporary Power, Lighting, and Site Lighting / Temporary Lighting		X	
	3.4 (E)	Temporary Power, Lighting, and Site Lighting / Site Security Lighting (for New Construction Only)		X	
	3.5 (A-J)	Temporary Heat		X	
	3.8 (A)	DDC Field Office / Office Space in Existing Building	X		
	3.8 (B)	DDC Field Office / DDC Field Office Trailer		X	
	3.8 (B-3a)	DDC Field Office / DDC Managed Field Office Trailer		X	
	3.8 (B-3b)	DDC Field Office / CM Managed Field Office Trailer		X	
	3.8 (D)	DDC Field Office / Additional Equipment for the DDC Field Office	X		
	3.13(A-D)	Work Fence Enclosure		X	
	3.17(B)	Project Rendering		X	
	3.18 (A-C)	Security Guards / Fire Guards on Site		X	
01 5411	3.1 (A-J)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Up To and Including 15 Stories		X	
	3.2 (A-M)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Over 15 Stories		X	
	3.3 (A-E)	Temporary Use, Operation and Maintenance of Elevators During Construction for Existing Buildings	X		
01 7300	3.3 (A-I)	Surveys		X	
	3.4 (A-B)	Borings		X	
	3.12 (A-D)	Sleeves and Hangers	X		
	3.13 (A)	Sleeve and Penetration Drawings	X		
	3.15 (A)	Location of Partitions	X		
01 7419	1.5 (C)	Waste Management Performance Requirements / LEED Certification		X	
01 7900		Demonstration and Owner's Pre-Acceptance Orientation	X		
01 8113		Sustainable Design Requirements for LEED Buildings		X	
01 8113.13		VOC Limits for Adhesives, Sealants, Paints and Coatings for LEED Buildings		X	
01 8119		Indoor Air Quality Requirements for LEED Buildings		X	
01 9113		General Commissioning Requirements		X	

AMENDED SECTIONS/SUB-SECTIONS

The Contractor is advised that the amended Sub-Sections set forth below are included in the General Conditions and apply to the Project.

Section 011000 SUMMARY

Include Article 1.14 Building Coordination:

- A. The building operates 24/7 hours and is managed by DHS (NYC Department of Homeless Services).
- B. NORMAL BUILDING HOURS: 24 hours a day 7 days a week.
- C. NORMAL BUILDING SYSTEM HOURS:
 - 1. 24 hours a day 7 days a week.
 - 2. All work must be performed during regular business hours 8:00 am to 4:00pm.
 - 3. After hour work to be requested by the contractor a minimum of 2 days in advance for review and approval.
 - 4. DHS/DDC requests for after hour work will be made minimum 2 days in advance unless it is emergency.
- D. AFTER HOURS COORDINATION
 - 1. All contractors who require access to the building outside of regular business hours are required to be on a preapproved access list, only DHS/DDC can authorize the contractor on-site.
 - 2. For access, a list must be submitted 48 hours in advance to DDC and DHS authorities. Pre-approved contractors will be required to sign in and out when accessing the building outside of normal business hours
- E. DHS security and building services require daily notifications for construction personnel scheduled for afterhours work.
- F. GENERAL CONSTRUCTION RESTRICTION NOTES
 - 1. DDC and DHS will work with contractor to schedule isolated shutdowns.
 - 2. All Contractors will be responsible for the safeguarding and protecting their own work, materials, tools and equipment.
- G. ROOF ACCESS/ HOIST OPERATIONS
 - 1. Contractor shall not have access to building elevators for removal or delivery of any material, equipment etc for the duration of the project.
 - 2. Contractor shall only transport personnel in building elevator.
 - 3. Contractor shall be allowed to set hoist operations for duration of project at the locations shown on the contract drawings.

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)
PART I - Contract Requirements

Various Articles of the Contract refer to requirements which are set forth in Schedule A of the General Conditions. The Schedule set forth below specifies the following: (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to the contract.

REFERENCE	ITEM	REQUIREMENTS	CONTRACT #1
Information For Bidders	Bid Security		See Attachment 1 – Bid Information in the Bid Booklet
Information For Bidders	Performance and Payment Bonds		See Attachment 1- Bid Information in the Bid Booklet
Article 14 Contract	Time of Substantial Completion	Consecutive Calendar Days	730
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 \$1,000,000 or less 5% If 100% bonds are not required, and Contract Price is more than \$1,000,000 10%
Article 24 Contract	Deposit Guarantee	Percent of Contract Price	1%
Article 24 Contract	Period of Guarantee		See Schedule B of the Addendum to the General Conditions
Article 74 Contract	Statement of Work		Addenda, numbered: <u>5</u>
Article 75 Contract	Compensation to be Paid to Contractor		Amount for which the Contract was Awarded: <i>Sixteen Million Two Hundred Thirty-One Thousand, Eight Hundred Forty-Five</i> Dollars (\$ <u>16,231,845.00</u>)
Article 79 Contract	MWBE Program		See MWBE Utilization Plan in the Bid Booklet

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Note: All certificate(s) of insurance submitted pursuant to Contract Article 22.3. 3 must be accompanied by a Certification by Broker consistent with Part III below and include the following information:

- For each insurance policy, the name and NAIC number of issuing company, number of policy, and effective dates;
- Policy limits consistent with the requirements listed below;
- Additional insureds or loss payees consistent with the requirements listed below; and
- The number assigned to the Contract by the City (in the "Description of Operations" field).

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<ul style="list-style-type: none"> ■ Commercial General Liability Art. 22.1.1 	<p>The minimum limits shall be \$1,000,000.00 per occurrence and \$2,000,000.00 per project aggregate applicable to this Contract.</p> <p>Additional Insureds:</p> <ol style="list-style-type: none"> 1. City of New York, including its officials and employees, with coverage at least as broad as ISO Forms CG 20 10 and CG 20 37, and 2. All person(s) or organization(s), if any, that Article 22.1.1(b) of the Contract requires to be named as Additional Insured(s), with coverage at least as broad as ISO Form CG 20 26. The Additional Insured endorsement shall either specify the entity's name, if known, or the entity's title (e.g., Project Manager).
<ul style="list-style-type: none"> ■ Workers' Compensation Art. 22.1.2 ■ Disability Benefits Insurance Art. 22.1.2 ■ Employers' Liability Art. 22.1.2 <input type="checkbox"/> Jones Act Art. 22.1.3 <input type="checkbox"/> U.S. Longshoremen's and Harbor Workers Compensation Act Art. 22.1.3 	<p>Workers' Compensation, Employers' Liability, and Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction.</p> <p>Note: The following forms are acceptable: (1) New York State Workers' Compensation Board Form No. C-105.2, (2) State Insurance Fund Form No. U-26.3, (3) New York State Workers' Compensation Board Form No. DB-120.1 and (3) Request for WC/DB Exemption Form No. CE-200. The City will not accept an ACORD form as proof of Workers' Compensation or Disability Insurance.</p> <p>Jones Act and U.S. Longshoremen's and Harbor Workers' Compensation Act: Statutory per U.S. law.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
■ Builders' Risk Art. 22.1.4	100 % of total value of Work Contractor the Named Insured; the City both an Additional Insured and one of the loss payees as its interests may appear. If the Work does not involve construction of a new building or gut renovation work, the Contractor may provide an installation floater in lieu of Builders Risk insurance. Note: Builders Risk Insurance may terminate upon Substantial Completion of the Work in its entirety.
■ Commercial Auto Liability Art. 22.1.5	\$1,000,000.00 per accident combined single limit If vehicles are used for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90
<input type="checkbox"/> Contractor's Pollution Liability Art. 22.1.6	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
<input type="checkbox"/> Marine Protection and Indemnity Art. 22.1.7(a)	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<input type="checkbox"/> Hull and Machinery Insurance Art. 22.1.7(b)	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
<input type="checkbox"/> Marine Pollution Liability Art. 22.1.7(c)	\$ _____ each occurrence Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Ship Repairers Legal Liability	\$ _____ each occurrence
[OTHER] Art. 22.1.8 <input type="checkbox"/> Collision Liability/Towers Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Railroad Protective Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

<p>[OTHER] Art. 22.1.8</p> <p>■ Asbestos Liability _____</p>	<p>Only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>\$1,000,000 each occurrence, \$2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>Additional Insureds: 1. City of New York, including its officials and employees.</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Professional Liability</p> <p>In the event any section of the Specifications requires the Contractor to engage a Professional Engineer to provide design and/or engineering services, the Engineer engaged by the Contractor, as well as any sub consultant(s) performing professional services, shall provide Professional Liability Insurance.</p>	<p>\$1,000,000 per occurrence</p> <p>The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of \$1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer.</p> <p>Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a retroactive date, including at least the last policy year.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certificates of Insurance

All certificates of insurance (except certificates of insurance solely evidencing Workers' Compensation Insurance, Employer's Liability Insurance, and/or Disability Benefits Insurance) must be accompanied by one of the following:

- (1) the Certification by Insurance Broker or Agent on the following page setting forth the required information and signatures;

-- OR --

- (2) copies of all policies as certified by an authorized representative of the issuing insurance carrier that are referenced in such certificate of insurance. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certification by Insurance Broker or Agent

The undersigned insurance broker or agent represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects.

[Name of broker or agent (typewritten)]

[Address of broker or agent (typewritten)]

[Email address of broker or agent (typewritten)]

[Phone number/Fax number of broker or agent (typewritten)]

[Signature of authorized official or broker or agent]

[Name and title of authorized official, broker or agent (typewritten)]

State of)
) ss:
County of)

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

NOTARY PUBLIC FOR THE STATE OF _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART IV. Address of Commissioner

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit

30-30 Thomson Avenue, 4th Floor

Long Island City, New York 11101

SCHEDULE B

Guarantees and Warranties

(Reference: Section 01 7839, Article 2.7 of the DDC Standard General Conditions)

GUARANTY FROM CONTRACTOR

(1) **Contractor's Guaranty Obligation:** The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with the Contract), except for the areas of Work set forth below:

- Roofing, Waterproofing, and Joint Sealant Work. For these types of work, the guarantee period shall be (2) two years.
- Trees and/or Plant Material. For trees and/or plant material furnished and installed, the guarantee period shall be (2) two years. During the guarantee period, the Contractor shall provide all maintenance services set forth in the Specifications.

(2) **Guaranty Period:** The obligation of the Contractor, and its Surety under the Performance Bond, is limited to the period(s) of time specified above.

(3) **Other Provisions Deemed Deleted:** In the event the Specifications and/or the Contract Drawings contain any provisions regarding guaranty requirements, such provisions are deemed deleted and replaced with the guaranty requirements set forth in this Schedule B.

WARRANTY FROM MANUFACTURER

(1) **Contractor's Obligation to Provide Warranties:** The items of material and/or equipment for which manufacturer warranties are required are listed below. For each item of material and/or equipment listed below, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth below and will be replaced or repaired within such specified period. The Contractor shall deliver all required warranties to the Commissioner.

(2) **Required Warranties:**

Specification Number	Material or Equipment	Warranty Period
071326	Self Adhering Sheet	
	Water proofing	5 years
079200	Joint Sealants	2 years
083483	Floor Doors	5 years
083900	Floor Protection Doors	1 year
087100	Door Hardware	3 years
211339	Compressed Air Foam System	1 year
230513	Electric Motors	5 years
232123	Pumps	1 year
235100	Vents, Stack and Breeching	1 year
235300	Fuel Handling Systems	1 year

236210	Air Cooled Air Conditioning Units	5 years
237305	Fans	3 years
238600	Electric Motor Controllers	5 years
262200	Transformer	5 years
262416	Panel boards	1 year
262726	Wiring Devices	2 year
262919	Switchboards	5 years
263213	Engine Generator and Accessory	5 years
263623	Automatic Transfer Switch	2 years
264000	Fire Alarm Life System	2 years
264313	Surge Protection Devices	3 years

- (3) **Application:** The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.
- (4) **Other Provisions:** The warranty requirements set forth in this Schedule B are also included in the Specifications.
- (a) In the event of any conflict between a warranty requirement set forth in the Specifications and a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall take precedence.
- (b) In the event a warranty requirement set forth in the Specifications is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications, shall remain in full force and effect.
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from both Schedule B and the Specifications, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (d) In the event a warranty requirement is provided for a particular item of material or equipment, and such requirement specifies a warranty period that is longer than that which is actually provided by any of the specified manufacturers, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by any of the specified manufacturers, unless otherwise directed in writing by the Commissioner.
- (e) Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.

SCHEDULE C

Contract Drawings

(Reference: Section 01 1000, Article 1.5 (A) of the DDC Standard General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

Project Cover Sheet

Emergency Generator Related Project

ARCHITECTURAL DRAWINGS

- GN-101.00 GENERAL NOTES
- GN-102.00 FLOOD MAPS
- A-035.00 SITE PLAN
- A-101.00 FUEL OIL TANK ROOM AT CELLAR PLAN
- A-102.00 ATS & TRANSFORMER ROOM AT BASEMENT PLAN
- A-103.00 ENLARGED FLOOR PLAN
- A-104.00 WEST PENTHOUSE FLOOR PLAN
- A-105.00 ENLARGED FLOOR PLANS
- A-106.00 BASEMENT PART PLAN AT FOAM EQUIPMENT ROOM
- A-201.00 WEST PENTHOUSE ELEVATION
- A-202.00 WEST PENTHOUSE ELEVATION
- A-203.00 WEST PENTHOUSE SECTIONS & DETAILS
- A-204.00 WEST PENTHOUSE DETAILS
- A-701.00 PARTITION
- A-702.00 DETAILS
- A-911.00 DOOR SCHEDULE AND DETAILS
- A-912.00 LOUVER SCHEDULE AND DETAILS

ASBESTOS ABATEMENT DRAWINGS

- H001.00 ASBESTOS ABATEMENT – GENERAL NOTES
- H002.00 ASBESTOS ABATEMENT – BASEMENT PLAN
- H003.00 ASBESTOS ABATEMENT – FIRST FLOOR PLAN
- H004.00 ASBESTOS ABATEMENT – SECOND FLOOR PLAN
- H005.00 ASBESTOS ABATEMENT – THIRD FLOOR PLAN
- H006.00 ASBESTOS ABATEMENT – FOURTH FLOOR PLAN
- H007.00 ASBESTOS ABATEMENT – FIFTH FLOOR PLAN
- H008.00 ASBESTOS ABATEMENT – SIXTH FLOOR PLAN
- H009.00 ASBESTOS ABATEMENT – SEVENTH FLOOR PLAN
- H010.00 ASBESTOS ABATEMENT – EIGHTH FLOOR PLAN
- H011.00 ASBESTOS ABATEMENT – NINTH FLOOR PLAN
- H012.00 ASBESTOS ABATEMENT – TENTH FLOOR PLAN (WEST ELEVATOR BULKHEAD)

STRUCTURE

- S-100.00 PART PLAN: CELLAR & BASEMENT LEVEL
- S-101.00 PART PLAN: BASEMENT
- S-102.00 PART FIRST – ROOF FLOOR PLAN
- S-103.00 PART FIRST – SEVENTH FLOOR
- S-104.00 WEST BULKHEAD: TANK FLOOR AND ROOF
- S-110.00 NOTES, LEGEND AND DETAILS
- S-120.00 SECTIONS 1
- S-121.00 SECTIONS 2

MECHANICAL DRAWINGS

M-100.00	MECHANICAL DRAWING LIST, SCOPE OF WORK AND NOTES
M-101.00	MECHANICAL LEGEND AND ABBREVIATIONS
M-210.00	MECHANICAL ROOF DEMO PLAN
M-300.00	MECHANICAL CELLAR FLOOR PLAN
M-301.00	MECHANICAL BASEMENT FLOOR PLAN
M-308.00	MECHANICAL EIGHTH FLOOR PLAN
M-310.00	MECHANICAL ROOF FLOOR PLAN
M-400.00	MECHANICAL FUEL OIL RISER DIAGRAM
M-500.00	MECHANICAL DETAILS
M-501.00	MECHANICAL DETAILS
M-600.00	MECHANICAL SCHEDULES

ELECTRICAL DRAWINGS

EG-100.00	ELECTRICAL DREAWING LIST, SCOPE OF WORK AND NOTES
EG-101.00	ELECTRICAL LEGEND AND ABBREVIATION
EG-300.00	ELECTRICAL POWER CELLAR PLAN-DEMO AND NEW WORK-OVERALL
EG-3C0A.00	ELECTRICAL POWER CELLAR PLAN-DEMO AND NEW WORK-EAST
EG-3C0B.00	ELECTRICAL POWER CELLAR PLAN-DEMO AND NEW WORK-WEST
EG-300.00	ELECTRICAL POWER BASEMENT PLAN-DEMO AND NEW WORK-OVERALL
EG-300A.00	ELECTRICAL POWER BASEMENT PLAN-DEMO AND NEW WORK-EAST
EG-300B.00	ELECTRICAL POWER BASEMENT PLAN-DEMO AND NEW WORK-WEST
EG-301.00	ELECTRICAL POWER FIRST FLOOR PLAN-DEMO AND NEW WORK-OVERALL
EG-301A.00	ELECTRICAL POWER FIRST FLOOR PLAN-DEMO AND NEW WORK-EAST
EG-301B.00	ELECTRICAL POWER FIRST FLOOR PLAN-DEMO AND NEW WORK-WEST
EG-302.00	ELECTRICAL POWER SECOND FLOOR PLAN-DEMO AND NEW WORK OVERALL
EG-302A.00	ELECTRICAL POWER SECOND FLOOR PLAN-DEMO AND NEW WORK-EAST
EG-302B.00	ELECTRICAL POWER SECOND FLOOR PLAN-DEMO AND NEW WORK-WEST
EG-303.00	ELECTRICAL POWER THIRD FLOOR PLAN-DEMO AND NEW WORK-OVERALL
EG-303A.00	ELECTRICAL POWER THIRD FLOOR PLAN-DEMO AND NEW WORK-EAST
EG-303B.00	ELECTRICAL POWER THIRD FLOOR PLAN-DEMO AND NEW YORK-WEST
EG-304.00	ELECTRICAL POWER FOURTH FLOOR PLAN-DEMO AND NEW WORK-OVERALL
EG-304A.00	ELECTRICAL POWER FOURTH FLOOR PLAN-DEMO AND NEW WORK-EAST
EG-304B.00	ELECTRICAL POWER FOURTH FLOOR PLAN-DEMO AND NEW WORK-WEST
EG-305.00	ELECTRICAL POWER FIFTH FLOOR PLAN-DEMO AND NEW WORK-OVERALL
EG-305A.00	ELECTRICAL POWER FIFTH FLOOR PLAN-DEMO AND NEW WORK-EAST
EG-305B.00	ELECTRICAL POWER FIFTH FLOOR PLAN-DEMO AND NEW WORK-WEST
EG-306.00	ELECTRICAL POWER SIXTH FLOOR PLAN-DEMO AND NEW WORK-OVERALL
EG-306A.00	ELECTRICAL POWER SIXTH FLOOR PLAN-DEMO AND NEW WORK-EAST
EG-306B.00	ELECTRICAL POWER SIXTH FLOOR PLAN DEMO AND NEW WORK-WEST
EG-307.00	ELECTRICAL POWER SEVENTH FLOOR PLAN-DEMO AND NEW WORK-OVERALL
EG-307A.00	ELECTRICAL POWER SEVENTH FLOOR PLAN-DEMO AND NEW WORK-EAST
EG-307B.00	ELECTRICAL POWER SEVENTH FLOOR PLAN-DEMO AND NEW WORK-WEST
EG-308.00	ELECTRICAL POWER EIGHTH FLOOR PLAN-DEMO AND NEW WORK
EG-309.00	ELECTRICAL POWER NINTH FLOOR PLAN-DEMO AND NEW WORK
EG-310R.00	ELECTRICAL POWER ROOF FLOOR PLAN-DEMO AND NEW WORK
EL-3C0B.00	ELECTRICAL LIGHTING CELLAR PLAN - NEW WORK-WEST
EL-300B.00	ELECTRICAL LIGHTING BASEMENT PLAN-DEMO AND NEW WORK-WEST
EL-30R.00	ELECTRICAL LIGHTING NINETH FLOOR AND ROOF PLAN-DEMO AND NEW WORK
EG-500.00	ELECTRICAL POWER EMERGENCY RISER DIAGRAM – EXISTING AND DEMO
EG-501.00	ELECTRICAL POWER EMERGENCY RISER DIAGRAM – NEW
EG-502.00	ELECTRICAL POWER EMERGENCY RISER DIAGRAM – ELEVATOR RELATED
EG-600.00	ELECTRICAL DETAILS – SHEET #1
EG-601.00	ELECTRICAL DETAILS – SHEET #2
EG-700.00	ELECTRICAL PANEL SCHEDULES –SHEET #1

EG-701.00 ELECTRICAL PANEL SCHEDULES –SHEET #2
EN-100.00 ENERGY COMPLIANCE – SHEET #1
EN-101.00 ENERGY COMPLIANCE – SHEET #2
FA-100.00 FIRE ALARM DRAWING LIST, SCOPE OF WORK AND NOTES
FA-3C0B.00 FIRE ALARM CELLAR PLAN DEMO AND NEW
FA-300B.00 FIRE ALARM BASEMENT PLAN DEMO AND NEW
FA-30R.00 FIRE ALARM ROOF PLAN DEMO AND NEW
FA-500.00 FIRE ALARM RISER DIAGRAM

PLUMBING DRAWINGS

P-100.00 -PLUMBING DRAWING LIST, SCOPE OF WORK AND NOTES
P-101.00 - PLUMBING LEGEND AND ABBREVIATION
P-200.00 - PLUMBING CELLAR PLAN DEMO PLAN
P-201.00- PLUMBING BASEMENT PLAN DEMO PLAN
P-210.00- PLUMBING ROOF PLAN & BULKHEAD TANK LEVEL DEMO PLAN
P-300.00- PLUMBING CELLAR CONSTRUCTION PLAN
P-301.00- PLUMBING BASEMENT CONSTRUCTION PLAN
P-310.00- PLUMBING ROOF CONSTRUCTION PLAN
P-500.00- PLUMBING SCHEDULE SHEET
P-600.00- PLUMBING DETAIL SHEET

FIRE PROTECTION DRAWINGS

FP-100.00 – FIRE PROTECTION DRAWING LIST, DESIGN CRITERIA AND NOTES
FP-101.00 - FIRE PROTECTION LEGEND AND ABBREVIATIONS
FP-102.00 - FIRE PROTECTION BUILDING NOTES SHEET
FP-200.00 - FIRE PROTECTION CELLAR DEMOLITION PLAN
FP-201.00- FIRE PROTECTION BASEMENT DEMOLITION PLAN
FP-300.00- FIRE PROTECTION CELLAR CONSTRUCTION PLAN
FP-301.00- FIRE PROTECTION BASEMENT CONSTRUCTION PLAN
FP-309.00- FIRE PROTECTION 9TH FL CONSTRUCTION PLAN
FP-310.00- FIRE PROTECTION ROOF CONSTRUCTION PLAN
FP-500.00- FIRE PROTECTION SCHEDULE SHEET
FP-501.00- FIRE PROTECTION FOAM SYSTEM CALC., LAYOUT & MANUF.DATA SHEETS
FP-502.00- FIRE PROTECTION FOAM SYSTEM MANUF.DATA SHEETS
FP-600.00- FIRE PROTECTION DETAIL SHEET

Electrical Infrastructure Upgrade Project

ARCHITECTURAL DRAWINGS

GN-111.00 GENERAL NOTES
GN-112.00 FLOOD MAPS
A-111.00 ELECTRICAL SWITCHGEAR ROOM AT BASEMENT LEVEL
A-921.00 DOOR SCHEDULE AND DETAILS

MECHANICAL DRAWINGS

M-700.00 MECHANICAL DRAWING LIST, SCOPE OF WORK AND NOTES
M-701.00 MECHANICAL LEGEND AND ABBREVIATIONS
M-801.00 MECHANICAL BASEMENT PLAN AND SCHEDULES
M-900.00 MECHANICAL DETAILS

STRUCTURAL

S-200.00 BASEMENT PART PLAN, DETAILS AND NOTES

ELECTRICAL DRAWINGS

- E-100.00 ELECTRICAL DREAWING LIST, SCOPE OF WORK AND NOTES
- E-101.00 ELECTRICAL LEGEND AND ABBREVIATION
- E-3C0.00 ELECTRICAL POWER CELLAR PLAN-DEMO AND NEW WORK-OVERALL
- E-3CA.00 ELECTRICAL POWER CELLAR PLAN-DEMO AND NEW WORK-EAST
- E-3CB.00 ELECTRICAL POWER CELLAR PLAN-DEMO AND NEW WORK-WEST
- E-300.00 ELECTRICAL POWER BASEMENT PLAN-DEMO AND NEW WORK-OVERALL
- E-300A.00 ELECTRICAL POWER BASEMENT PLAN-DEMO AND NEW WORK-EAST
- E-300B.00 ELECTRICAL POWER BASEMENT PLAN-DEMO AND NEW WORK-WEST
- E-310.00 ELECTRICAL POWER FIRST FLOOR PLAN-DEMO AND WORK-OVERALL
- E-310A.00 ELECTRICAL POWER FIRST FLOOR PLAN-DEMO AND WORK-EAST
- E-310B.00 ELECTRICAL POWER FIRST FLOOR PLAN-DEMO AND WORK-WEST
- E-320.00 ELECTRICAL POWER SECOND FLOOR PLAN-DEMO AND NEW WORK-OVERALL
- E-320A.00 ELECTRICAL POWER SECOND FLOOR PLAN-DEMO AND NEW WORK-EAST
- E-320B.00 ELECTRICAL POWER SECOND FLOOR PLAN-DEMO AND NEW WORK-WEST
- E-330.00 ELECTRICAL POWER THIRD FLOOR PLAN-DEMO AND NEW WORK-OVERALL
- E-330A.00 ELECTRICAL POWER THIRD FLOOR PLAN-DEMO AND NEW WORK-EAST
- E-330B.00 ELECTRICAL POWER THIRD FLOOR PLAN-DEMO AND NEW WORK-WEST
- E-340.00 ELECTRICAL POWER FOURTH FLOOR PLAN-DEMO AND NEW WORK-OVERALL
- E-340A.00 ELECTRICAL POWER FOURTH FLOOR PLAN-DEMO AND NEW WORK-EAST
- E-340B.00 ELECTRICAL POWER FOURTH FLOOR PLAN-DEMO AND NEW WORK-WEST
- E-350.00 ELECTRICAL POWER FIFTH FLOOR PLAN-DEMO AND NEW WORK-OVERALL
- E-350A.00 ELECTRICAL POWER FIFTH FLOOR PLAN-DEMO AND NEW WORK-EAST
- E-350B.00 ELECTRICAL POWER FIFTH FLOOR PLAN-DEMO AND NEW WORK-WEST
- E-360.00 ELECTRICAL POWER SIXTH FLOOR PLAN-DEMO AND NEW WORK-OVERALL
- E-360A.00 ELECTRICAL POWER SIXTH FLOOR PLAN-DEMO AND NEW WORK-EAST
- E-360B.00 ELECTRICAL POWER SIXTH FLOOR PLAN-DEMO AND NEW WORK-WEST
- E-370.00 ELECTRICAL POWER SEVENTH FLOOR PLAN-DEMO AND NEW WORK-OVERALL
- E-370A.00 ELECTRICAL POWER SEVENTH FLOOR PLAN-DEMO AND NEW WORK-EAST
- E-370B.00 ELECTRICAL POWER SEVENTH FLOOR PLAN-DEMO AND NEW WORK-WEST
- E-380.00 ELECTRICAL POWER EIGHTH FLOOR PLAN-NEW WORK
- E-390.00 ELECTRICAL POWER NINTH FLOOR PLAN-NEW WORK
- E-500.00 ELECTRICAL POWER EMERGENCY RISER DIAGRAM – DEMOLITION
- E-502.00 ELECTRICAL POWER EMERGENCY RISER DIAGRAM – NEW WORK
- E-601.00 ELECTRICAL DETAILS- SHEET #1
- E-602.00 ELECTRICAL DETAILS- SHEET #2
- E-603.00 ELECTRICAL DETAILS- SHEET #3
- E-700.00 ELECTRICAL PANEL SCHEDULES – SHEET #1
- E-701.00 ELECTRICAL PANEL SCHEDULES – SHEET #2
- EN-102.00 ENERGY COMPLIANCE – SHEET #3
- EN-103.00 ENERGY COMPLIANCE – SHEET #4

SCHEDULE D

Electrical Motor Control Equipment

(Reference: 01 3506, Article 3.8 of the DDC Standard General Conditions)

Requirements for electrical motor equipment may be included in one or more sections of the Specifications for the Contract for the Project. Schedule D set forth below delineates specific information for electrical motor control equipment. In the event of any conflict between the Specifications and this Schedule D, Schedule D shall take precedence; provided, however, in the event of an omission from Schedule D (i.e., Schedule D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from Schedule D shall have no effect and the Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

DB Disconnect Circuit Breaker (Switch) **P** Pilot Light **BG** Break Glass Station
TS Thermal Switch **F** Firestat **HOA** Hand-Off Auto.
MS Magnetic Starter **T** Thermostat **PB** Push Button Station
CMS Comb. Mag. Starter **AL** Alternator **RO** Remote "off"

Equip. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
EF-1	Fuel Room	1	1 hp	208/3	CMS	
EF-2	Generator Room	1	0.25 hp	115/1	CMS	
EF-3	Generator Room	1	7.5 hp	208/3	CMS	
SF-1	Fuel Room	1	1 hp	208/3	CMS	
EUH-1	Generator Room	2	10 kw	208/3	T	
EUH-2	Fuel Room	1	7.5 kw	208/3	T	
FOP-1	Fuel Room	1	0.5 hp	208/3	CMS	
AC-1	Electric Room	1	0.06 kw	208/1	CMS	
AC-2	ATS Room	1	0.06 kw	208/1	CMS	
AC-3	Transformer Room	1	0.06 kw	208/1	CMS	
AC-4	Transformer Room	1	0.06 kw	208/1	CMS	
ACCU-1	Outdoor	1	7.5 kw	208/3	CMS	
EUH-1	Electric Room	3	5 kw	208/3	T	

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/GPM)

REPORT DATE		FMS ID #/PROJECT ID #: CONTRACT REGISTRATION #: PROJECT NAME:			Contract 1 - GENERAL CONSTRUCTION																			
SPEC. SECT. #	DESCRIPTION	COORD. WITH CONTR.	SUBMITTAL	SUB. DATE	REQ'D DEL.	FABRIC. TIME	SUBMISSIONS																	
							SHOP DWG.	SAMPLE	CAT CUTS	REC'D	RETD	ACTION	REC'D	RETD	ACTION	REC'D	RETD	ACTION						
01 3526	Safety and Health Program	X																						
01 3526	Contractor's Safety Plan	X																						
01 3591	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	MSDS		X																		
01 8119	IAQ Management Plan	X																			
01 8119	Product Cut Sheets				X																
01 8119	IAQ Management Plan Photographs	X																			
02 4119	Selective Demolition, Removal and Salvage	X																			
02 8013	Allowance for incidental Asbestos Abatement	X		X																	
02 8213	Asbestos Abatement	X																			
03 0130	Concrete Restoration	X		X																	
03 3000	Cast-In-Place Concrete	X									X										
04 2113	Brick Masonry																				
04 2200	Concrete Unit Masonry																				

05 1000	Structure Steel	X	X	X																		
05 5100	Metal Stairs	X	X	X																		
05 5213	Pipe and Tube Railings		X	X																		
05 7000	Ornamental Metals	X	X	X																		
07 1326	Self-Adhering Sheet Waterproofing	X	X	X																		
07 2100	Insulation	X	X	X																		
07 6200	Sheet Metal Flashing and Trim		X	X																		
07 8413	Through Penetration Firestop System											X										
07 9200	Joint Sealants											X										
08 1113	Hollow Metal Doors and Frames			X								X										
08 3113	Access Doors											X										
08 3483	Floor Doors	X	X	X								X										
08 3900	Flood Protection Door											X										
08 7100	Door Hardware											X										
08 9119	Fixed Louver		X	X								X										
09 2216	Non Structure Metal Framing	X	X	X																		
09 2900	Gypsum Board	X	X	X								X										
09 9123	Interior Painting																					
09 9656	Slip Retardant Epoxy Floor Coating		X	X																		

10 1423	Room Identification Signage	X		X																
13 4800	Sound Vibration Seismic Control	X	X																	
21 0517	Sleeves and Seal for Fire Suppression Piping			X																
21 0518	Escutcheons for Fire Suppression Piping			X																
21 0519	Meters and Gauges for Fire Protection			X																
21 0520	Piping and Fitting Materials		X																	
21 0523	Fire Suppression Valves		X																	
21 0529	Hangers, Supports, Anchors and Guides for Fire Suppression Systems	X	X																	
21 0533	Identification of Fire Suppression Piping and Equipment	X																		
21 1119	Fire Department Connection	X																		
21 1313	Wet Pipe Sprinkler System	X	X																	
21 1339	Compressed Air Foam System	X	X																	

22 0517	Sleeves and Sleeves Seals for Plumbing Piping											X								
22 0518	Escutcheons for Plumbing Piping											X								
22 0523	Valves											X								
22 0529	Hangers, Supports, Anchors and Guides	X		X								X								
22 0530	Disinfection of Water Supply System			X								X								
22 0553	Identification of Plumbing Piping and Equipment																			
22 0590	Testing		X																	
22 0719	Insulation											X								
22 1116	Domestic Water Piping and Materials											X								
22 1316	Sanitary Waste Piping Materials											X								
22 1319	Sanitary Waste Piping Specialties		X																	
22 1413	Storm Drain Piping and Fitting Materials											X								
22 1423	Storm Drainage Specialties		X																	
23 0200	Fire Stopping											X								
23 0513	Motors											X								

23 0516	Expansion Compensators	X	X	X																							
23 0523	Valves							X																			
23 0529	Hangers, Anchors and Supports	X	X																								
23 0540	Acoustics	X																									
23 0548	Vibration Isolation							X																			
23 0553	System Identification	X																									
23 0593	Testing, Adjusting and Balancing	X																									
23 0900	Instruments	X							X																		
23 1113	Sheet Metal, Ductwork and Accessories	X	X																								
23 2123	Pumps								X																		
23 2500	Piping Cleaning and Chemical Water Treatment								X																		
23 2600	Water Specialties	X																									
23 3313	Dampers							X																			
23 5100	Vents, Stacks and Breeching	X	X																								
23 5210	Piping and Accessories	X	X																								
23 5300	Fuel Handling System	X	X																								
23 6210	Air Cooled Air Conditioning Units	X	X																								
23 7305	Fans								X																		
23 8440	Space Heating Units								X																		

26 2919	Switchboards	X	X	X																
26 3213	Engine Generator and Accessories	X	X	X																
26 3623	Automatic Transfer Switches	X																		
26 4000	Fire Alarm Life Safety System	X	X	X																
26 4313	Surge Protection Devices	X																		

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TABLE OF CONTENTS

CONTRACT NO. 1 ELECTRICAL CONSTRUCTION WORK

SECTION

DIVISION 2 - EXISTING CONDITIONS

SECTION

02 41 19	Selective Demolition, Removals and Salvage
02 80 13	Allowance for Incidental Asbestos Abatement
02 82 13	Asbestos Abatement

DIVISION 3 - CONCRETE

03 01 30	Concrete Restoration
03 30 00	Cast-in-Place Concrete

DIVISION 4 - MASONRY

04 21 13	Brick Masonry
04 22 00	Concrete Unit Masonry

DIVISION 5 - METALS

05 10 00	Structure Steel - Electrical
05 51 00	Metal Stairs
05 52 13	Pipe and Tube Railings
05 70 00	Ornamental Metals

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

07 13 26	Self-Adhering Sheet Waterproofing
07 21 00	Insulation
07 62 00	Sheet Metal Flashing and Trim
07 84 13	Through Penetration Firestop Systems
07 92 00	Joint Sealants

DIVISION 8 - OPENINGS

08 11 13	Hollow Metal Doors and Frames
08 31 13	Access Doors
08 34 83	Floor Doors
08 39 00	Flood Protection Doors
08 71 00	Door Hardware
08 91 19	Fixed Louvers



DIVISION 9 – FINISHES

- 09 22 16 Non-Structural Metal Framing
- 09 29 00 Gypsum Board
- 09 91 23 Interior Painting
- 09 96 56 Slip Retardant Epoxy Floor Coating

DIVISION 10 – SPECIALTIES

- 10 14 23 Room Identification Signage

DIVISION 13 – SOUND, VIBRATION AND SEISMIC CONTROL

- 13 48 00 Sound, Vibration and Seismic Control

DIVISION 21 - FIRE SUPPRESSION

- 21 00 03 Scope of Work
- 21 05 17 Sleeves and Seals for Fire Suppression Piping
- 21 05 18 Escutcheons for Fire Suppression Piping
- 21 05 19 Meters and Gauges for Fire Suppression Systems
- 21 05 20 Piping and Fitting Materials
- 21 05 23 Fire Suppression Valves
- 21 05 29 Hangers, Supports, Anchors and Guides for Fire Suppression Systems
- 21 05 53 Identification of Fire Suppression Piping and Equipment
- 21 11 19 Fire Department Connections
- 21 13 13 Wet Pipe Sprinkler Systems
- 21 13 39 Compressed Air Foam System

DIVISION 22 - PLUMBING

- 22 00 03 Scope of Work
- 22 05 17 Sleeves and Sleeve Seals for Plumbing Piping
- 22 05 18 Escutcheons for Plumbing Piping
- 22 05 23 Valves
- 22 05 29 Hangers, Supports, Anchors and Guides
- 22 05 30 Disinfecting of Water Supply System
- 22 05 53 Identification of Plumbing Piping and Equipment
- 22 05 90 Testing
- 22 07 19 Insulation
- 22 11 16 Domestic Water Piping and Fitting Materials
- 22 13 16 Sanitary Waste and Vent Piping and Fitting Materials
- 22 13 19 Sanitary Waste Piping Specialties
- 22 14 13 Storm Drain Piping and Fitting Materials
- 22 14 23 Storm Drainage Specialties



DIVISION 23 - HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

23 02 00	Firestopping
23 05 13	Electric Motors
23 05 16	Expansion Compensators
23 05 23	Valves
23 05 29	Hangers, Anchors and Supports
23 05 40	Acoustics
23 05 48	Vibration Isolation
23 05 53	Systems Identification
23 05 93	Testing, Adjusting and Balancing
23 09 00	Instruments
23 11 13	Sheet Metal, Ductwork and Accessories
23 21 23	Pumps
23 25 00	Pipe Cleaning and Chemical Water Treatment
23 26 00	Water Specialties
23 33 13	Dampers
23 51 00	Vents, Stacks and Breeching
23 52 10	Piping and Accessories
23 53 00	Fuel Handling Systems
23 62 10	Air Cooled Air Conditioning Units
23 73 05	Fans
23 84 40	Space Heating Units
23 85 00	Variable Frequency Controllers
23 86 00	Electric Motor Controllers



DIVISION 26 - ELECTRICAL

26 02 50	Systems Identification
26 02 65	Testing, Adjusting and Balancing
26 02 80	Equipment Connections and Coordination
26 02 90	Ceiling, Floor and Wall Electrical Penetration Fire Seals
26 05 19	600 Volt Wire and Cable
26 05 26	Grounding System
26 05 33	Raceways and Boxes
26 05 73	Overcurrent Protective Devices Coordination Study
26 22 00	Low-Voltage Distribution Transformers
26 24 16	Panelboards
26 27 26	Wiring Devices
26 28 13	Fuses (600 V and Less)
26 28 16	Disconnect Switches
26 29 13	Installation of Individual Motor Controllers
26 29 19	Switchboards
26 32 13	Engine Generator and Accessories
26 36 23	Automatic Transfer Switches
26 40 00	Fire Alarm-Life Safety Systems
26 43 13	Surge Protection Device

END OF TABLE OF CONTENTS

CONTRACT # 1
ELECTRICAL CONSTRUCTION WORK

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SECTION 02 41 19

SELECTIVE DEMOLITION, REMOVALS, AND SALVAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes all labor, materials, equipment, and services necessary to complete the work of selective demolition, removals, and salvage as shown on the Drawings, specified herein, and as required by conditions and NYC Construction Code, including, but not limited to, the following:
1. Demolition and removal of selected portions of buildings or structures.
 2. Restoration procedures for selective demolition operations.

1.3 DEFINITIONS

- A. Selective Demolition: Carefully demolish existing construction and legally dispose of removed elements and materials off-site.
- B. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- C. Remove and Salvage: Detach items from existing construction and store them for restoration and reinstallation.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain City of New York's property, demolished materials shall become Contractor's property and shall be removed from Project site.
- B. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to City of New York that may be encountered during selective demolition remain City of New

Selective Demolition, Removals, & Salvage



York's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to City of New York.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition, removals, and salvage. Comply with hauling and disposal regulations NYC Construction Code.
- B. Standards: Comply with ANSI A10.6 and NFPA 241.
- C. Knowledge of Site: Bidders shall visit site and make themselves thoroughly familiar with specific conditions relating to requirements of this Section.

1.6 SUBMITTALS

- A. General: Submit each item in this Article in compliance with the Conditions of the Contract and General Conditions. Revise and resubmit each item as required to obtain Commissioner's approval.
- B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience.
- C. Schedule of Selective Demolition Activities: Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
- D. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged. Note location of each item or material.
- E. Predemolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.
- F. Utility Mark-Outs: Provide mark-outs for all utilities prior to the start of any work that may impact concealed utilities. Concealed utilities include, but are not limited to, any utilities that may be concealed within roofing, walls, foundations, floors or below grade.

1.7 PROJECT CONDITIONS

- A. Maintain access to existing walkways, areaways, courtyards, and other adjacent used facilities.
 - 1. Do not close or obstruct walkways or other used facilities without written permission.
- B. City of New York assumes no responsibility for condition of areas to be selectively demolished.



1. Conditions existing at time of bid will be maintained by City of New York as far as practical.
- C. Hazardous Materials: Hazardous materials are known to be present in areas in which selective demolition, removals, and salvage work is to be performed.
 1. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
- D. Storage or sale of removed items or materials on-site will not be permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

PART 2 - PRODUCTS

2.1 RESTORATION MATERIALS

- A. Use restoration materials identical to existing materials.
 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to fullest extent possible.
 2. Use materials whose installed performance equals or surpasses that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- B. Inventory and record conditions of items to be removed and reinstalled and items to be removed and salvaged.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure nature and extent of conflict. Promptly submit a written report to Commissioner.
- D. As the Work progresses, Contractor shall be responsible to perform any surveys to detect hazards resulting from selective demolition, removals, and storage activities.



3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Commissioner. Provide temporary services during interruptions to existing utilities, as acceptable to Commissioner.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Commissioner and NYC Department of Transportation. Provide alternate routes around closed or obstructed traffic ways if required by NYC Department of Transportation.
 - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by NYC Department of Buildings.
 - 3. Protect existing site improvements, appurtenances, and landscaping to remain.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
- C. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.



- D. Temporary Shoring: Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being selectively demolished or removed.
 - 1. Strengthen or add new supports when required during progress of selective demolition, removals, and salvage.

3.4 POLLUTION CONTROLS

- A. Dust Control: Use temporary enclosures and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition, removals, and salvage operations. Return adjacent areas to condition existing before work of this Section began.

3.5 SELECTIVE DISASSEMBLY, REMOVALS, AND SALVAGE

- A. General: Demolish and remove existing construction only to extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition, removals, and salvage systematically, from higher to lower level. Complete operations above each floor or tier before disturbing supporting members on next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches or open flames of any kind during selective demolition, removals, and salvage work.
 - 5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

Selective Demolition, Removals, & Salvage



6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 7. Locate selective demolition, removals, and salvage equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 8. Dispose of demolished and removed items and materials promptly.
 9. Return elements of construction and surfaces that are to remain to condition existing before selective demolition, removals, and salvage operations began.
- B. Existing Facilities: Protect stairs, walkways, building entries, and other building facilities during selective demolition, removal, and salvage operations.
- C. Removed and Salvaged Items: Comply with the following:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to entity designated to restore and reinstall items.
 4. Protect items from damage during transport and storage.
 5. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition, removals, and salvage.
- E. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

3.6 PATCHING AND RESTORATION

- A. General: Promptly correct damage to adjacent construction caused by selective demolition. Removals, and salvage operations.

3.7 DISPOSAL OF DEMOLISHED AND REMOVED MATERIALS

- A. General: Promptly dispose of demolished and removed materials not to be salvaged. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.



- C. Disposal: Transport demolished materials off City of New York's property and legally dispose of them.

END OF SECTION



**Department of
Design and
Construction**

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12/22/2017

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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 **\$50,000.00** 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.

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

- H. Prior to starting, the Asbestos abatement contractor must notify the Commissioner of the Department of Design and Construction if he/she anticipates any difficulty in performing the Work as required by these Specifications. The Asbestos abatement contractor is responsible to prepare and submit all filings, notifications, etc. required by all City, State and Federal regulatory agencies having jurisdiction.

The Asbestos abatement contractor is responsible for submitting the Asbestos Project Notification Form (ACP-7 Form) to the Department of Environmental Protection, Asbestos Control Program, as per Title 15, Chapter I of RCNY and to the NYSDOL as per Industrial Code Rule 56.

The Asbestos abatement contractor is responsible for preparing, and submitting Asbestos Variance Application (ACP-9). If a Variance is required, the Asbestos abatement contractor is responsible to retain a NYSDOL Asbestos Project Designer, as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required variance.

The General contractor is responsible for preparing and submitting an Asbestos Abatement Permit and/or Work Place Safety Plans (WPSP) that may be required for the completion of the Contract or incidental work. If such plans are required, the Asbestos abatement contractor is responsible to retain a NYSDOL Licensed Design Professional as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required plans.

The Asbestos abatement contractor is responsible for the submission of all required documents to the NYCDEP to acquire the appropriate Asbestos Project Conditional Closeout (ACP-20) and/or Asbestos Project Completion Forms (ACP-21) on a timely basis for the completion of the incidental work encountered under this contract.

The Asbestos abatement contractor will be required to attend an on-site job meeting with the Construction Project Manager prior to the start of work to examine conditions and plan the sequence of operations, etc.

The Asbestos abatement contractor shall have a NYSDOL/NYCDEP Asbestos Supervisor onsite to oversee the work and conduct a final visual inspection as required by both Title 15, Chapter 1 of the RCNY and NYSDOL Industrial Code Rule 56.

- I. All work shall be done during regular working hours unless the Asbestos abatement contractor requests authorization to work in other than regular working hours and such authorization is granted by the Commissioner. (Regular work hours are those hours during which any given facility, in which work is to be done, is customarily open and functioning, normally between the hours of 8:00 A.M. and 4:00 P.M. Monday - Friday.) If such work schedule is authorized by the Commissioner, the work shall be done at no additional cost to the City.

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

- 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

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

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;

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

- D. Building location/address, including Block and Lot numbers;
- E. Work schedule including the starting and completion dates;
- F. Abatement methods to be employed;
- G. Procedures for removal of asbestos-containing material;
- H. Name, title and authority of governmental representative sponsoring project.

1.04 WORK INCLUDED IN UNIT PRICE

The Asbestos abatement contractor will be paid a basic unit price of **\$25.00** per square feet for the removal and disposal of asbestos containing material and replacement of the same with non-asbestos containing materials.

Unit price shall include all costs necessary to do the work of this Contract, including but not limited to: labor, materials, equipment, utilities, disposal, insurance, overhead and profit.

1.05 AIR MONITORING – ASBESTOS ABATEMENT CONTRACTOR

- A. "Air Sampling" shall mean the process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Standard and Technology which are utilized for lower detectability and specific fiber identification.
- B. Air monitoring of Asbestos abatement contractor's personnel will be performed in conformance with OSHA requirements, (All costs associated with this work are deemed included in the unit price.).
- C. Qualifications of Testing Laboratory:

The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).

Note: Work area air testing and analysis before, during and upon completion of work (clearance testing) will be performed by a Third Party Air Monitor under separate Contract with the City.

1.06 THIRD PARTY MONITORING AND LABORATORY

- A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.
- B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM).
- C. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the Asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.
- D. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the Asbestos abatement contractor.

1.07 PAYMENT REQUEST DOCUMENTATION

- B. The following information shall be included for each payment request:
 - 1. Description of work performed.
 - 2. Linear footage and pipe sizes involved.
 - 3. Square footage for boiler & breaching insulation removed.
 - 4. Square footage of non pipe and boiler areas removed, patched, enclosed, sealed, or painted.
 - 5. Square footage of encapsulation, sealing, patching, and painting involved.
 - 6. Total cost associated with compliance with the assigned task.
 - 7. Architectural, Electrical, HVAC, Plumbing, etc. work incidental to the Asbestos Abatement Work.
 - 8. A certified copy (in form 4312-39) to the Comptroller or Financial Officer of the New York City to the effect that the financial statement is true.
 - 9. A signed copy (in form 6506q-6) of certificate of compliance with non-discriminatory provisions of the Contract.

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

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

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

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 1.08, multiplied by the unit price in Section 1.04.

EXAMPLE: 100 lin.ft. of 1/2" pipe and 100 lin.ft. of 6" pipe, including elbows, tees. Flanges, etc.

$$100 \times 0.65 = 65 \text{ sq.ft.} \quad 65 \times \text{unit price} = \text{Payment}$$

$$100 \times 2.62 = 262 \text{ sq.ft.} \quad 262 \times \text{unit price} = \text{Payment}$$

- B. REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER INSULATION:** (all types including Silicate Block and including the removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

EXAMPLE: Item B. removal and replacement of 1000 S.F. of boiler insulation (incl. Silicate block)

$$1000 \text{ S.F.} \times (1.5) \times \text{the Unit Price} = \text{Payment}$$

- C. REMOVAL, DISPOSAL AND REPLACEMENT OF TANK INSULATION:** (all types including removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.
- D. REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER UPTAKE, & BREACHING INSULATION:** (all types including stiffening angles and wire lath) Payment shall be made at 2.0 times the unit price per square foot.
- E. REMOVAL, DISPOSAL AND REPLACEMENT OF DUCT INSULATION:** Payment shall be made at 1.0 times the unit price per square foot.
- 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

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMEN

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

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

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. Safety Data Sheets (SDS) 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 SDS 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

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

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

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

project record shall be kept on site at all times. Upon completion of the project, the project record shall be maintained by the building owner. The project record shall be submitted to DDC as part of the close out documents. The project record shall consist of:

- a. Copies of licenses of all asbestos abatement contractors involved in the project;
- b. Copies of NYCDEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;
- c. Copies of all project notifications and reports filed with NYCDEP, NYSDOL and USEPA for the project, with any amendments or variances;
- d. Copies of all asbestos abatement permits, including associated approved plans and work place safety plan;
- e. A copy of the air sampling log and all air sampling results;
- f. A copy of the abatement asbestos abatement contractor's daily log book;
- g. Copies of all asbestos waste manifests;
- h. A copy of all Project Monitor's Reports (ACP-15).
- i. A copy of each ATR-1 Form completed for the asbestos project (if required).
- j. A copy of each Asbestos Project Conditional Closeout Report (ACP-20) if required.
- k. A copy of the Asbestos Project Completion Form (ACP-21).

1.13 PROTECTION OF FURNITURE AND EQUIPMENT

Cover all furniture and equipment that cannot be removed from Work Areas. Movable furniture and equipment will be removed from Work Areas by the Asbestos abatement contractor prior to start of work. At the conclusion of the work (after final air testing), the Asbestos abatement contractor will remove all plastic covering on walls, floors, furniture, equipment and reinstall furniture and equipment. He shall remove and store all sheaths, curtains and drapes, and reinstall same following final clean up.

1.14 UTILITIES

A. General:

All temporary facilities shall be subject to the approval of the Commissioner. Prior to starting work at any site, locations and/or sketches (if required) of temporary facilities must be submitted to the Construction Project Manager for the required approval.

B. Water:

The Department of Design and Construction will furnish all water needed for construction, at no cost to the Asbestos abatement contractor in buildings under their jurisdiction. However, it is the responsibility of the Asbestos abatement contractor to ensure that hot water is provided for showering in the decontamination unit. The Asbestos abatement contractor shall furnish, install and maintain any needed equipment to meet these requirements at his own expense.

C. Electricity:

The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the Asbestos abatement contractor in a building, under their jurisdiction. The Asbestos abatement contractor is responsible for routing the electric power to the abatement Work Area.

All temporary lighting and temporary electrical service for Work Area shall be in weatherproof enclosures and be ground fault protected.

D. In leased spaces, arrangements for water supplies and electricity must be made with the landlord. However, all such arrangements must be made through and are subject to approval of the Department of Design and Construction. Utilities will be provided at no cost to the Asbestos abatement contractor. However, it is the Asbestos abatement contractor's (or the General contractor's) responsibility to furnish and install a suitable distribution system to the Work Area. This system will be provided at no cost to the City.

1.15 FEES

The Asbestos abatement contractor shall be responsible for any and all fees or charges imposed by Local, State or Federal Law, Rule and Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the date of the Bid opening.

END OF SECTION

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SECTION 028213**ASBESTOS ABATEMENT****PART 1 – GENERAL****1.01 DESCRIPTION**

- A. The Contract Documents are as defined in the “Agreement”. The General Conditions shall apply to all Work of this Section.
- B. Work specified herein shall be the removal and disposal of Asbestos-Containing Materials (ACM) and asbestos-contaminated materials from designated areas of the Bellevue Men’s Shelter, located at 400 East 30th Street, New York, NY 10016
- C. The following documents were reviewed and utilized to generate this abatement design specification which serves to locate and quantify the amount of ACM, and asbestos contaminated material, to be abated in support of this project.
 - 1. Sets of Drawings titled “Bellevue Men’s Shelter, Emergency Generator” dated 12/09/16, and titled “Bellevue Men’s Shelter, Electrical Service Upgrade” dated 12/23/16, prepared by WSP;
 - 2. Asbestos Survey Report prepared by Louis Berger & Assoc., P.C. (LBA) dated 01/20/17, KAM dated 12/20/16 & 05/27/16, LBA dated 04/15/16, LIRO dated 05/12/15 and ATC dated 12/12/13.
- D. The phasing and scheduling of work for this project shall be coordinated with and approved by the Construction Project Manager and Facility Manager. The Construction Project Manager and Facility Manager will make the final determination on all issues under this Contract covered by this Specification.

1.02 SCOPE OF WORK

- A. The asbestos abatement contractor is to provide all labor, materials, equipment, services, testing, appurtenances, permits and agreements necessary to perform the work required for the abatement of ACM as required by these contract documents. All work shall be performed in accordance with this Specification, EPA regulations, OSHA regulations, New York City Local Law 70, Title 15, Chapter 1 RCNY, New York State Industrial Code 56, NIOSH recommendations, and any other applicable federal, state or local government regulations. Whenever there is a conflict or overlap of the above references, the most stringent provisions are applicable.
- B. The intent of this Specification section is to ensure that the asbestos abatement contractor is responsible for the following:
 - 1. Abatement of all ACM.

2. Cleaning and decontamination of the entire affected area.
 3. Demolition that may be required to access ACM in each area, Asbestos abatement contractor shall dispose of all debris associated with demolition activities as ACM waste.
 4. Removal and disposal of all ACM found within these areas such as glue associated with fiberglass wall panels, aircell duct insulation, block duct insulation, electrical wire wrap on electrical panel, pipe insulation, pipe fitting insulation and exterior large louver caulking.
 5. Provide all scaffolding, platform installation, equipment, tools, transportation and any other equipment required and/or necessary to complete all work described in the Contract Documents.
 6. The Asbestos abatement contractor shall be responsible for and shall include any and all fees or changes imposed by Local, State or Federal Law, Rule or Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the work.
 7. Prior to destructive demolition activities, the DDC may elect to collect bulk samples of assumed asbestos-containing materials and analyze the bulk samples for asbestos content.
- C. The Asbestos abatement contractor shall perform the following work as described below and indicated on the drawings. The drawings are only a diagrammatic representation of the Work Areas and do not constitute the actual quantities of material. Asbestos abatement contractor is responsible for the confirmation of the actual total quantities of the Work.

1. Drawing H002.00: Basement Plan

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Area B1**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
B1	NYCDEP Section § 1-106 Tent Containment Procedures	150 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	—

ASBESTOS ABATEMENT**2. Drawing H003.00: First Floor Plan**

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Areas 1A, 1B, 1C & 1D**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
1A	NYCDEP Section § 1-106 Tent Containment Procedures	100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
1B		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
1C		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
1D		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-

3. Drawing H004.00: Second Floor Plan

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Areas 2A, 2B, 2C & 2D**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
2A	NYCDEP Section § 1-106 Tent Containment Procedures	100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
2B		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
2C		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
2D		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-

4. Drawing H005.00: Third Floor Plan

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Areas 3A, 3B, 3C & 3D**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
3A	NYCDEP Section § 1-106 Tent Containment Procedures	100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	—
3B		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	—
3C		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	—
3D		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	—

5. Drawing H006.00: Fourth Floor Plan

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Areas 4A, 4B, 4C & 4D**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
4A	NYCDEP Section § 1-106 Tent Containment Procedures	100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	—
4B		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	—
4C		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	—
4D		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	—

6. Drawing H007.00: Fifth Floor Plan

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Areas 5A, 5B, 5C & 5D**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
5A	NYCDEP Section § 1-106 Tent Containment Procedures	100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
5B		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
5C		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
5D		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-

7. Drawing H008.00: Sixth Floor Plan

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Areas 6A, 6B, 6C & 6D**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
6A	NYCDEP Section § 1-106 Tent Containment Procedures	100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
6B		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
6C		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
6D		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-

8. Drawing H009.00: Seventh Floor Plan

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Areas 7A, 7B, 7C & 7D**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
7A	NYCDEP Section § 1-106 Tent Containment Procedures	100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
7B		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
7C		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
7D		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-

9. Drawing H010.00: Eighth Floor Plan

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Areas 8A & 8B**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.
- b. Remove and dispose of asbestos-containing glue associated with fiberglass wall panels within **Work Areas 8C**. Asbestos-containing glue associated with fiberglass wall panels shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
8A	NYCDEP Section § 1-106 Tent Containment Procedures	100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
8B		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
8C		175 Sq. Ft. of Glue Associated with Fiberglass Wall Panels (Brown)	-

10. Drawing H011.00: Ninth Floor Plan

- a. Remove and dispose of asbestos-containing electric wire wrap on electrical panel within **Work Areas 9A & 9B**. Asbestos-containing electric wire wrap on electrical panel shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
9A	NYCDEP Section § 1-106 Tent Containment Procedures	100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-
9B		100 Ln. Ft. of Electric Wire Wrap on Electrical Panel (White)	-

11. Drawing H012.00: Tenth Floor Plan (West Elevator Bulkhead)

- a. Remove and dispose of asbestos-containing aircell duct insulation, block duct insulation, pipe insulation and pipe fitting insulation within **Work Area 10**. Asbestos-containing aircell duct insulation, block duct insulation, pipe insulation and pipe fitting insulation shall be removed utilizing NYCDEP Full Containment Procedures. Asbestos-containing large louver caulking-exterior shall be removed utilizing NYCDEP Title 15, Chapter 1 § 1-109 Abatement from Vertical Exterior Surfaces.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
10	NYCDEP Full Containment Procedures	7,500 Sq. Ft. of Aircell Duct Insulation (Gray) and Block Duct Insulation (White)	250 Ln. Ft. of Pipe Insulation-Soft & Hard Texture (Beige) and Pipe Fitting Insulation Associated with Soft & Hard Textured Pipe Insulation (Gray)
	NYCDEP Section § 1-109 Abatement from Vertical Exterior Surfaces	3 Sq. Ft. (30 Ln. Ft.) of Large Louver Caulking-Exterior (Black) within 2 Openings	-

- D. The facility is under the jurisdiction of the New York City Department of Homeless Services. The asbestos abatement contractor shall perform the work of this contract in a manner that will be least disruptive to the normal use of the building.
- E. Asbestos abatement contractor's attention is directed to the fact that patents cover certain methods of asbestos abatement indicated in the specifications. To date, patents have been issued with regard to negative pressure enclosures or negative or reduced pressure and glove-bag.
- F. Asbestos abatement contractor shall be solely responsible for and shall hold the City of New York Department of Design and Construction and the City harmless from, any and all damages, losses and expenses resulting from any infringement by Asbestos abatement contractor of any patent, including but not limited to the patents described above, used by Asbestos abatement contractor during performance of this agreement.
- G. Prior to starting, the asbestos abatement contractor must notify the Commissioner of the City of New York Department of Design and Construction if he anticipates any difficulty in performing the work as directed and required by these Specifications. Asbestos abatement contractor shall be required to attend an on-site job meeting with the Construction Project Manager prior to start of work to examine conditions of the site for removal and plan the sequence for removal operations.
- H. The asbestos abatement contractor shall retain a certified Project Designer for the preparation of an Asbestos Variance Application (ACP-9), if required.
- I. The asbestos abatement contractor shall be responsible for preparing and submitting all filings, notifications, amendments and variances, etc. required by all City, State and Federal regulatory agencies having jurisdiction, at no additional cost to the NYC DDC.
- J. The general contractor shall retain a Registered Design Professional (person licensed and registered to practice the professions of architecture or engineering under the Education Law of the State of New York) to prepare a Work Place Safety Plan (WPSP), if required.
- K. The general contractor shall retain a Registered Design Professional (person licensed and registered to practice the professions of architecture or engineering under the Education Law of the State of New York) to perform final inspections required pursuant to Title 28 of the Administrative Code, including but not limited to special inspections required under Chapter 17 of the Building Code. Such special inspections and A-TR1 forms shall be completed by the Registered Design professional.
- L. For coordination with other Asbestos abatement contractors, see the General Conditions governing all Contracts.

M. Related Asbestos Removal Work Under Other Contracts:

1. Each asbestos abatement contractor shall be responsible for the removal of incidental asbestos not identified in this section and found prior to or during the Work.
2. Incidental asbestos is defined as ACM that is discovered during the course of their work that must be abated to enable them to perform the work of their Contract.

N. Work Hours:

1. The asbestos abatement contractor shall establish his work schedule in a way that avoids interference or conflict with the normal functioning of the facility. Work in the evenings shall be done at no additional cost to the City.
2. All work shall be done during regular working hours unless the Asbestos abatement contractor requests authorization to work other than regular working hours and such authorization is granted by the Commissioner (Regular working hours are those during which any given facility in which work is to be done is customarily open and functioning). If such work schedule is authorized by the Commissioner the work shall be done at no additional cost to the City.
3. The order of phases and start dates associated with each will be determined by the Construction Project Manager.
4. Asbestos abatement contractor shall be required to schedule waste transfer during evening hours, when activity within the facility is at a minimum. Evening hours are defined as 6:00 p.m. to 6:00 a.m. Waste transfer must be approved by the Construction Project Manager and Facility Manager.

O. The following conditions shall apply to all temporary shutdowns of existing services:

1. All temporary lighting and temporary electrical services for use in the Work Area shall be in weather proof enclosures and be ground fault protected and:
 2. Shall be performed at no additional charge to the City.
 3. Shall be performed at times not interfering with the other activities in the building.
 4. Shall be performed only with written consent from the Commissioner and the Facility Manager.

5. Shall be made through written request to the Commissioner at least 10 days in advance with complete written description of the work to be performed.

P. Stages of Asbestos Removal Work:

- a. The asbestos abatement contractor will be required to perform the work and it is the intent of this Specification to remove all asbestos containing and asbestos contaminated materials from the Work Area. The asbestos abatement contractor is responsible for verifying all quantities of materials listed.

- Q. Certain equipment in the Work Area may need to remain operational during removal. Therefore, the removal of ACM from this equipment shall be performed as the last removal activities within the Work Area. The Asbestos abatement contractor shall coordinate the scheduling for the removal of ACM on functioning equipment with the Construction Project Manager.

1.03 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, 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 \$1,000,000 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. Throughout the specifications, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics thereof. Provide materials or workmanship that meet or exceed the specifically named codes or standards where required by these specifications.
- C. Site Investigation: Asbestos abatement contractor shall inspect all the specifications and related drawings, and will investigate and confirm the site conditions affecting the work, including, but not limited to:
1. Physical considerations and conditions of both the material and structure. These considerations include any obstacles or obstructions encountered in accessing or removing the material.
 2. Handling, storage, transportation and disposal of the material.
 3. Availability of qualified and skilled labor.
 4. Availability of utilities.
 5. Exact quantities of all materials to be disturbed and/or removed.

1.04 WORK BY OTHERS

The City reserves the right during the term of this Contract to have work performed on asbestos abatement projects by other asbestos abatement contractors as the situation warrants.

1.05 DEFINITIONS

- A. General Explanation: Certain terms used in this Specification Section are defined below. Definitions and explanations of this Specification Section are not necessarily complete or exclusive, but are general for the Work to the extent they are not stated more explicitly in another element of the Contract Documents.

B. Definitions in General Use:

1. **Approve:** Where used in conjunction with Engineer's response to submittals, requests, applications, inquiries, reports and claims by Asbestos abatement contractor, the meaning of term "approved" will be held to limitations of Engineer's responsibilities and duties as specified in Contract Documents. In no case will "approval" by Engineer be interpreted as a release of Asbestos abatement contractor from responsibilities to fulfill requirements of Contract Documents.
2. **Directed, Requested, etc.:** Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by Engineer," "requested by Engineer," and similar phrases. However, no such implied meaning will be interpreted to extend Engineer's responsibility into Asbestos abatement contractor's responsibility for construction supervision.
3. **Furnish:** Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
4. **Indicated:** The term "indicated" is a cross-reference to graphic representations, notes or schedules on Drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
5. **Install:** Except as otherwise defined in greater detail, term "install" is used to describe operations at Project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.
6. **Installer:** The term "installer" is defined as the entity (person or firm) engaged by the asbestos abatement contractor, or its sub-asbestos abatement contractor for performance of a particular unit of work at Project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (installers) be expert in operations they are engaged to perform.
7. **Provide:** Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.

8. **Third-Party Air Monitor:** The term "Third-Party Air Monitor" is defined as an entity engaged by City and Construction Project Manager to perform specific inspections or tests of the work, either at Project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.

C. **Definitions Relative to Asbestos Abatement:**

1. **Abatement:** Any and all procedures physically taken to control fiber release from asbestos-containing materials. This includes removal, encapsulation, enclosure, cleanup and repair.
2. **Adequately Wet:** The complete penetration of a material with amended water to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then the material has not been adequately wetted. However, the absence of visible emissions is not evidence of being adequately wet. ACM must be fully penetrated with the wetting agent in order to be considered adequately wet. If the ACM being abated is resistant to amended water penetration, wetting agent shall be applied to the material prior to and during removal as necessary to minimize fiber release.
3. **Aggressive Sampling:** Method of sampling in which the individual collecting the air sample creates activity by the use of mechanical equipment during the sampling period to stir up settled dust and simulate activity in that area of the building.
4. **AHERA:** Asbestos Hazard Emergency Response Act of 1986
5. **AIHA:** American Industrial Hygiene Association.
6. **Airlock:** System for permitting entrance and exit while restricting air movement between a contaminated area and an uncontaminated area. It consists of two curtained doorways separated by a distance of at least three feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.
7. **Air Sampling:** Process of measuring the fiber content of a known volume of air collected during a specific period. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400, or the provisional transmission electron microscopy methods developed by the US EPA which is utilized for lower detection levels and specific fiber identification.
8. **Ambient Air Monitoring:** "Ambient air monitoring" shall mean measurement or determination of airborne asbestos fiber concentrations outside but in the general vicinity of the worksite.

9. Amended Water: Water to which a surfactant has been added.
10. ANSI: American National Standards Institute
11. Area Air Sampling: Any form of air sampling or monitoring where the sampling device is placed at some stationary location.
12. Asbestos: Any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumingtonite-grunerite), crocidolite (riebeckite), tremolite, anthophyllite and actinolite.
13. Asbestos-Containing Material (ACM): Asbestos or any material containing more than one-percent asbestos.
14. Asbestos-Containing Waste Material: ACM, asbestos-contaminated objects or debris associated with asbestos abatement requiring disposal.
15. Asbestos-Contaminated Objects: Any objects which have been contaminated by asbestos or asbestos-containing material.
16. Asbestos Assessment Report: "Asbestos Assessment Report" shall mean the "Form ACP-5" form, as approved by NYCDEP, by which a NYCDEP-certified asbestos investigator certifies that a building or structure (or portion thereof) is free of ACM or the amount of ACM to be abated constitutes a minor project.
17. Asbestos Handler: Individual who disturbs, removes, repairs, or encloses asbestos material. This individual shall have completed approved training course(s) and be in possession of certification issued by NYCDEP and NYSDOL.
18. Asbestos Handler Supervisor: Individual who supervises the handlers during an asbestos project and ensures that proper asbestos abatement procedures as well as individual safety procedures are being adhered to. This individual shall have completed approved training course(s) and be in possession of certification issued by NYCDEP and NYSDOL.
19. Asbestos Investigator: An individual certified by NYCDEP as having successfully demonstrated his or her ability to identify the presence of and evaluate the condition of asbestos in a building or structure.
20. Asbestos Project: Any form of work performed in a building or structure which will disturb (e.g., remove, enclose, encapsulate) more than 25 linear feet or more than 10 square feet of asbestos-containing material.

21. ASTM: American Society for Testing and Materials.
22. Asbestos Project Notification: The "Form ACP-7" asbestos project notification form as approved by DEP.
23. Authorized Visitor: Authorized visitor shall mean the building owner and his/her representative, and any representative of a regulatory or other agency having jurisdiction over the project.
24. Building Owner: Person in whom legal title to the premises is vested unless the premises are held in land trust, in which instance Building Owner means the person in whom beneficial title is vested.
25. Building Materials: Any and all manmade materials, including but not limited to interior and exterior finishes, equipment, bricks, mortar, concrete, plaster, roofing, flooring, caulking, sealants, tiles, insulation, and outdoor paving such as sidewalks, paving tiles and asphalt.
26. Certified Industrial Hygienist (CIH): Individual with a minimum of five years experience as an industrial hygienist and who has successfully completed both levels of the examination administered by the American Board of Industrial Hygiene and who is currently certified by that board.
27. Certified Safety Professional (CSP): Individual having a bachelor's degree from an accredited college or university and a minimum of four years experience as a safety professional and who has successfully completed both levels of the examination administered by the Board of Certified Safety Professionals and who is currently certified by that board.
28. Chain of Custody: "Chain of Custody" shall mean the form or set of forms that document the collection and transfer of a sample.
29. City: City of New York
30. Clean Room: An uncontaminated area or room that is part of worker decontamination enclosure system with provisions for storage of workers' street clothes and protective equipment.
31. Clearance Air Monitoring: Employment of aggressive sampling techniques with a volume of air collected to determine the airborne concentration of residual fibers and shall be performed as the final abatement activity.
32. Commissioner: shall mean the head of the Agency that has entered into this contract or his/her duly authorized representative.
33. Competent Person: Shall mean the designated person as defined by OSHA in 29 CFR1926.1101.

34. Curtained Doorway: Device that consists of at least three overlapping sheets of fire retardant plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to ensure that the sheets hang straight and maintain a seal over the doorway when not in use.
35. Decontamination Enclosure System: Series of connected rooms, separated from the Work Area and from each other by air locks, for the decontamination of workers, materials, waste containers, and equipment.
36. Demolition: The dismantling or razing of a building, including all operations incidental thereto (except for asbestos abatement activities), for which a demolition permit from the New York City Department of Buildings is required.
37. NYCDEP or DEP: The New York City Department of Environmental Protection.
38. Disturb: Any action taken which may alter, change, or stir, such as but not limited to the removal, encapsulation, enclosure or repair of asbestos-containing material.
39. DOB: The New York City Department of Buildings.
40. Egress: A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.
41. ELAP: Environmental Laboratory Approval Program administered by the New York State Department of Health.
42. Encapsulant (sealant) or Encapsulating Agent: Liquid material which can be applied to ACM and which temporarily controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant). A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.
43. Encapsulation: The coating or spraying of asbestos-containing material encapsulant. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or

abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

44. Enclosure: Construction of airtight walls and/or ceilings between ACM and the facility environment, or around surfaces coated with ACM, or any other appropriate procedure as determined by the NYCDEP which prevents the release of asbestos fibers.
45. EPA or USEPA: United States Environmental Protection Agency.
46. Equipment Room: Contaminated area or room that is part of the worker decontamination enclosure system with provisions for the storage of contaminated clothing and equipment.
47. Exit: That portion of a means of egress system which is separated from other interior spaces of a building or structure by fire-resistance-rated construction to provide a protected path of egress travel between the exit access and the exit discharge.
48. FDNY: The Fire Department of the City of New York.
49. Fiber: An acicular single crystal or a similarity elongated polycrystalline aggregate which displays some resemblance to organic fibers by having such properties as flexibility, high aspect ratio, silky luster, axial lineation, and others, and which has attained its shape primarily through growth rather than cleavage.
50. Fixed Object: A unit of equipment, furniture, or other item in the work area which cannot be removed from the work area. Fixed objects shall include equipment, furniture, or other items that are attached, in whole or in part, to a floor, ceiling, wall, or other building structure or system or to another fixed object and cannot be reasonably removed from the work area. Fixed objects shall also include pipes and other equipment inside the work area which are not the subject of the asbestos project. Active fire suppression system components shall not be considered fixed objects.
51. Glovebag technique: shall mean a method for removing asbestos-containing material from heating, ventilation and air conditioning (HVAC) ducts, short piping runs, valves, joints, elbows, and other nonplanar surfaces. The glovebag assembly is a manufactured device consisting of a large bag (constructed of at least 6-mil transparent plastic), two inward-projecting long sleeve gloves, one inward-projecting waterwand sleeve, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process.

52. HEPA-Filter: High efficiency particulate air filter capable of trapping and retaining 99.97 percent of particles (asbestos fibers) greater than 0.3 micrometers mass median aerodynamic equivalent diameter.
53. HEPA vacuum equipment: "HEPA vacuum equipment" shall mean vacuuming equipment with a HEPA filter.
54. Holding Area: Chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.
55. Homogeneous Work Area: Portion of the Work Area that contains one type of ACM and/or where one type of abatement is used.
56. Industrial Hygiene: Science and art devoted to the recognition, evaluation, and control of those environmental factors or stresses, arising in or from the work place, which may cause sickness, impaired health and well being, or significant discomfort and inefficiency among worker or among the citizens of the community.
57. Industrial Hygienist: Individual having a college or university degree or degrees in Engineering, Chemistry, Physics or Medicine, or related Biological Sciences who, by virtue of special studies and training, has acquired competence in industrial hygiene. Such special studies and training must have been sufficient in all of the above cognate sciences to provide the abilities:
 - a. To recognize the environmental factors and to understand their effect on people and their well being; and
 - b. To evaluate, on the basis of experience and with the aid of quantitative measurement techniques, the magnitude of these stresses in terms of ability to impair people's health and well being; and
 - c. To prescribe methods to eliminate, control, or reduce such stresses when necessary to alleviate their efforts.
58. Isolation Barrier: The construction of partitions, the placement of solid materials, and the plasticizing of apertures to seal off the work place from surrounding areas and to contain asbestos fibers in the work area.
59. Large Asbestos Project: Asbestos project involving the disturbances (e.g., removal, enclosure, encapsulation) of 260 linear feet or more of ACM or 160 square feet or more of ACM.
60. Log: An official record of all activities that occurred during the project. At a minimum, the log shall identify the building owner, agent, asbestos

abatement contractor, and workers, and other pertinent information including daily activities, cleanings and waste transfers, names and certificate numbers of asbestos handler supervisors and asbestos handlers; results of inspections of decontamination systems, barriers, and negative pressure ventilation equipment; summary of corrective actions and repairs; work stoppages with reason for stoppage; manometer readings at least twice per work shift; daily checks of emergency and fire exits and any unusual events.

61. Minor Project: A project involving the disturbance (e.g., removal, enclosure, encapsulation, repair) of 25 linear feet or less of asbestos containing material or 10 square feet or less of asbestos containing material.
62. Movable Object: Unit of equipment or furniture in the Work Area that can be removed from the Work Area.
63. Negative Air Pressure Equipment: Portable local exhaust system equipped with HEPA filtration. The system shall be capable of creating a negative pressure differential between the outside and inside of the Work Area.
64. NESHAPS: National Emission Standards for Hazardous Air Pollutants.
65. NFPA: The National Fire Protection Association.
66. NIOSH: National Institute for Occupational Safety and Health.
67. DEP or NYCDEP: New York City Department of Environmental Protection
68. NYSDOL: New York State Department of Labor.
69. NYSDOL ICR 56: "NYSDOL ICR 56" shall mean Part 56 of the Official Compilation of Codes, Rules and Regulations of the State of New York or 12 NYCRR Part 56.
70. NYSDOH: The New York State Department of Health.
71. Obstruction: The blocking of a means of egress with any temporary structure or barrier. A double layer of fire-retardant 6-mil polyethylene sheeting shall not be considered an obstruction when it is prominently marked as an exit with photo luminescent signage or paint and cutting tools (knife, razor) are attached to the work area side of the sheeting for use in the event that the sheeting must be cut to permit egress. A corridor shall not be considered obstructed when there is a clear path measuring at least three (3) feet wide.

72. Occupied Area: Area of the work site where abatement is not taking place and where personnel or occupants normally function or where workers are not required to use personal protective equipment.
73. OSHA: Occupational Safety and Health Administration.
74. Outside air: "Outside air" shall mean the air outside the work place.
75. Person: Individual, partnership, company, corporation, association, firm, organization, governmental agency, administration, or department, or any other group of individuals, or any officer or employee thereof.
76. Personal Air Monitoring: Method used to determine employees' exposure to airborne asbestos fibers. The sample is collected outside the respirator in the worker's breathing zone.
77. Personal Protective Equipment (PPE): Appropriate protective clothing, gloves, eye protection, footwear, and head gear.
78. Phase Contrast Microscopy (PCM): The measurement protocol for the assessment of the fiber content of air. (NIOSH Method 7400).
79. Physician: Person licensed or otherwise authorized under Article 131 Section 65.22 of the New York State Education Law.
80. Plasticize: To cover floors and walls with fire retardant plastic sheeting as herein specified or by using spray plastics as acceptable to the Department.
81. Polarized Light Microscopy (PLM): The measurement protocol for the assessment of the asbestos content of bulk materials. (Interim Method for the Determination of Asbestiform Materials in Bulk Insulation Samples- 40 CFR Part 763, Subpart F, Appendix A as amended on September 1, 1982)
82. Project Designer: A person who holds a valid Project Designer Certificate issued by the New York State Department of Labor.
83. Project Monitor: A person who holds a valid Project Monitor Certificate issued by the New York State Department of Labor.
84. Qualitative Fit Test: Individual test subject's responding (either voluntarily or involuntarily) to a chemical challenge outside the respirator face-piece. Acceptable methods include irritant smoke test, odorous vapor test, and taste test.
85. Quantitative Fit Test: Exposing the respiratory wearer to a test atmosphere containing an easily detectable, nontoxic aerosol, vapor or gas as the test agent. Instrumentation, which samples the test atmosphere and the air inside

the face-piece of the respirator, is used to measure quantitatively the leakage into the respirator. There are a number of test atmospheres, test agents, and exercises to perform during the test.

86. Registered Design Professional: A person licensed and registered to practice the professions of architecture or engineering under the Education Law of the State of New York.
87. Removal: Stripping of any asbestos- containing materials from surfaces or components of a facility or taking out structural components in accordance with 40 CFR 61 Subparts A and M.
88. Renovation: An addition or alteration or change or modification of a building or the service equipment thereof, that is not classified as an ordinary repair as defined in §27-125 of the Administrative Code of the City of New York.
89. Repair: Corrective action using specified work practices (e.g., glovebag, plastic tent procedures, etc.) to minimize the likelihood of fiber release from minimally damaged areas of ACM.
90. Replacement material: Any material used to replace ACM that contains less than .01 percent asbestos.
91. Shift: A worker's, or simultaneous group of workers', complete daily term of work.
92. Shower Room: Room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold running water controllable at the tap and arranged for complete showering during decontamination.
93. Small Asbestos Project: Asbestos project involving the disturbance (e.g., removal, enclosure, encapsulation) of more than 25 and less than 260 linear feet of ACM or more than ten and less than 160 square feet of ACM.
94. Staging Area: Work Area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the Work Area.
95. Strip: To remove asbestos materials from any part of the facility.
96. Structural Member: Load-supporting member of a facility, such as beams and load-supporting walls, or any non-load-supporting member, such as ceiling and non-load-supporting walls.

97. Surface barriers: The plasticizing of walls, floors, and fixed objects within the work area to prevent contamination from subsequent work.
98. Surfactant: Chemical wetting agent added to water to improve penetration.
99. Transmission Electron Microscopy (TEM): The measurement protocol for the assessment of the asbestos fiber content of air. Interim Transmission Electron Microscopy Analytical Methods-40 CFR Part 763, Subpart E, Appendix A.
100. Visible Emissions: Emissions containing particulate material that are visually detectable without the aid of instruments.
101. Washroom: Room between the Work Area and the holding area in the equipment decontamination enclosure system where equipment and waste containers are wet cleaned and/or HEPA-vacuumed prior to disposal.
102. Waste decontamination enclosure system: "Waste decontamination enclosure system" shall mean the decontamination enclosure system designated for the controlled transfer of materials and equipment, consisting of a washroom and a holding area.
103. Wet Cleaning: "Wet cleaning" shall mean the removal of asbestos fibers from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water.
104. Wet methods: "Wet methods" shall mean the use of amended water or removal encapsulants to minimize the generation of fibers during ACM disturbance.
105. Work Area: Designated rooms, spaces, or areas of the building or structure where asbestos abatement activities take(s) place.
106. Worker Decontamination Enclosure System: Portion of a decontamination enclosure system designed for controlled passage of workers and authorized visitors, consisting of a clean room, a shower room, and an equipment room separated from each other and from the Work Area by airlocks and curtained doorways.
107. Work Place: The work area and the decontamination enclosure system(s).
108. Work Place Safety Plan: Construction documents prepared by a registered design professional and submitted for review by DEP in order to obtain an asbestos abatement permit. Such plan shall include, but not be limited to, plans, sections, and details of the work area clearly showing the extent, sequence, and means and methods by which the work is to be performed.

109. Work Site: Premises where abatement activity is being performed. May be composed of one or more Work Areas.

1.06 STANDARD OPERATING PROCEDURES

- A. Develop and implement a written standard procedure for abatement work to ensure maximum protection and safeguard from asbestos exposure of the workers, visitors, employees, public, and environment.

B. **TELEPHONE PAGING DEVICE**

The asbestos abatement contractor or his authorized representative shall, at all times during the normal workday or during periods of overtime work under this Contract, carry a digital telephone paging device ("Beeper") and/or cellular telephones which can be activated by a telephone number in the 212 or 646 or 718 or 917 or 929 area code. He shall supply the Department of Design and Construction with the activation number for the device and he is liable to respond back to the calls from DDC within the next one (1) hour period after he receives calls from DDC. The cost to the asbestos abatement contractor for this device and all charges accruing thereto is deemed included in the work.

- C. The standard operating procedure shall ensure:

1. Tight security from unauthorized entry into the workspace.
2. Restriction of asbestos abatement contractor's personnel to the immediate Work Area and access/egress routes.
3. Donning of proper protective clothing and respiratory protection prior to entering the Work Area.
4. Safe work practices in the work place, including provisions for inter-room communications, exclusion of eating, drinking, smoking, or in any way breaking the respiratory protection.
5. Proper exit practices from the work space to the outside through the showering and decontamination facilities.
6. Removing asbestos in a way that minimizes release of fibers.
7. Packing, labeling, loading, transporting, and disposing of contaminated material in a way that minimizes exposure and contamination.
8. Emergency evacuation procedures, for medical or safety situations, to minimize the potential exposure to airborne asbestos fibers for emergency personnel, building occupants, and building environment.

9. Safety from accidents in the workspace, especially from electrical shocks, fall hazards associated with scaffolding, slippery surfaces, and entanglements in loose hoses and equipment.
 10. Provisions for effective supervision, air monitoring and personnel monitoring for exposure during the work.
 11. Engineering controls that minimize exposure to fibers within the workspace.
 12. The asbestos abatement contractor shall provide a 24-hour fire watch throughout the entire term of the project, to protect against fire and unauthorized entry into the workspace. Fire watch shall be performed by an individual who is a certified asbestos worker capable of entering the Work Area for regular inspections.
- D. Provide an Asbestos Handler Supervisor to provide continuous supervision of all work, and to be responsible for the following:
1. Ensure that individuals are using proper personal protective equipment, are trained in its use and hold valid NYCDEP and NYSDOL Asbestos Handler certificates
 2. Maintain entry log records and ensure that they are recorded in accordance with the provisions of Title 15, Chapter 1 of RCNY and NYSDOL ICR 56.
 3. Surveillance of the Work Areas at a minimum of once per work shift or as required by Title 15, Chapter 1 of RCNY and NYSDOL ICR 56 -7.3, to ensure the integrity of work place isolation, negative pressure equipment and workers personal protective equipment is not torn or ripped and that respiratory protection is worn at all times.
 4. Ensure that sufficient personal protective equipment is stored in the clean room.
 5. Take precautions to prevent heat stress. Precautions include, but are not limited to, selecting lightweight protective clothing, reducing the work rate, and providing adequate fluid breaks.
 6. Perform work area inspection with project monitor prior to the commencement of final clearance air monitoring.
 7. The asbestos abatement contractor shall retain the asbestos handler supervisor to perform a visual inspection prior to the post-abatement clearance air monitoring to confirm that all containerized waste has been removed from work and holding areas and there is no visible ACM debris or residue on or about all abated surfaces.

E. ENGINEERING CONTROLS

1. The 8-hour time weighted average airborne concentration of fibers to which any passerby may be exposed shall not exceed 0.01 fibers per cubic centimeter of air when fibers have a physical dimension longer than 5 micrometers as determined by the method prescribed in these Specifications.
2. All asbestos projects shall utilize negative pressure ventilation equipment.
 - a. The asbestos abatement contractor shall use a manometer to document the pressure differential. The asbestos abatement contractor shall install and make the manometer operational once the negative pressure has been established in the work area. Magnahelic manometers shall be calibrated at least every six months and a copy of the current calibration certification shall be available at the work site.
3. Negative pressure ventilation equipment shall be installed and operated to provide at least one air change in the work area every 15 minutes. Where there are no floor or wall barriers because floor or wall material is being abated, there shall be at least one air change in the work area every ten minutes.
4. The negative pressure ventilation equipment shall operate continuously, 24 hours a day, from the establishment of isolation barriers through successful clearance air monitoring. If such equipment shuts off, adjacent areas shall be monitored for asbestos fibers.
5. A static negative air pressure of 0.02 inches (minimum) water column shall be maintained at all times in the work place during abatement to ensure that contaminated air in the Work Area does not filter back to uncontaminated areas.
6. If the contaminated area of an asbestos project covers the entire floor of the affected building, or an area greater than 15,000 square feet on any given floor, the installation of a negative air cut off switch or switches shall be required at a single location outside the work place, such as inside a stairwell, or at a secured location in the ground floor lobby when conditions warrant. The required switch or switches shall be installed by a licensed electrician pursuant to a permit issued by the Department of Buildings. If negative pressure ventilation equipment is used on multiple floors, the cut off switch shall be able to turn off the equipment on all floors.
7. On loss of negative pressure or electric power to the negative pressure ventilating units, abatement shall stop immediately and shall not resume until power is restored and negative pressure ventilation equipment is operating again.

8. Negative pressure ventilation equipment shall be exhausted to the outside of the building away from occupied areas.
 - a. All openings (including but not limited to operable windows, doors, vents, air intakes or exhausts of any mechanical devices) less than 15 feet from the exterior exhaust duct termination location shall be plasticized with two layers of fire retardant 6-mil polyethylene sheeting, or a second negative pressure ventilation unit with the primary unit's capacity shall be connected in series prior to exhausting to the outside.
 - b. Negative pressure ventilation equipment shall exhaust away from areas accessible to the public.
 - c. All ducting shall be sealed and braced or supported to maintain airtight joints. Ducts shall be reinforced and shall be installed so as to prevent breakage. Damage to ducts must be repaired immediately.
9. Where ducting to the outside is not possible, a second negative pressure ventilation unit compatible with the primary unit's capacity shall be connected in series. The area receiving the exhaust shall have sufficient, non-recycling exhaust capacity to the outside of the structure.
10. In the event that there is a failure of the containment system or a breach in the Isolation Barriers, all abatement work will cease and the asbestos abatement contractor will immediately correct the condition. Abatement work will not resume until the Work Area has been smoke tested by the third party laboratory and approved by the Construction Project Manager.

F. LOCKDOWN ENCAPSULATION PROCEDURES

1. The following procedures shall be followed to seal in non-visible residue while conducting lockdown encapsulation on all surfaces from which ACM has not been removed:
 - a. Only encapsulants rated as acceptable or marginally acceptable on the basis of Battelle Columbus Laboratory test procedures and rating requirements developed under the 1978 USEPA Contract shall be used for lockdown encapsulation.
 - b. The encapsulant solvent or vehicle shall not contain a volatile hydrocarbon unless reviewed and approved by DEP.
 - c. Latex paint with solids content greater than 15 percent shall be considered a lockdown sealant for coating all non-metallic surfaces.

- d. Encapsulants shall be applied using airless spray equipment. Spraying is to occur at the lowest pressure range possible to minimize fiber release from encapsulant impact at the surface. It shall be applied with a consistent horizontal or vertical motion.
- e. The cleaned layer of the surface barriers shall be removed from walls and floors.

The isolation barriers shall remain in place throughout cleanup. Decontamination enclosure systems shall remain in place and be utilized. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

1.07 NOTIFICATIONS, PERMITS, WARNING SIGNS, LABELS, AND POSTERS

- A. The asbestos abatement contractor shall submit an Asbestos Project Notification (ACP-7) to the NYCDEP listing each work area within the building separately one week in advance of the start of work.
- B. The registered design professional shall obtain an asbestos abatement permit authorizing the performance of construction work as required for asbestos projects involving one or more of the following activities:
 - 1. Obstruction of an exit door leading to an exit stair or the exterior of the building;
 - 2. Obstruction of an exterior fire escape or access to that fire escape;
 - 3. Obstruction of a fire-rated corridor leading to an exit door;
 - 4. Removal of handrails in an exit stair or ramp;
 - 5. Removal or dismantling of any fire alarm system component including any fire alarm-initiating device (e.g., smoke detectors, manual pull station);
 - 6. Removal or dismantling of any exit sign or any component of the exit lighting system, including photo luminescent exit path markings;
 - 7. Removal or dismantling of any part of a sprinkler system including piping or sprinkler heads;
 - 8. Removal or dismantling of any part of a standpipe system including fire pumps or valves;

9. Removal of any non-load bearing / non-fire-rated wall (greater than 45 square feet or 50 percent of a given wall);
 10. Any plumbing work other than the repair or replacement of plumbing fixtures;
 11. Removal of any fire-resistance rated portions of a wall, ceiling, floor, door, corridor, partition, or structural element enclosure including spray-on fire resistance rated materials;
 12. Removal of any fire damper, smoke damper, fire stopping material, fire blocking, or draft stopping within fire-resistance rated assemblies or within concealed spaces;
 13. Any work that otherwise requires a permit from the DOB (full demolitions, alterations, renovations, modifications or plumbing work).
- C. The asbestos abatement contractor shall provide a floor plan showing the areas of the building under abatement and the location of all fire exits in said areas. It shall be prominently posted in the building lobby or comparable location, along with a notice stating the location within the building of the negative air cutoff switch, if applicable.
- D. The general contractor shall submit, as required, an asbestos abatement permit due to one or more of the activities listed in 1.07 (B) (1-8) and (B) (13) of this specification. The asbestos abatement contractor is responsible for submitting, with an asbestos project notification, a work place safety plan (WPSP) and any other applicable construction documents. These documents must be prepared by a registered design professional.
- E. A WPSP is not required for projects requiring an asbestos abatement permit due to one or more of the activities listed in 1.07 (B) (9-12) of this specification. The asbestos abatement contractor shall submit, together with the asbestos project notification, all applicable asbestos abatement permit construction documents.
- F. The general contractor shall retain a Registered Design Professional to perform the inspections required pursuant to Title 28 of the Administrative Code, including but not limited to special inspections required by Chapter 17 of the Building Code, as follows:
1. A final inspection shall be performed by a registered design professional retained by the asbestos abatement contractor after all work authorized by the asbestos abatement permit is completed. The person performing the inspection shall note all failures to comply with the provisions of the Building Code or approved asbestos abatement permit and shall promptly notify the owner in writing. All defects noted in such inspection shall be corrected. The final inspection report shall either:

a. Confirm:

- (1) That the construction work is complete, including the reinstallation or reactivation of any building fire safety or life safety component.
- (2) That any defects previously noted have been corrected.
- (3) That all required inspections were performed.
- (4) That the work is in substantial compliance with the approved asbestos abatement permit construction documents, the Building Code, and other applicable laws and rules.

b. Confirm:

- (1) That the construction work does not return the building (or portion thereof) affected by the abatement project to a condition compliant with the building code and other applicable laws and rules, but that the registered design professional has reviewed an application for asbestos abatement permit construction documents approval that has been approved by the department of buildings, and the subsequent scope of work as approved will, upon completion, render all areas affected by the asbestos project in full compliance with the building code and all applicable laws and rules.
- (2) That any defects previously noted that are not addressed by the subsequent scope of work as approved by the department of buildings, have been corrected.
- (3) That all required inspections that are not addressed by the subsequent scope of work as approved by the department of buildings were performed.
- (4) That all completed work pursuant to an asbestos abatement permit is in substantial compliance with the approved asbestos abatement permit construction documents.

- G. The general contractor shall provide the final inspection reports to be filed with DEP on A-TR1 form. Records of final inspections made by registered design professionals shall be submitted to DDC as part of the close out document package.

- H. Erect bilingual (English-Spanish) warning signs around the work space and at every point of potential entry from the outside and at main entrance to building which can be viewed by the public without obstruction, in accordance with OSHA 29 CFR 1926.1101 (K) (Sign Specifications) and Title 15, Chapter 1 of RCNY. The warning signs shall be a bright color so that they will be easily noticeable. The size of the sign and the size of the lettering shall be no less than OSHA requirements.
- I. Provide the required labels for all polyethylene bags and all drums utilized to transport contaminated material to the landfill in accordance with OSHA 29 CFR 1926.1101 (K)(2) and by 49 CFR Parts 171 and 172 of the Department of Transportation regulations.
- J. Provide any other signs, labels, warnings, and posted instructions that are necessary to protect, inform and warn people of the hazard from asbestos exposure. Post in a prominent and convenient place for the workers a copy of the latest applicable regulations from OSHA, EPA, NIOSH, State of New York and New York City and any additional items mandated for posting by the aforementioned regulations.
- K. Furnish all permits, variances and notices required to perform the Work.

1.08 EMERGENCY PRECAUTIONS

- A. Establish emergency and fire exits from the Work Area. The clean side of all emergency exits shall be equipped with two full sets of protective clothing and respirators at all times.
- B. Notify local medical emergency personnel, both ambulance crews and hospital emergency room staff prior to commencement of abatement operations as to the possibility of having to handle contaminated or injured workmen, and shall be advised on safe decontamination.
- C. Prepare to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated immediately for decontamination. When an injury occurs, precautions shall be taken to reduce airborne fiber concentrations (i.e., misting of the air with water) until the injured person has been removed from the Work Area.
- D. Notify, before actual removal of the asbestos material, the local police and fire departments to the danger of entering the Work Area. Asbestos abatement contractor shall make every effort to help these agencies form plans of action should their personnel need to enter the contaminated area.

1.09 SUBMITTALS

A. Pre-Construction Submittals:

1. Attend a pre-construction meeting scheduled by the City of New York Department of Design and Construction. This meeting shall also be attended by a designated representative of the City of New York third party air monitoring firm, facility manager and the Construction Project Manager. At this meeting, the asbestos abatement contractor shall present three copies of the following items, bound and indexed. The detailed plan of action must be submitted at least five (5) days prior to the pre-construction meeting.
 - a. 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.
 - (4) A schedule of equipment to be used including numbers and types of all major equipment such as HEPA Air Filtration Units, HEPA-vacuums, airless sprayers, Water Atomizing Devices and Type "C" compressors.
 - e. A written plan and shop drawings for preparation of work site and decontamination chamber.

- f. Description of protective clothing and approved respirator to be used, make, model, NIOSH approval numbers.
- g. Delineation of responsibility of work site supervision, including competent person, with names, resumes, and home telephone numbers.
- h. Explanation of decontamination sequence and isolation techniques.
- i. Description of specific equipment to be utilized, including make and model number of air filtration devices, vacuums, sprayers, etc.
- j. Description of any prepared methods, procedures, techniques, or equipment other than those specified in the Contract Documents.
- k. Explanation of the handling of asbestos contaminated wastes including EPA and NYCDEP identification numbers of Waste Hauler.
- l. Description of the final clean-up procedures to be used.
- m. Name and qualifications of asbestos abatement contractor's Air Monitor including AIHA accreditation, and proof of NIOSH PAT and NIST/NVLAP Bulk Quality Assurance Proficiency of OSHA samples for approval by the City of New York Department of Design and Construction.
- n. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance (name and telephone number) and procedures to be used for access by medical personnel (examples: first aid squad and physician). NOTE: Necessary Emergency Procedures Shall Take Priority Over All Other Requirements of These Specifications.
- o. Safety Data Sheets (SDS) 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 SDS are reviewed.
- p. Worker Training and Medical Surveillance: Asbestos abatement contractor shall submit a list of the persons who will be employed by him in the removal work. Present evidence that workers have received proper training required by the regulations and the medical examinations required by OSHA 29 CFR 1926.1101.

- q. Logs: Specimen copies of daily progress log, visitor's log, and disposal log.
- (1) The 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 Environmental Control Representative; name, address and phone number of asbestos abatement contractor; name, address and phone number of asbestos abatement contractor and City's air testing entity; emergency numbers including, but not limited to local Fire/Rescue Department. Log book shall contain a list of personnel approved by the laboratory for entry into the Work Area.
 - (2) All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted. Any significant events occurring during the abatement project shall be entered into the log. Upon completion of the job, the Asbestos abatement contractor shall submit a copy of the logbook containing a day-to-day record of personnel log entries countersigned by the Construction Project Manager every day.
- r. Worker's Acknowledgments: Submit statements signed by each employee that the employee has received training in the proper handling of ACM, understands the health implications and risks involved; and understands the use and limitations of the respiratory equipment to be used.

- B. Submit copies of the following items to the Construction Project Manager during the work:
1. Security and safety logs showing names of person entering workspace, date and time of entry and exit, record of any accident, emergency evacuation, and any other safety and/or health incident.
 2. Progress logs showing the number of workers, supervisors, hours of work and tasks completed shall be submitted daily to the Construction Project Manager.
 3. Floor plans indicating asbestos abatement asbestos abatement contractor's current work progress shall be submitted for review by the Construction Project Manager at weekly progress meetings.

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 DEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;
 - c. Copies of all project notifications and reports filed with DEP and NYSDOL for the project, with any amendments or variances;
 - d. Copies of all asbestos abatement permits, including associated approved plans and work place safety plan;

- e. A copy of the air sampling log and all air sampling results;
 - f. A copy of the abatement asbestos abatement contractor's daily log book;
 - g. All data related to bulk sampling including the results of any asbestos surveys performed by an asbestos investigator;
 - h. Copies of all asbestos waste manifests;
 - i. A copy of all Project Monitor's Reports (ACP-15).
 - j. A copy of each ATR-1 Form completed for the asbestos project (if required).
 - k. A copy of each Asbestos Project Conditional Closeout Report (ACP-20).
 - l. A copy of the Asbestos Project Completion Form (ACP-21).
9. The asbestos abatement contractor shall submit one of the following certifications to the DOB, with a copy provided to DDC:
- a. Asbestos Project Completion Form. If an asbestos project has been performed, a copy of the asbestos project completion form issued by DEP shall be submitted to DOB, with a copy being provided to DDC, prior to the issuance of a DOB permit and to any amendment of the underlying construction document approval which increases the scope of the project to include (a) work area(s) not previously covered.
 - b. An Asbestos Project Conditional Close-out Form. If an asbestos project has been performed a copy of the asbestos project conditional close-out form issued by DEP shall be submitted to DOB, with a copy being provided to DDC, prior to the issuance of a DOB permit and to any amendment of the underlying construction document approval which increases the scope of the project to include (a) work area(s) not previously covered.

1.10 QUALITY ASSURANCE

- A. All work required for the completion of this project or called for in this Specification must be executed in a workmanlike manner by using the appropriate methods established by regulatory requirements and/or industrial standards. All workmanship or work methods are subject to review and acceptance by the Construction Project Manager. Throughout the Specification, reference is made to

codes and standards which establish qualities, levels or types of workmanship which will be considered acceptable. It is the asbestos abatement contractor's responsibility to comply with these codes and standards during the execution of this work.

- B. All materials and equipment required or consumed during the work of this Contract must meet the minimum acceptable criteria established by codes and standards referenced elsewhere in this Specification. Materials and equipment must be submitted for prior approval as part of the asbestos abatement contractor's "Shop Drawings".
- C. It is the asbestos abatement contractor's responsibility, when so required by the Specification or upon written request from the Commissioner or his representative to furnish all required proof that workmanship, materials and/or equipment meet or exceed the codes and standards referenced. Such proof shall be in the form requested, typically a certified report or test conducted by a testing entity approved for that purpose by DDC.
- D. The asbestos abatement contractor shall furnish proof that employees working under his supervision have had instruction on the dangers of asbestos exposure, on respirator use, decontamination, and OSHA regulations. This proof shall be in the form of a notarized affidavit to the effect that the above requirements have been satisfied.
- E. The asbestos abatement contractor will have at all times in his possession and in view at the job site the OSHA regulations 29 CFR 1910.1001, and 1926.1101 Asbestos, and Environmental Protection Agency 40 CFR, Part 61, subpart B: National Emission Standard for asbestos, asbestos stripping, work practices and disposal of asbestos waste. He shall also have one copy of NYC Title 15, Chapter 1 of RCNY and NYS DOL ICR 56 at the job site at all times.
- F. Familiarity with Pertinent Codes and Standards: In procuring all items used in this work, it is the asbestos abatement contractor's responsibility to verify the detailed requirements of the specifically named codes and standards and to verify that the items procured for use in this work meet or exceed the specified requirements, and are suitable for their intended use.
- G. Rejection of Non Complying Items: The Commissioner reserves the right to reject items incorporated into the work that fail to meet the specified minimum requirements. The Commissioner further reserves the right, and without prejudice to other recourse that maybe taken, to accept non-complying items subject to an adjustment in the Contract amount as approved by the City.
- H. Applicable Regulations, Codes and Standards: Applicable standards listed in these Specifications include, but are not necessarily limited to, standards promulgated by the following agencies and organizations:

1. American National Standards Institute (ANSI)
(Successor to USASI and ASA)
25 West 43rd Street (between 5th and 6th Avenue) 4th Floor
New York, NY 10036
212-642-4900
2. American Society for Testing and Materials (ASTM)
100 Bar Harbor Drive
West Conshohocken, PA 19428-2959
610-832-9500
3. National Institute for Occupational Safety and Health (NIOSH)
Robert A. Taft Laboratory
4676 Columbia Pkwy
Mailstop R12 Cincinnati, Ohio 45226
513-841-4428
4. National Electrical Code (NEC)
See NFPA
5. National Fire Protection Association (NFPA)
1 Batterymarch Park
Quincy, Massachusetts 02169-7471
617-770-3000
6. New York City Fire Department (FDNY)
9 Metrotech Center
Brooklyn, NY 11201-5431
718-999-2117
7. New York City Department of Buildings (NYC DOB)
Enforcement Division
280 Broadway, New York, New York 10007
212- 566-2850
8. New York City Department of Environmental Protection (NYCDEP)
Bureau of Environmental Compliance
Asbestos Control Program
59-17 Junction Boulevard, 8th Floor
Corona, New York 11368
718-595-3682
9. New York City Department of Health and Mental Hygiene (NYC DOHMH)
Environmental Investigation
125 Worth Street
New York, New York 10013
212-442-3372

10. New York State Department of Labor (NYSDOL)
Division of Safety and Health
Engineering Services Unit
State Office Building Campus
Albany, New York 12240-0010
 11. New York City Department of Sanitation
125 Worth Street, Room 714
New York, New York 10013
212-566-1066
 12. Occupational Safety and Health Administration (OSHA)
Region II - Regional Office
201 Varick Street, Room 908
New York, New York 10014
212-337-2378
 13. United States Environmental Protection Agency (EPA or USEPA)
Region II
Asbestos NESHAPS Contact
Air and Waste Management Division
(Air Compliance Branch) – USEPA
290 Broadway, 21st Floor
New York, New York 10007-1866
212-637-3660
- I. Post all applicable regulations in a conspicuous place at the job site. Assure that the regulations are not altered, defaced or covered by other materials. One copy of each regulation must also be kept at the Asbestos abatement contractor's office.

1.11 CITY/ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITIES

- A. The normal occupants of the Work Areas will be relocated by the City prior to the performance of the abatement work and returned there to at the conclusion of the abatement work, at no cost to the asbestos abatement contractor. However, the asbestos abatement contractor shall protect all furniture and equipment in the Work Areas in a manner as hereinafter specified. In addition, the asbestos abatement contractor shall perform the work of this Contract in a manner that will be least disruptive to the normal use of the non-Work Areas in the building.
- B. Asbestos abatement contractor shall be responsible for cleaning all portable items not specifically addressed by the Facility, in the Work Areas, or dispose of same as asbestos contaminated waste.
- C. Facility to provide asbestos abatement contractor with a list of items that cannot be removed and need special attention.

- D. Facility to stop all deliveries that may be scheduled to the Work Area while work is in progress.
- E. Facilities to have authorized personnel on site at all times or supply the asbestos abatement contractor with means of contacting such personnel without unreasonable delay. Such personnel shall have access to all areas, have knowledge of electrical, and air handling equipment. Such personnel shall assist the asbestos abatement contractor in case of any power failure or breakdown to shut down air supply systems, to reset and control all protective systems such as alarms, sprinklers, locks, etc. The Facility shall ensure no active air handling systems are operating within the Work Area.
- F. City will not occupy the portions of the building, in which work is being performed during the entire asbestos removal operation, including completion of clean up.
- G. Asbestos abatement contractor shall provide a plan for 24 hour job security both for prevention of theft and for barring entry of curious but unprotected personnel into Work Areas.
- H. Asbestos abatement contractor shall provide surveillance by a fire watch and set forth procedures to be taken for the safety of building occupants in the event of an emergency, in accordance with the WPSP.
- I. Should the failure of any utility occur, the City will not be responsible to the asbestos abatement contractor for loss of time or any other expense incurred.
- J. Facility will be responsible to notify the asbestos abatement contractor of any planned electrical power shutdowns in order to ensure that there are no power interruptions in the negative air pressure systems.
- K. Asbestos abatement contractor shall remove all flammable materials from the work area and all sources of ignition (including but not limited to pilot lights) shall be extinguished.
- L. Asbestos abatement contractor shall require a competent person (as defined in OSHA 1926.1101) to perform the following functions and to be on-site continuously for the duration of the project:
 - 1. Monitor the set up of the Work Area enclosure and ensure its integrity.
 - 2. Control entry and exit into the work enclosure.
 - 3. Ensure that employees are adequately trained in the use of engineering controls, proper work practices, proper personal protective equipment and in decontamination procedures.

4. Insure that employees use proper engineering controls, proper work practices, proper personal protective equipment and proper decontamination procedures.
5. The competent person (as defined in OSHA1926.1101) shall check for rips and tears in work suits, and ensure that they are mended immediately or replaced.

1.12 USE OF BUILDING FACILITIES

- A. City shall make available to the asbestos abatement contractor, from existing outlets and supplies, all reasonably required amounts of water and electric power at no charge.
- B. Electric power to all Work Areas shall be shut down and locked out except for electrical equipment that must remain in service. Safe temporary power and lighting shall be provided by asbestos abatement contractor in accordance with applicable codes. All power to Work Areas shall be brought in from outside the area through ground-fault interrupter circuits installed at the source. Stationary electrical equipment within the Work Area, which must remain in service, shall be adequately protected, enclosed and ventilated. The Facility will identify all electric lines that must remain in service. Asbestos abatement contractor shall protect all lines.
- C. Asbestos abatement contractor shall provide, at his own expense, all electrical, water, and waste connections, tie-ins, extensions, and construction materials, supplies, etc. All water tie-ins shall be hard piped with polyethylene or copper piping. At the end of each shift, asbestos abatement contractor shall disconnect all hoses within the work zone and place in equipment room of the worker decontamination unit. Asbestos abatement contractor shall ensure positive shutoff of all water to Work Area during non-working hours.
- D. Utilities:
 1. General:

All temporary facilities required to be installed, shall be subject to the approval of the Commissioner. Prior to starting the work at any site; specify clearly the temporary locations of facilities preferably with sketches and submit the same to the Construction Project Manager for approval.
 2. Water:

The Department of Design and Construction will furnish all water needed for construction, at no cost to the asbestos abatement contractor in buildings under their jurisdiction. All temporary plumbing or adaptations to supply the needs of the Work Area shall be installed and removed by the asbestos abatement contractor and the cost thereof included in the Lump Sum price

for abatement work. Shower water for the decontamination unit shall be provided hot. Heating of water, if necessary, shall be provided by the asbestos abatement contractor.

3. Electricity:

The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the asbestos abatement contractor in buildings under their jurisdiction. All temporary electrical work or adaptations to supply the needs of the Work Area shall be installed and removed by the asbestos abatement contractor and the cost thereof included in the Lump Sum price for abatement work.

In leased spaces, arrangements for water supplies and electricity must be made with the landlord. However, all such arrangements must be made through and are subject to approval of the Department of Design and Construction. Utilities will be provided at no cost to the 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.

A dedicated power supply for the negative pressure ventilating units shall be utilized. The negative air equipment shall be on a ground fault circuit interrupter (GFCI) protected circuit separate from the remainder of the work area temporary power circuits.

E. Asbestos abatement contractor shall shut down and lock out all electric power to all work areas except for electrical equipment that must remain in service. Safe temporary power and lighting shall be provided in accordance with all applicable codes. Existing light sources (e.g., house lights) shall not be utilized. All power to work areas shall be brought in from outside the area through ground-fault circuit interrupter at the source.

1. If electrical circuits, machinery, and other electrical systems in or passing through the work area must stay in operation due to health and safety requirements, the following precautions must be taken:

a. All unprotected cables, except low-voltage (less than 24 volts) communication and control system cables, panel boxes of cables and joints in live conduit that run through the work area shall be covered with three (3) independent layers of six (6) mil fire retardant polyethylene. Each layer shall be individually duct taped and sealed. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air sampling results have been obtained.

- b. Any energized circuits remaining in the work area shall be posted with a minimum two (2) inch high lettering warning sign which reads: DANGER LIVE ELECTRICAL - KEEP CLEAR. A sign shall be placed on all live covered barriers at a maximum of ten (10) foot intervals. These signs shall be posted in sufficient numbers to warn all persons authorized to enter the work area of the existence of the energized circuits.
 2. Any source of emergency lighting which is temporarily blocked as a result of work place preparation shall be replaced for the duration of the project by battery operated or temporary exit signs, exit lights, or photo luminescent path markings.
- F. Asbestos abatement contractor shall provide a separate temporary electric panel board to power asbestos abatement contractor's equipment. The Facility will designate an existing electrical source in proximity to the Work Area. Asbestos abatement contractor's licensed electrician shall provide temporary tie-in via cable, outlet boxes, junction boxes, receptacles and lights, all with ground fault interruption. At no time shall extension cords greater than 50-feet in length be allowed. All temporary electrical installation shall be in accordance with OSHA regulations. The electric shut down for power panel tie-in will be on off-hours and must be coordinated with the Facility. Asbestos abatement contractor shall provide to the City a specification and drawing outlining his power requirements at the pre-construction meeting.
- G. Additional electrical equipment (i.e., transformers, etc.), which is necessary due to the lack of existing power on the floor, shall be at the asbestos abatement contractor's expense.
- H. Asbestos abatement contractor shall provide fire protection in accordance with all State and Local fire codes.
- I. Sprinklers, standpipes, and other fire suppression systems shall remain in service and shall not be plasticized.
- J. When temporary service lines are no longer required, they shall be removed by the asbestos abatement contractor. Any parts of the permanent service lines, grounds and buildings, disturbed or damaged by the installation and/or removal of the temporary service lines, shall be restored to their original condition by the asbestos abatement contractor. Senior Stationary Engineer will inspect and test all switches, controls, gauges, etc. and shall submit a list to the Construction Project Manager of any equipment damaged by the asbestos abatement contractor.
- K. Asbestos abatement contractor shall supply hot shower water necessary for use in the decontamination unit.

1.13 USE OF THE PREMISES

- A. Asbestos abatement contractor shall confine his apparatus, the storage of materials, and supplies, and the operation of his workmen to limits established by law, ordinances, and the directions of the Construction Project Manager and the Facility. All flammable or combustible materials shall be properly stored to obviate fire and in areas approved by the Facility.
- B. Asbestos abatement contractor shall assure that no exits from the building are obstructed, that appropriate safety barriers are established to prevent access, and that Work Areas are kept neat, clean, and safe.
- C. Asbestos abatement contractor shall maintain exits from the work area or alternative exits shall be established, in accordance with section 1027 of the New York City Fire Code. Exits shall be checked at the beginning and end of each work shift against blockage or impediments to exiting.
- D. If the openings of temporary structural partitions related to abatement work areas block egress, the partition shall consist of two sheets of fire retardant 6-mil plastic, prominently marked as an exit with photo luminescent paint or signage. Cutting tools (e.g., knife, razor) shall be attached to the work area side of the sheeting for use in the event that the barrier must be cut open to allow egress.
- E. All surrounding work, fixtures, soil lines, drains, water lines, gas pipes, electrical conduit, wires, utilities, duct work railings, shrubbery, landscaping, etc. which are to remain in place shall be carefully protected and, if disturbed or damaged, shall be repaired or replaced as directed by the City, at no additional cost.
- F. All routes through the building to be used by the asbestos abatement contractor shall first be approved by the Construction Project Manager and the Facility.
- G. Attention is specifically drawn to the fact that other asbestos abatement contractors, performing the work of other Contracts, may be (or are) 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 asbestos abatement contractors who may be on (or are on) any site of the work of this Contract. Regulated area exempted.
- H. Temporary toilet facilities must be provided by the asbestos abatement contractor on the site. Coordinate location of facilities with Construction Project Manager. No toilet facilities will be allowed in the Work Area.

1.14 PROTECTION AND DAMAGE

- A. The asbestos abatement contractor is responsible to cover all furniture and equipment that cannot be removed from Work Areas. Moveable furniture and equipment will be removed from Work Areas by asbestos abatement contractor prior to start of work and returned upon successful completion of the final air testing. At the conclusion of the work (after clearance level of air testing reaches the acceptable limit), the asbestos abatement contractor will remove all plastic covering from the walls, floors, furniture, equipment and reinstall furniture and equipment in the cleaned Work Area. The asbestos abatement contractor shall remove all shades, curtains and drapes from the Work Area, and reinstall the same following the final clean up.
- B. Prior to plasticizing, the proposed work areas shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning methods. Methods that raise dust, such as sweeping or vacuuming with equipment not equipped with HEPA filters, are prohibited.
- C. Use rubber tired vehicles that use non-volatile fuels for conveying material inside building and provide temporary covering, as necessary, to protect floors.
- D. No materials or debris shall be thrown from windows or doors of the building. Building waste system shall NOT be used to remove refuse.
- E. Debris shall be removed from the work site daily. Premises shall be left neat and clean after each work shift, so that work may proceed the next regular workday without interruption. Limited bag storage may take place within the Work Area when approved by the Construction Project Manager.
- F. Protect floors and walls along removal routes from damage, wear and staining with contamination control flooring. All finished surfaces to be protected with Masonite or other rigid sheathing material.
- G. A preliminary inspection for pre-existing damage shall be conducted by asbestos abatement contractor and representative of the City before commencement of the project.

1.15 RESPIRATORY PROTECTION REQUIREMENTS

- A. Respiratory protection shall be worn by all individuals who may be exposed to asbestos fibers from the initiation of the asbestos project until all areas have successfully passed clearance air monitoring in accordance with Regulations and these Specifications.
- B. Asbestos abatement contractor shall develop and implement a written respiratory protection program with required site-specific procedures and elements. The program shall be administered by a properly trained individual. The written

respiratory protection program shall include the requirements set forth in OSHA Standard 29 CFR 1910.134, at a minimum.

- C. The Asbestos abatement contractor shall provide workers with individually issued and marked respiratory equipment. Respiratory equipment shall be suitable for the asbestos exposure level(s) in the Work Area(s), as specified in OSHA Standards 26 CFR 1910.134 and 29 CFR 1926.1101, NIOSH Standard 42 CFR 84, or as more stringently specified otherwise, herein.
- D. Where respirators with disposable filter parts are employed, the asbestos abatement contractor will provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.
- E. All respiratory protection shall be NIOSH approved. All respiratory protection shall be provided by asbestos abatement contractor, and used by workers in conjunction with the written respiratory protection program.
- F. Asbestos abatement contractor shall provide respirators selected by an Industrial Hygienist that meet the following requirements:

Table 1. -- Assigned Protection Factors⁵

Type of Respirator ^{1,2}	Half mask	Full facepiece	Helmet/hood
1. Air-Purifying Respirator	³ 10	50
2. Powered Air-Purifying Respirator (PAPR)	50	1,000	⁴ 25/1,000
3. Supplied-Air Respirator (SAR) or Airline Respirator			
• Demand mode	10	50
• Continuous flow mode	50	1,000	⁴ 25/1,000
• Pressure-demand or other positive-pressure mode	50	1,000
4. Self-Contained Breathing Apparatus (SCBA)			
• Demand mode	10	50	50
• Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	10,000	10,000

Notes:

¹Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

²The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

³This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

⁴The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

⁵These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

G. Selection of high efficiency filters:

1. All high efficiency filters shall have a nominal efficiency rating of 100 (99.97-percent effective) when tested against 0.3-micrometer monodisperse diethyl-hexyl phthalate (DOP) particles.
2. Choose N-, R-, or P-series filters based upon the presence or absence of oil particles.
 - a. N-series filters shall only be used for non-oil solid and water based aerosols or fumes.
 - b. R- and P-series filters shall be used when oil aerosols or fumes (i.e., lubricants, cutting fluids, glycerin, etc.) are present. The R-series filters are oil resistant and the P-series filters are oil proof.
 - c. Follow filter manufacture recommendations.
3. If a vapor hazard exists, use an organic vapor cartridge in combination with the high efficiency filter.

H. Historical airborne fiber level data may serve as the basis for selection of the level of respiratory protection to be used for an abatement task. Historical data provided by the asbestos abatement contractor shall be based on personal air monitoring performed during work operations closely resembling the processes, type of material, control methods, work practices, and environmental conditions present at the site. Documentation of aforementioned results may be requested by the City and/or Third-Party Air Monitor for review. This will not relieve the asbestos abatement contractor from providing personal air monitoring to determine the

time-weighted average (TWA) for the work under contract. The TWA shall be determined in accordance with 29 CFR 1926.1101.

- I. At no time during actual removal operations shall half-mask air purifying respirators be allowed unless a full 8-hour TWA and excursion limit have been conducted, and reviewed by the Construction Project Manager. If the TWA and excursion limit have not been conducted, a Supplied-Air Respirator (SAR) or Airline Respirator or Self-Contained Breathing Apparatus (SCBA) must be used. Use of single use dust respirators is prohibited for the above respiratory protection.
- J. Workers shall be provided with personally issued and individually marked respirators. Respirators shall not be marked with any equipment that will alter the fit of the respirator in any way. Only waterproof identification markers shall be used.
- K. Asbestos abatement contractor shall ensure that the workers are qualitatively or quantitatively fit tested by an Industrial Hygienist initially and every 12 months thereafter with the type of respirator he/she will be using.
- L. Whenever the respirator design permits, workers shall perform the positive and negative air pressure fit test each time a respirator is worn. Powered air-purifying respirators shall be tested for adequate flow as specified by the manufacturer.
- M. No facial hairs (beards) shall be permitted to be worn when wearing respiratory protection that requires a mask-to-face seal.
- N. If a worker wears glasses, a spectacle kit to fit their respirator shall be provided by the asbestos abatement contractor at the asbestos abatement contractor's expense.
- O. Respiratory protection maintenance and decontamination procedures shall meet the following requirements:
 1. Respiratory protection shall be inspected and decontaminated on a daily basis in accordance with OSHA 29 CFR 1910.134 (b); and
 2. High efficiency filters for negative pressure respirators shall be changed after each shower; and
 3. Respiratory protection shall be the last piece of worker protection equipment to be removed. Workers must wear respirators in the shower when going through decontamination procedures as stated in Section 3.03 and/or 3.04.
 4. Airline respirators with high efficiency filtered disconnect shall be disconnected in the equipment room and worn into the shower. Powered air-purifying respirator face pieces shall be worn into the shower. Filtered/power pack assemblies shall be decontaminated in accordance with manufacturers recommendations; and

5. Respirators shall be stored in a dry place and in such a manner that the face-piece and exhalation valves are not distorted; and
 6. Organic solvents shall not be used for washing of respirators.
- P. Authorized visitors shall be provided with suitable respirators and instruction on the proper use of respirators whenever entering the Work Area. Qualitative fit test shall be done to ensure proper fit of respirator.

1.16 PROTECTIVE CLOTHING

- A. Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work. Provide to all workers, foremen, superintendents, authorized visitors and inspectors, protective disposable clothing consisting of full body coveralls, head covers, gloves and 18-inch high boot type covers or reusable footwear.
- B. In addition to personal protective equipment for workers, the asbestos abatement contractor shall make available at each worksite at least four (4) additional uniforms and required respiratory equipment each day for personnel who are authorized to inspect the work site. He/she shall also provide, for the duration of the work at any site involving a decontamination unit for worksite access, a lockable storage locker for use by the Construction Project Manager. In addition to respiratory masks for workers, the asbestos abatement contractor must have on hand at the beginning of each work day, at least four (4) masks each with two sets of fresh filters, for use by personnel who are authorized to inspect the worksite. The asbestos abatement contractor shall check for proper fit of the respirators of all City personnel authorized to enter the Work Area.
- C. Asbestos handlers involved in tent procedures shall wear two (2) disposable suits, including gloves, hood and footwear, and appropriate respiratory equipment. All street clothes shall be removed and stored in a clean room within the work site. The double layer personal protective equipment shall be used for installation of the tent and throughout the procedure, if a decontamination unit (with shower and clean room) is contiguous to the Work Area, only one (1) layer of disposable personal protective equipment shall be required; in this case, prior to exiting the tent the worker shall HEPA vacuum and wet clean the disposable suit.
- D. The outer disposable suit (if 2 suits are worn) shall be removed and remain in the tent upon exiting. Following the tent disposal and work site clean up the workers shall immediately proceed to a shower at the work site. The inner disposal unit and respirator shall be removed in the shower after appropriate wetting. The disposal clothing shall be disposed of as asbestos-containing waste material. The workers shall then fully and vigorously shower with supplied liquid bath soap, shampoo, and clean dry towels.

- E. Coveralls: provide disposable full-body coveralls and disposable head covers. Require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes for all workers in the Work Area.
- F. Boots: provide work boots with non-skid soles, and where required by OSHA, foot protection, for all workers. Provide boots at no cost to workers. Paint uppers of all boots yellow with waterproof enamel. Do not allow boots to be removed from the Work Area for any reason after being contaminated with ACM and/or dust.
- G. Hard Hats: provide hard hats as required by OSHA for all workers, and provide a minimum of four spares for Inspectors, visitors, etc. Label all hats with same warning label as used on disposal bags. Require hard hats to be worn at all times that work is in progress that may cause potential head injury. Provide hard hats of the type with polyethylene strap suspension. Require hats to remain in the Work Area throughout the work. Thoroughly clean and decontaminate and bag hard hats prior to removing them from the Work Area at the end of the work.
- H. Goggles: provide eye protection (goggles) as required by OSHA for all workers involved in any activity that may potentially cause eye injury. Require them to be worn at all times during these activities. Thoroughly clean and decontaminate goggles before removing them from the Work Area.
- I. Gloves: provide work gloves to all workers, of the type dictated by the Work and OSHA Standards. Do not remove gloves from the Work Area. Dispose of as asbestos-asbestos contaminated waste at the end of the work. Gloves shall be worn at all times, except during Work Area Preparation activities that do not disturb ACM.
- J. Reusable footwear, hard hats and eye protection devices shall be left in the contaminated Equipment Room until the end of the Asbestos Abatement Work.
- K. Disposable protective clothing shall be discarded and disposed of as asbestos waste every time the wearer exits from the workspace to the outside through the decontamination facility.
- L. Respirators, disposable coveralls, head covers and foot covers shall be provided by the asbestos abatement contractor for the Facilities Representative, Construction Project Manager and any other authorized representative who may inspect the Work Area. Provide two respirators and six respirator filter changes per day.

1.17 AIR MONITORING - ASBESTOS ABATEMENT CONTRACTOR

- A. Asbestos abatement contractor shall employ a qualified industrial hygiene laboratory to analyze air samples in accordance with OSHA Regulations, 1926.1101 (Asbestos Standards for Construction) and New York City regulations.

- B. The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).
- C. Industrial hygiene laboratory shall also be a current proficient participant in the NIST/NVLAP Quality Assurance Program for the identification of bulk samples. Laboratory identification number shall be submitted to and approved by the City.
- D. Air monitoring responsibilities for the asbestos abatement contractor's employees, shall be performed by a representative of the industrial hygiene laboratory retained by the asbestos abatement contractor.
- E. Asbestos abatement contractor shall submit to the City all credentials of the designated (as defined in OSHA 1926.1101) and industrial hygiene laboratory representative for approval.
- F. Air monitoring and inspection shall be conducted by the Asbestos abatement contractor's competent person (as defined in OSHA 1926.1101).
- G. Continuous (daily or per shift) monitoring and inspection will include Work Area samples, personnel samples from the breathing zone of a worker to accurately determine the employees' 8-hour TWA (unless Type C respirators are used) and decontamination unit clean room samples.
- H. Work Area samples and employee personnel samples shall be taken using pumps whose flow rates can be determined to an accuracy of +5-percent, at a minimum of two liters per minute. This must be demonstrated at the job site.
- I. Sampling and analysis methods shall be per NIOSH 7400A.
- J. Test Reports:
 - 1. Promptly process and distribute one copy of the test results, to the Commissioner.
 - 2. Prompt reports are necessary so that if required, modifications to work methods and/or practices may be implemented as soon as possible.
 - 3. Asbestos abatement contractor shall by facsimile notify the Commissioner within 24 hours of the results of each test, followed by written notification within three days.
- K. Competent person shall conduct inspections and provide written reports daily. Inspections will include checking the standard operating procedures, engineering control systems, respiratory protection and decontamination systems, packaging

and disposal of asbestos waste, and any other aspects of the project which may affect the health and safety of the people and environment.

- L. All costs for required air monitoring by the asbestos abatement contractor's competent person shall be borne by the asbestos abatement contractor.
- M. The City reserves the right to conduct air and surface dust sampling in conjunction with and separate from the Third-Party Air Monitor for the purposes of Quality Assurance.
- N. All samples shall be accompanied by a Chain of Custody Record that shall be submitted to the Construction Project Manager upon completion of analysis.

1.18 THIRD PARTY MONITORING AND LABORATORY

- A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.
- B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM). This laboratory shall meet the standards stated in Paragraph 1.17. B.
- C. Observations will include, but not be limited to, checking the standard operating procedures, engineering control systems, respiratory protection, decontamination systems, packaging and disposal of asbestos waste, and any other aspects of the project that may affect the health and safety of the environment, Asbestos abatement contractor, and/or facility occupants.
- D. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the 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.
- E. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the Asbestos abatement contractor.
- F. At a minimum, air sampling shall be conducted in accordance with the following schedule:

Abatement Activity	Pre-Abatement	During Abatement	Post-Abatement
Equal to or greater than 10,000 square feet or 10,000 linear feet of ACM	PCM	PCM	TEM
Less than 10,000 square feet or 10,000 linear feet of ACM	PCM	PCM	PCM

Note: TEM is acceptable wherever PCM is required.

G. The number of air samples required per stage of abatement and size of abatement project is listed in the table below:

		Pre-Abatement	During Abatement	Post Abatement
Large Asbestos Projects				
1.	Full Containment	10	5	10
2.	Glovebag inside Tent	5 ^a	5 ^a	5 ^a
3.	Exterior Foam and Vertical Surfaces	-	5 ^c	5 ^d
4.	Interior Foam	10	5 ^c	10 ^d
Small Asbestos Projects				
1.	Full Containment	6	3	6
2.	Glovebag inside Tent	3 ^b	3 ^b	3 ^b
3.	Tent	3 ^b	3 ^b	3 ^b
4.	Exterior Foam and Vertical Surfaces	-	3 ^c	3 ^d
5.	Interior Foam	6	3 ^c	6 ^d
Minor Projects				
1.	Glovebag inside Tent	-	-	1 ^d
2.	Tent	-	-	1 ^d
3.	Exterior Foam and Vertical Surfaces	-	-	1 ^d
4.	Interior Foam	-	-	1 ^d

Notes:

- a. if more than three (3) tents then two (2) samples required per enclosure.
- b. if more than three (3) tents then one (1) sample required per enclosure.
- c. samples shall be taken within the work area(s).
- d. area sampling is required only if:
 - visible emissions are detected during the project
 - during-abatement area sampling results exceeded 0.01 f/cc or the pre-abatement area sampling result(s) for interior projects where applicable.

- work area to be reoccupied is an interior space at a school, healthcare, or daycare facility.

- H. Prior to commencement of abatement activities, the Third Party Air Monitoring Firm will collect a minimum number of area samples inside each homogeneous work area.
1. Samples will be taken during normal occupancy activities and circumstances at the work site.
 2. Samplers shall be located within the proposed work area and at all proposed isolation barrier locations.
 3. Samples shall be analyzed using PCM.
 4. The number of samples to be collected will be determined by the size of the project and the abatement methods to be utilized.
- I. Frequency and duration of the air sampling during abatement shall be representative of the actual conditions during the abatement. The size of the asbestos project will be a factor in the number of samples required to monitor the abatement activities. The following minimum schedule of samples shall be required daily.
1. For large asbestos projects employing full containment, area air sampling shall be performed at the following locations:
 - a. Two area samples outside the work area in uncontaminated areas of the building, remote from the decontamination facilities.
 - (1) Primary location selection shall be within 10 feet of isolation barriers.
 - (2) Where negative ventilation exhaust runs through uncontaminated building areas, one of the area samples will be required in these areas to monitor any potential fiber release.
 - (3) Where exhaust tubes have been grouped together in banks of up to five (5) tubes, with each tube exhausting separately and the bank of tubes terminating together at the same controlled area, one area air sample shall be taken.
 - b. One area sample within the uncontaminated entrance to each decontamination enclosure system.
 - c. Where adjacent non-work areas do not exist, an exterior area sample shall be taken.

- d. One area sample within 5 feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors but not within a duct.
 - e. One area sample outside, but within 25 feet of, the building or structure, if the entire building or structure is the work area.
2. For large asbestos projects involving interior foam method, area air sampling shall be performed at the following sampling locations:
- a. One area sample taken outside the work area within 10 feet of isolation barriers.
 - b. One area sample taken within the uncontaminated entrance to each worker decontamination and waste decontamination enclosure system.
 - c. One area sample within 5 feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors but not within a duct, if applicable.
 - d. Three area samples inside the work area.
 - e. One area sample where the negative ventilation exhaust ducting runs through uncontaminated building areas, if applicable.
3. For large asbestos projects employing the glovebag procedure within a tent, a minimum of five continuous air samples shall be taken concurrently with the abatement for each work area, unless there are more than three enclosures, in which case two area samples per enclosure are required.
- a. Four area samples taken outside the work area within ten feet of tent enclosure(s).
 - b. One area sample taken within the uncontaminated entrance to each worker and waste decontamination enclosure system.
 - c. One area sample within five feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors, but not within a duct, if applicable.
 - d. One area sample where negative ventilation exhaust ducting runs through uncontaminated building areas, if applicable.

4. For large asbestos projects involving exterior foam method or removal of ACM from vertical surfaces, a minimum of five continuous area samples shall be taken concurrently with the abatement for each work area using the following minimum requirements:
 - a. Three area samples inside the work area and remote from the decontamination systems.
 - b. One area sample within the uncontaminated entrance to each worker and waste decontamination enclosure system.
 - c. One area sample outside the work area within 25 feet of the building or structure, if the entire building or structure is the work area.
 - d. One area sample inside the building or structure at the egress point to the work area, if applicable.

5. For small asbestos projects employing full containment, a minimum of three continuous area samples shall be taken concurrently with the abatement for each work area at the following locations:
 - a. Two area samples taken outside the work area within ten feet of the isolation barriers.
 - b. One area sample within the uncontaminated entrance to each worker or waste decontamination enclosure system.
 - c. One area sample within five feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors, but not within a duct, if applicable.
 - d. One area sample where negative ventilation exhaust ducting runs through an uncontaminated building area, if applicable.

6. Tent Procedures:

For projects involving more than 25 linear feet or 10 square feet, a minimum of three continuous samples shall be taken concurrently throughout abatement.

- J. Post-abatement clearance air monitoring for projects not solely employing glove-bag procedures shall include a minimum number of area samples inside each homogeneous work area and outside each homogeneous work area (five samples inside/five samples outside for Large Projects and three samples inside/three samples outside for Small Projects). In addition to the five sample inside/five sample outside minimum for Large Projects, one additional representative area sample shall be collected inside and outside the work area for every 5,000 square feet above 25,000 square feet of floor space where ACM has been abated.

- K. Post-abatement clearance air monitoring for Small Projects solely employing glove-bag procedures is not required unless one or more of the following events occurs. In such cases, post-abatement clearance air monitoring procedures shall be followed. The events requiring post-abatement clearance air monitoring are:
1. The integrity of the glove-bag was compromised,
 2. Visible emissions are detected outside the glove-bag, and/or
 3. Ambient levels exceed 0.01 f/cc during abatement.
- L. Monitoring requirements for other than post-abatement clearance air monitoring are as follows:
1. The sampling zone for indoor air samples shall be representative of the building occupants' breathing zone.
 2. If possible, outdoor ambient and baseline samplers should be placed about 6 feet above the ground surface in reasonable proximity to the building and away from obstructions and drafts that may unduly affect airflow.
 3. For outdoor samples, if access to electricity and concerns about security dictate a rooftop site, locations near vents and other structures on the roof that would unduly affect airflow shall be avoided.
 4. Air sampling equipment shall not be placed in corners of rooms or near obstructions such as furniture.
 5. Samples shall have a chain of custody record.
- M. Area air sampling during abatement shall be conducted as specified in the following documents except as restricted or modified herein:
1. Measuring Airborne Asbestos Following an Abatement Action, US EPA document 600/4-85-049 (Nov., 1985);
 2. Guidance for Controlling Asbestos-Containing Materials in Buildings; US EPA Publication 560/5-85- 024 (June, 1984);
 3. Methodology for the Measurement of Airborne Asbestos by Electron Microscopy US EPA Contract No. 68-02- 3266;
 4. Mandatory and non-mandatory Electron Microscopy Methods set forth in 40 CFR Part 763, Subpart E, Appendix A.
 5. NIOSH 7400 method using "A" counting rules

N. In accordance with the above criteria, area samples (see NYCDEP Asbestos Control Program Regulations) shall conform to the following schedule:

Area Samples for Analysis by	Minimum Volume	Flow Rate
PCM, 25mm cassettes	560 liters	5 to 15 liters/minute
TEM, 25mm cassettes	560 liters	1 to 10 liters/minute
TEM, 37mm cassettes	1,250 liters	1 to 10 liters/minute

O. Post-abatement clearance air monitoring requirements are as follows:

1. Sampling shall not begin until at least one hour after wet cleaning has been completed and no visible pools of water or condensation remain.
2. Samplers shall be placed at random around the work area. If the work area contains the number of rooms equivalent to the number of required samples based on floor area, a sampler shall be placed in each room. When the number of rooms is greater than the required number of samples, a representative sample of rooms shall be selected.
3. The representative samplers placed outside the work area but within the building shall be located to avoid any air that might escape through the isolation barriers and shall be approximately 50 feet from the entrance to the work area, and 25 feet from the isolation barriers.

P. The following aggressive sampling procedures shall be used within the work area during all clearance air monitoring:

1. Before starting the sampling pumps, use forced air equipment (such as a one horsepower leaf blower) to direct exhaust air against all walls, ceilings, floors, ledges and other surfaces in the work area. This pre-sampling procedure shall take at least five minutes per 1,000 square feet of floor area; then
2. Place a 20-inch diameter fan in the center of the room. Use one fan per 10,000 cubic feet of room space. Place the fan on slow speed and point it toward the ceiling.
3. Start the sampling pumps and sample for the required time or volume.
4. Turn off the pump and then the fan(s) when sampling is completed.

5. Collect a minimum number of area samples inside and outside each homogeneous work area (five inside/five outside samples for Large Projects and three inside/three outside samples for Small Projects). In addition to the minimum for Large Projects, one representative area samples shall be collected inside and outside the work area for every 5,000 square feet above 25,000 square feet of floor space where ACM has been abated.

Q. For post-abatement monitoring, area samples shall conform to the following schedule:

Area Samples for Analysis by	Minimum Volume	Flow Rate
PCM	1,800 liters	5 to 15 liters/minute
TEM	1,250 liters	1 to 10 liters/minute

1. Each homogeneous work area that does not meet the clearance criteria shall be thoroughly re-cleaned using wet methods, with the negative pressure ventilation system in operation. New samples shall be collected in the work area as described above. The process shall be repeated until the work site meets the clearance criteria.
2. For an asbestos project with more than one homogeneous work area, the release criterion shall be applied independently to each work area.
3. Should airborne fiber concentrations exceed the clearance criteria, the asbestos abatement contractor shall re-clean the work area utilizing wet wiping and HEPA-vacuuming techniques. Following completion of re-cleaning activities, the Third-Party Air Monitor will perform an observation of the Work Area. If the Third-Party Air Monitor determines that the work was performed in accordance with the specifications, the appropriate settling period will be observed and additional air sampling will be performed.
4. All costs resulting from additional air tests and observations shall be borne by the asbestos abatement contractor. These costs may include, but are not limited to, labor, analysis fees, materials, and expenses.
5. After the area has been found to be in compliance, the asbestos abatement contractor may remove Isolation Barriers and perform final cleaning as specified.

R. Clearance and/or Re-occupancy Criteria:

1. The clearance criteria shall be applied to each homogeneous work area independently.

2. For PCM analysis, the clearance air monitoring shall be considered satisfactory when each of the 5 inside/5 outside samples for Large Projects and/or 3 inside/3 outside samples for Small Projects is less than or equal to 0.01 f/cc or the background concentrations, whichever is greater.
3. For TEM analysis, the clearance air monitoring shall be considered satisfactory when the requirements stated in 40 CFR Part 763, Subpart E, Appendix A, Section IV are met.
4. As soon as the air monitoring tests are completed, the Third-Party Air Monitor will send the results of such tests to the City and notify the Asbestos abatement contractor.
5. The asbestos abatement contractor shall initiate the appropriate closeout information into the DEP ARTS database within 24 hours of work area completion to allow the Third Party Air Monitoring Firm to complete and submit the ACP-15 forms for each specific work area.
6. The asbestos abatement contractor shall provide the ACP-20 and ACP-21 forms to the Third Party Air Monitoring Firm within 48 hours of receipt.

1.19 TAMPERING WITH TEST EQUIPMENT

All parties to this Contract are hereby notified that any tampering with testing equipment will be considered an attempt at falsifying reports and records to federal and state agencies and each offense will be prosecuted under applicable state and federal criminal codes to the fullest extent possible.

1.20 GUARANTEE

- A. Work performed in compliance with this Contract shall be guaranteed for a period of one year from the date the completed work is accepted by the City.
- B. The asbestos abatement contractor shall not be held liable for the guarantee where the repair required under the guarantee is a result of obvious abuse or vandalism, as determined by the Commissioner.
- C. The City will notify the asbestos abatement contractor in writing regarding defects in work under the guarantee.

PART 2 – PRODUCTS

2.01 MATERIAL HANDLING

- A. Deliver all materials to the job site in their manufacturer's original container, with the manufacturer's label intact and legible.

1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 2. Store all materials on pallets, away from any damp and/or wet surface. Cover materials in order to prevent damage and/or contamination.
 3. Promptly remove damaged materials and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the City.
- B. The Construction Project Manager may reject as non-complying such material and products that do not bear identification satisfactory to the Construction Project Manager as to manufacturer, grade, quality and other pertinent information.

2.02 MATERIALS

- A. Wetting agents: (Surfactant) shall consist of resin materials in a water base, which have been tested to ensure materials are non-toxic and non-hazardous. Surfactants shall be installed according to the manufacturer's written instructions.
- B. Encapsulants: Liquid material which can be applied to asbestos-containing material which temporarily controls the possible release of asbestos fibers from the material or surface either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant). A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.
- C. During abatement activities, replacement materials shall be stored outside the work area in a manner to prevent contamination. Materials required for the asbestos project (i.e., plastic sheeting, replacement filters, duct tape, etc.) shall be stored to prevent damage or contamination.
- D. Framing Materials and Doors: As required to construct temporary decontamination facilities and isolation barriers. Lumber shall be high grade, new, finished one side and fire retardant.
- E. Fire Retardant Polyethylene Sheeting: minimum uniform thickness of 6-mil. Provide largest size possible to minimize seams. All materials used in the construction of temporary enclosures shall be noncombustible or fire-retardant in accordance with NFPA 701 and 255.
- F. Fire Retardant Reinforced Polyethylene Sheeting: For covering floor of decontamination units, provide translucent, nylon reinforced or woven polyethylene laminated, fire retardant polyethylene sheeting. Provide largest size possible to minimize seams, minimum uniform thickness 6-mil. All materials used

in the construction of temporary enclosures shall be noncombustible or fire-retardant in accordance with NFPA 701 and 255.

- G. Drums: Asbestos-transporting drums, sealable and clearly marked with warning labels as required by OSHA and EPA.
- H. Polyethylene Disposal Bags: Asbestos disposal bags, minimum of fire retardant 6-mil thick. Bags shall be clearly marked with warning labels as required by OSHA and EPA.
- I. Signs: Asbestos warning signs for posting at perimeter of Work Area, as required by OSHA and EPA.
- J. Waste Container Bag Liners and Flexible Trailer Trays: One piece leak-resistant flexible tray with absorbent pad.
- K. Tape: Provide tape which is of high quality with an adhesive that is formulated to aggressively stick to sheet polyethylene.
- L. Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.
- M. Flexible Duct: Spiral reinforced flex duct for air filtration devices.
- N. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, gloves, and 18-inch high boot-type foot covers. Protective clothing shall conform to OSHA Standard 29 CFR 1926.1101.
- O. Surfactants, strippers, sealers, or any other chemicals used shall be non-carcinogenic and non-toxic.
- P. Materials used in the construction of temporary enclosures shall be noncombustible or fire-retardant in accordance with NFPA 701 and 255.

2.03 TOOLS AND EQUIPMENT

- A. Air Filtration Device (AFD): AFDs shall be equipped with High Efficiency Particulate Air (HEPA) filtration systems and shall be approved by and listed with Underwriter's Laboratory.
- B. Scaffolding: All scaffolding shall be designed and constructed in accordance with OSHA (29 CFR 1926/1910), New York City Building Code, and any other applicable federal, state and local government regulations. Whenever there is a conflict or overlap of the above references the most stringent provisions are applicable. All scaffolding and components shall be capable of supporting without failure a minimum of four times the maximum intended load, plus an allowance

for impact. All scaffolding and staging must be certified in writing by a Professional Engineer licensed to practice in the State of New York.

1. Equip rungs of all metal ladders, etc., with an abrasive, non-slip surface.
 2. Provide non-skid surface on all scaffold surfaces subject to foot traffic. Scaffold ends and joints shall be sealed with tape to prevent penetration of asbestos fibers.
- C. **Transportation Equipment:** Transportation Equipment, as required, shall be suitable for loading, temporary storage, transit and unloading of asbestos contaminated waste without exposure to persons or property. Any temporary storage containers positioned outside the building for temporary storage shall be metal, closed and locked.
- D. **Vacuum Equipment:** All vacuum equipment utilized in the Work Area shall utilize HEPA filtration systems.
- E. **Vacuum Attachments:** Soft Brush Attachment, Asbestos Scraper Tool, Drill Dust Control Kit.
- F. **Electric Sprayer:** An electric airless sprayer suitable for application of encapsulating material and shall be approved by and listed with Underwriters Laboratory.
- G. **Water Sprayer:** The water sprayer shall be an airless or other low-pressure sprayer for amended water application.
- H. **Water Atomizer:** Powered air-misting device equipped with a ground fault interrupter and equipped to operate continuously.
- I. **Brushes:** All brushes shall have nylon bristles. Wire brushes are excluded from use due to their potential to shred asbestos fibers into small, fine fibers. Wire brushes maybe used for cleaning pipe joints within glove-bags upon written approval of the Construction Project Manager.
- J. **Power tools used to drill, cut into, or otherwise disturb ACM shall be manufacturer-equipped with HEPA filtered local exhaust ventilation. Abrasive removal methods, including the use of beadblasters, are prohibited.**
- K. **Other Tools and Equipment:** Asbestos abatement contractor shall provide other suitable tools for the stripping, removal, encapsulation, and disposal activities including but not limited to: hand-held scrapers, sponges, rounded-edge shovels, brooms, and carts.

- L. Fans and Leaf Blower: Provide Leaf Blower (one leaf blower per floor) and one 20-inch diameter fans for each 10,000 cubic feet of Work Area volume to be used for aggressive sampling technique for clearance air testing.
- M. Fire Extinguishers: At least one fire extinguisher with a minimum rating 2-A:10-B:C shall be required for each work place. In the case of large asbestos projects, at least two such fire extinguishers shall be required.
- N. First Aid Kits: Asbestos abatement contractor shall maintain adequately stocked first aid kits in the clean rooms of the decontamination units and within Work Areas. The first aid kit shall be approved by a licensed physician for the work to be performed under this Contract.
- O. Water Service:
 - 1. Temporary Water Service Connection: All connections to the Facilities water system shall include back flow protection. Valves shall be temperature and pressure rated for operation of the temperature and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping, and equipment. Leaking or dripping fittings/valves shall be repaired and or replaced as required.
 - 2. Water Hoses: Employ new heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each Work Area and to each Decontamination Enclosure Unit. Provide fittings as required for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.
 - 3. Water Heater: Provide UL rated 40-gallon electric water heaters to supply hot water for Personal Decontamination Enclosure System Shower. Activate from 30 Amp Circuit breakers located within the Decontamination Enclosure sub panel. Provide relief valve compatible with water heater operations, pipe relief valve down to drip pan at floor level with type 'L' copper piping. Drip pans shall be 6-inch deep and securely fastened to water heater. Wiring of the water heater shall comply with NEMA, NECA, and UL standards.
- P. Electrical Service:
 - 1. General: Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.
 - 2. Temporary Power: Provide service to decontamination unit sub panel with minimum 60 AMP, two pole circuit breaker or fused disconnect connected to the building's main distribution panel. Sub panel and disconnect shall be

sized and equipped to accommodate all electrical equipment required for completion of the work.

3. **Voltage Differences:** Provide identification warning signs at power outlets that are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.
4. **Ground Fault Protection:** Equip all circuits for any purpose entering Work Area with ground fault circuit interrupters (GFCI). Locate the GFCIs outside the Work Area so that all circuits are protected prior to entry to Work Area. Provide circuit breaker type ground fault circuit interrupters (GFCI) equipped with test button and reset switch for all circuits to be used for any purpose in Work Area, decontamination units, exterior, or as otherwise required by NEC, OSHA or other authority.
5. **Power Distribution System:** Provide circuits of adequate size and proper characteristics for each use. In general run wiring overhead, and rise vertically where wiring will be least subject to damage from operations.
6. **Temporary Wiring:** In the Work Area shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance. Provide liquid tight enclosures or boxes for all wiring devices. Do not wire temporary lighting with plain, exposed (insulated) electrical conductors.
7. **Electrical Power Cords:** Use only grounded extension cords; use hard service cords where exposed to traffic and abrasion. Use single lengths of cords only.
8. **Temporary Lighting:** All lighting within the Work Area shall be liquid and moisture proof and designed for the use intended.
 - a. Provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in task lighting.
 - b. Provide lighting in the Decontamination Unit as required to supply a minimum 50-foot candle light level.
9. If electrical circuits, machinery, and other electrical systems in or passing through the work area must stay in operation due to health and safety requirements, the following precautions must be taken:
 - a. All unprotected cables, except low-voltage (less than 24 volts) communication and control system cables, panel boxes of cables and joints in live conduit that run through the work area shall be covered

with three (3) independent layers of six (6) mil fire retardant polyethylene. Each layer shall be individually duct taped and sealed. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air sampling results have been obtained.

2.04 CLEANING

- A. Throughout the construction period, the asbestos abatement contractor shall maintain the building as described in this Section.
1. The asbestos abatement contractor shall prevent building areas other than the Work Area from becoming contaminated with asbestos-containing dust or debris. Should areas outside the Work Area become contaminated with asbestos-containing dust or debris as a consequence of the asbestos abatement contractor's work practices, the asbestos abatement contractor shall be responsible for cleaning these areas in accordance with the procedures appended in Title 15, Chapter 1 of RCNY and NYS DOL ICR56. All costs incurred in cleaning or otherwise decontaminating non-Work Areas and the contents thereof shall be borne by the asbestos abatement contractor at no additional cost to the City.
 2. The asbestos abatement contractor shall provide to all personnel and laborers the required equipment and materials needed to maintain the specified standard of cleanliness.
- B. General
1. Waste water from asbestos removal operations, including shower water, may be discharged into the public sewer system only after approved filtration is on operation to remove asbestos fibers.
 2. Asbestos wastes shall be double bagged in six mil (.006") fire retardant polyethylene bags approved for ACM disposal and shall be properly labeled and handled before disposal.
 3. All waste generated shall be bagged, wrapped or containerized immediately upon removal. The personal and waste decontamination enclosure systems and floor and scaffold surfaces shall be HEPA vacuumed and wet cleaned at the end of each work shift at a minimum.
 4. The asbestos abatement contractor shall use corrugated cartons or drums for disposal of asbestos-containing waste having sharp edged components (e.g., nails, screws, metal lathe and tin sheeting) that may tear polyethylene bags and sheeting. The waste within the drums or cartons must be double bagged.

5. The asbestos abatement contractor shall transport all bags of waste to disposal site in thirty gallon capacity metal or fiber drums with tight lids, or in locked steel dumpster.
6. Dumping of debris, waste or bagged waste will not be permitted.
7. The waste decontamination enclosure system shall be wet cleaned twice using wet cleaning methods upon completion of waste removal. When the worker decontamination enclosure shower room alternates as a waste container wash room, the shower room shall be washed immediately with cloths or mops saturated with a detergent solution prior to wet cleaning.
8. Excessive water accumulation or flooding in the work area shall require work to stop until the water is collected and disposed of properly.
9. ACM shall be collected utilizing rubber dust pans and rubber squeegees.
10. HEPA vacuums shall not be used on wet materials unless specifically designed for that purpose.
11. Metal shovels shall not be used within the work area.
12. Mastic solvent when used will be applied in moderation (e.g., by airless sprayer). Saturation of the concrete floor with mastic solvent must be avoided.
13. The asbestos abatement contractor shall retain all items in the storage area in an orderly arrangement allowing maximum access, not impeding traffic, and providing the required protection of all materials.
14. The asbestos abatement contractor shall not allow accumulation of scrap, debris, waste material, and other items not required for use in this work. When asbestos contaminated waste must be kept on the work site overnight or longer, it shall be double bagged and stored in accordance with New York City Department of Sanitation (NYCDOS) regulation Title 16 Chapter 8, and Federal, State and City laws.
15. At least twice a week (more if necessary), the asbestos abatement contractor shall completely remove all scrap, debris and waste material from the job site.
16. The asbestos abatement contractor shall provide adequate storage space for all items awaiting removal from the job site, observing all requirements for fire protection and concerns for the environment.
17. All respiratory protection equipment shall be selected from the latest NIOSH Certified Equipment list.

18. Daily and more often, if necessary, the asbestos abatement contractor shall inspect the Work Areas and adjoining spaces, and pick up all scrap, debris, and waste material. All such items shall be removed to the place designated for their storage.
19. Weekly, and more often, if necessary, the asbestos abatement contractor shall inspect all arrangements of materials stored on the site; re-stack and tidy them or otherwise service them to meet the requirements of these Specifications.
20. The asbestos abatement contractor shall maintain the site in a neat and orderly condition at all times.

PART 3 – EXECUTION

3.01 WORKER DECONTAMINATION FACILITY

A. Large Asbestos Projects (Small Project Option):

1. Provide a worker decontamination facility in accordance with, Title 15, Chapter 1, OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein. Unless approved by NYCDEP and the City, worker decontamination facilities shall be attached to the Work Areas
 - a. Structure:
 - (1) Use modular systems or build using wood or metal frame studs, joists, and rafters placed at a maximum of 16 inches on-center.
 - (2) When worker decontamination unit is located outdoors, in areas with public access, or in correctional facilities, frame work shall be lined with minimum 3/8" thickness fire rated plywood sheathing. Sheathing shall be caulked or taped airtight at all joints and seams.
 - (3) Interior shall be covered with two layers of fire retardant 6-mil polyethylene sheeting, with a minimum overlap of 12 inches at seams. Seal seams airtight using tape and adhesive. The interior floor shall be covered with two (2) layers of reinforced fire-retardant polyethylene sheeting with a minimum overlap on the walls of twelve inches.
 - (4) Entrances to the decontamination unit shall be secured with lockable hinged doors. Doors shall be open at all times when abatement operations are in progress. Doors shall be louvered

to allow for air movement through the decontamination units into Work Area.

- b. **Curtained Doorways:** A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.
- c. **Air Locks:** Air locks shall consist of two curtained doorways placed a minimum of three feet apart.
- d. **Decontamination Enclosure System** shall be placed adjacent to the Work Area and shall consist of three totally enclosed chambers, separated from Work Area and each other by airlocks, as follows:
 - (1) **Equipment Room:** The equipment room shall have a curtain doorway to separate it from the Work Area, and share a common airlock with the shower room. The equipment room shall be large enough to accommodate at least one worker (allowing them enough room to remove their protective clothing and footwear), and a fire retardant 6-mil disposal bag for collection of discarded clothing and equipment. The equipment room shall be utilized for the storage of equipment and tools after decontamination using a HEPA-vacuum and/or wet cleaning. A one-day supply of replacement filters, in sealed containers, for HEPA-vacuums and negative air machines, extra tools, containers of surfactant, and other materials and equipment required for the project shall be stored here. A walk-off pan filled with water shall be placed in the Work Area just outside the equipment room for persons to clean foot coverings when leaving the Work Area. Contaminated footwear and reusable work clothing shall be stored in this room.
 - (2) **Shower Room:** The shower room shall have two airlocks (one that separates it from the equipment room and one that separates it from the clean room). The shower room shall contain at least one shower, with hot and cold water adjustable at the tap, per six workers. Careful attention shall be given to the shower to ensure against leaking of any kind and shall contain a rigid catch basin at least six inches deep. Asbestos abatement contractor shall supply towels, shampoo and liquid soap in the shower room at all times. Shower water shall be continuously drained, collected, and filtered through a system with at least a 5-micron particle size collection capacity. A system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filters by large particles. Pumps shall be installed, maintained

and utilized in accordance with manufacturer's recommendations. Filtered water shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos waste.

- (3) Clean Room: The clean room shall share a common airlock with the shower room and shall have a curtained doorway to separate it from outside non-contaminated areas. Lockers, for storage of workers' street clothing, and shelves, for storing respirators, shall be provided in this area. Clean disposable clothing, replacement filters for respirators, and clean dry towels shall be provided in the clean room. The clean room shall not be used for the storage of tool, equipment or other materials.

B. Small Asbestos Projects:

1. Provide a worker decontamination facility in accordance with, Title 15, Chapter 1, OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein. Unless approved by NYCDEP and the City, worker decontamination facilities shall be attached to the Work Areas.
2. The worker decontamination enclosure system shall consist of, as a minimum, an equipment room, a shower room, and a clean room separated from each other and from the work area by curtained doorways. The equipment storage, personnel gross decontamination and removal of disposal clothing shall occur in the equipment room prior to entering the shower. All other requirements shall be the same as described above for a large asbestos project.
3. For small asbestos projects with only one exit from the work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage. All other requirements shall be the same as described above for a large asbestos project.

- C. Decontamination Enclosure System Utilities:** Lighting, heat, and electricity shall be provided as necessary by the Asbestos abatement contractor, and as specified herein.

3.02 WASTE DECONTAMINATION FACILITY

A. Large Asbestos Project (Small Project Option)

1. Provide a worker decontamination facility in accordance with, Title 15, Chapter 1, OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein. Unless approved by NYCDEP and the City, worker decontamination facilities shall be attached to the Work Areas.

- a. Structure:
- (1) Use modular systems or build using wood or metal frame studs, joists, and rafters placed at a maximum of 16 inches on-center.
 - (2) When worker decontamination unit is located outdoors, in areas with public access, or in correctional facilities, frame work shall be lined with minimum 3/8" thickness fire rated plywood sheathing. Sheathing shall be caulked or taped airtight at all joints and seams.
 - (3) Interior walls shall be covered with two layers of fire retardant 6-mil polyethylene sheeting, with a minimum overlap of 12 inches at seams. Seal seams airtight using tape and adhesive. The interior floor shall be covered with two (2) layers of reinforced fire-retardant polyethylene sheeting with a minimum overlap on the walls of twelve inches.
 - (4) Entrances to the decontamination unit shall be secured with lockable hinged doors. Doors shall be open at all times when abatement operations are in progress. Doors shall be louvered to allow for air movement through the decontamination units into the Work Area.
- b. Curtained Doorways: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.
- c. Air Locks: Air locks shall consist of two curtained doorways placed a minimum of three feet apart.
- d. Decontamination Enclosure System shall be located outside the work area and attached to all locations through which ACM waste will be removed from the work area and shall consist of two totally enclosed chambers, separated from the Work Area and each other by airlocks, as follows:
- (1) Washroom: An equipment washroom shall have two air locks (one separating the unit from the Work Area and one common air lock that separates it from the holding area). The washroom shall have facilities for washing material containers and equipment. Gross removal of dust and debris from contaminated material containers and equipment shall be accomplished in the Work Area, prior to moving to the washroom.

- (2) Holding Area: A holding area shall share a common air lock with the equipment washroom and shall have a curtained doorway to outside areas. A hinged, lockable door shall be placed at the holding area entrance to prevent unauthorized access into the Work Area.

B. Small Asbestos Project:

1. The worker decontamination enclosure system shall consist of, as a minimum, an equipment room, a shower room, and a clean room separated from each other and from the work area by curtained doorways. The equipment storage, personnel gross decontamination and removal of disposal clothing shall occur in the equipment room prior to entering the shower. All other requirements shall be the same as described above for a large asbestos project.
2. For small asbestos projects with only one exit from the work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage. All other requirements shall be the same as described above for a large asbestos project.

- C. Decontamination Enclosure System Utilities: Lighting, heat, and electricity shall be provided as necessary by the Asbestos abatement contractor, and as specified herein.

3.03 PERSONNEL ENTRANCE AND DECONTAMINATION PROCEDURES FOR REMOVAL OPERATIONS UTILIZING REMOTE DECONTAMINATION FACILITIES

- A. All individuals who enter the Work Area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall fully identify the facility, agents, asbestos abatement contractor(s), the project, each Work Area, and worker respiratory protection employed. The job supervisor shall be responsible for the maintenance of the log during the abatement activity. The log shall be submitted to the NYC DDC within 48 hours of request.
- B. Each worker shall remove street clothes in the clean room; wear two disposable suits, including gloves, hoods and non-skid footwear; and put on a clean respirator (with new filters) before entering the Work Area.
- C. Each worker shall, before leaving the Work Area or tent, clean the outside of the respirators and outer layer of protective clothing by wet cleaning and/or HEPA-vacuuming. The outer disposable suit shall be removed in the airlock prior to proceeding to the Worker Decontamination Unit. The inner disposable suit and respirator shall be wet wiped and HEPA vacuumed thoroughly before removing and prior to aggressive shower.

- D. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately.

3.04 PERSONNEL ENTRANCE AND DECONTAMINATION PROCEDURES FOR REMOVAL OPERATIONS UTILIZING ATTACHED DECONTAMINATION FACILITIES

- A. All workers and authorized visitors shall enter the Work Area through the worker decontamination facility.
- B. All individuals who enter the Work Area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, asbestos abatement contractor(s), the project, each Work Area and worker respiratory protection employed. The site supervisor shall be responsible for the maintenance of the log during the abatement activity. The log shall be submitted to the NYC DDC within 48 hours of request.
- C. Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator with filters, and clean protective clothing before entering the Work Area through the shower room and equipment room.
- D. Each worker or authorized visitor shall, each time he leaves the Work Area, remove gross contamination from clothing before leaving the Work Area; proceed to the equipment room and remove clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.
- E. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the Work Area is not permitted outside the Work Area.

3.05 MAINTENANCE OF DECONTAMINATION ENCLOSURE FACILITIES AND BARRIERS

The following procedures shall be followed during abatement activities.

- A. All polyethylene barriers inside the work place and partitions constructed to isolate the Work Area from occupied areas shall be inspected by the asbestos handler supervisor at least twice per shift.

- B. Smoke tubes shall be used to test the integrity of the Work Area barriers and the decontamination enclosure systems daily before abatement activity begins and at the end of each shift.
- C. Damage and defects in the decontamination enclosure system shall be repaired immediately upon discovery. The decontamination enclosure system shall be maintained in a clean and sanitary condition at all times.
- D. At any time during the abatement activity, if visible emissions are observed, or elevated asbestos fiber counts outside the Work Area are measured, or if damage occurs to barriers, abatement shall stop. The source of the contamination shall be located, the integrity of the barriers shall be restored and extended to include the contaminated area, and visible residue shall be cleaned up using appropriate HEPA-vacuuming and wet cleaning.
- E. Inspections and observations shall be documented in the daily project log by the asbestos handler supervisor.
- F. The daily inspection to ensure that exits have been checked against exterior blockage or impediments to exiting shall be documented in the log book. If exits are found to be blocked, abatement activities shall stop until the blockage is cleared.

3.06 MODIFICATIONS TO HVAC SYSTEMS

- A. Shut down, isolate or seal, all existing HVAC units, fans, exhaust fans, perimeter convection air units, supply and/or return air ducts, etc., situated in, traversing or servicing the work zone.
- B. Seal all seams with duct tape. Wrap entire duct with a minimum of two layers of fire retardant 6-mil polyethylene sheeting. All shutdowns are to be coordinated with the Facility. Where systems must be maintained, i.e., traversing Work Areas to non-Work Areas, only supply ducts will be maintained, protect as described above. All returns must be blanked off in Work Area and adjacent areas, including floor above and below Work Area. When required Asbestos abatement contractor shall apply for a clarification from NYCDEP. The Asbestos abatement contractor shall implement the following engineering procedures:
 - 1. Maintenance of a positive pressure within the HVAC system of 0.01 inch water gauge (or greater) with respect to the ambient pressure outside the Work Area. The conditions for this system shall be maintained and be operational 24 hours per day from the initiation of Work Area preparation until successful final air clearance. Positive pressurization of HVAC system shall be applied only under the direction and control of professional engineer, or other knowledgeable licensed professional;

2. The positive pressurization of the duct shall be tested, inspected and recorded both at the beginning and at the end of each shift;
 3. The positive pressurization shall be monitored using instrumentation which will provide a written record of pressurization and that will trigger an audible alarm, if the static pressure falls below the set value;
 4. The supply air fan and the supply air damper for the active positive-pressurized duct shall be placed in the manual "on" positions to prevent shutdown by fail-safe mechanisms;
 5. The return air fan and the return air dampers shall be shut down and locked-out;
 6. All the seams of the HVAC ducts that pass through the Work Area shall be sealed;
 7. The HVAC ducts that pass through the Work Area shall be covered with two (2) layers of fire retardant 6-mil polyethylene sheeting, and all seams and edges of both layers shall be sealed airtight;
 8. The supply air fans, return air fans, and all dampers servicing the Work Area itself shall be shut down and locked-out. All openings within the Work Area of supply and return air ducts shall be sealed with 3/8-inch fire rated plywood and two layers of fire retardant 6-mil polyethylene;
 9. When abatement occurs during periods while the HVAC system is shut down an alternative method of pressurization of the duct passing through the Work Area should be employed (e.g., by low-pressure "blowers", etc., directly coupled into the duct). Item #4 above shall be deleted and shall be replaced by the requirement to set the dampers of the HVAC duct in the manual closed positions, in order to effect pressurization.
- C. Asbestos abatement contractor to coordinate this item with the Facility and Construction Project Manager at the commencement of work. Where present HVAC systems (ducts) service an area and that air system cannot be shut down, asbestos abatement contractor shall isolate and seal the ducts, both supply and return, at the boundary of that zone.
1. To isolate, cap, or seal a duct, the asbestos abatement contractor shall remove insulation from duct (if necessary), then disconnect linkage to fold shut all fire dampers. Asbestos abatement contractor shall seal all edges and seams with caulk and duct-tape.
 2. Asbestos abatement contractor shall then cut existing duct and fold metal in and secure with approved fasteners. Asbestos abatement contractor shall caulk and duct-tape all seams and edges.

3. All ducts shall then be completely wrapped and sealed with duct-tape and three (3) layers of reinforced polyethylene sheeting.
 4. All ducts shall be restored to original working order at the end of the project.
- D. Where present HVAC systems (ducts) service occupied areas (non-Work Areas), the Asbestos abatement contractor shall blank off the ducts.
1. To isolate or seal the return duct, the asbestos abatement contractor shall remove any insulation (if necessary) from the duct. Then disconnect linkage to fold shut all fire dampers and insert a fiberglass board within the duct. Asbestos abatement contractor shall seal all edges and seams with caulk, duct-tape and three (3) layers of reinforced polyethylene sheeting.
 2. All isolation of return ducts and any other activity that requires removal of ceiling by the asbestos abatement contractor shall be conducted under controls. Work is to be coordinated with the Construction Project Manager and the Facility and is described as follows:
 - a. Work shall occur as scheduled.
 - b. Horizontal surfaces near the blanking operations shall be protected with fire retardant 6-mil polyethylene sheeting.
 - c. Plastic drapes shall be used to enclose the immediate area.
 - d. Asbestos abatement contractor to position and operate air filtration devices and HEPA-vacuums in the area to clean space after blanking operations.
 - e. All personnel involved with this work shall receive personal protection (i.e., respirators and disposable suits).
- E. Upon loss of negative pressure or electric power, all work activities in an area shall cease immediately and shall not resume until negative pressure and/or electric power has been fully restored. When a power failure or loss of negative pressure lasts, or is expected to last, longer than thirty (30) minutes, the following sequence of events shall occur.
1. All make up air inlets shall be sealed airtight.
 2. All decontamination facilities shall be sealed airtight after evacuation of all personnel from the Work Area.
 3. All adjacent areas shall be monitored for potential fiber release upon discovery of and subsequently throughout, power failure.

3.07 LOCKOUT OF HVAC SYSTEMS, ELECTRIC POWER, AND ACTIVE BOILERS

Prior to the start of any prep work, the asbestos abatement contractor shall employ skilled tradesmen with limited asbestos licenses for the following work:

- A. Disable all ventilating systems or other systems bringing air into or exhausting air out of the Work Area. Disable system by disconnecting wires removing circuit breakers, by lockable switch or other positive means to ensure against accidental re-starting of equipment.
- B. Lock out power to the Work Area by switching off all breakers and removing them from panels or by switching and locking entire panel. Label panel with following notation: "DANGER CIRCUIT BEING WORKED ON". Give all keys to Facility.
- C. Lock out power to circuits running through Work Area whenever possible by switching off and removing breakers from panel. If circuits must remain live, the Facility shall notify asbestos abatement contractor in order that he may secure a variance from NYCDEP. The asbestos abatement contractor shall protect all conduit and wires to remain and label all active circuits at intervals not to exceed 3 feet with tags having the following notation: "DANGER LIVE ELECTROCUTION HAZARD". The asbestos abatement contractor shall label all circuits in all locations including hidden locations that may be affected by the work in a similar manner.
- D. All boilers and other equipment within the work area shall be shut down, locked out, tagged out and the burner/boiler/equipment accesses and openings shall be sealed until abatement activities are complete. If the boiler or other exhausted equipment will be subject to abatement, all breeching, stacks, columns, flues, shafts, and double-walled enclosures serving as exhausts or vents shall be segregated from the affected boiler or equipment and sealed airtight to eliminate potential chimney effects within the work area.

PART 4 – PREPARATION OF WORK AREA AND REMOVAL PROCEDURES

4.01 REMOVAL OF ASBESTOS-CONTAINING MATERIAL

A. Asbestos abatement contractor Responsibility

Asbestos abatement contractor shall be responsible for the proper removal of ACM from the Work Area using standard industry techniques. The Third-Party Air Monitor representative shall observe the Work.

1. General Requirements:

- a. Removal of ACM shall be performed using wet methods. Dry removal of ACM is prohibited.
- b. Spray ACM with amended water with sufficient frequency and quantity to enhance penetration. Sufficient time shall be allowed for amended water to penetrate the material to the substrate prior to removal. All ACM shall be thoroughly wetted while work is being conducted.
- c. Accumulation of standing water on the floor of the Work Area is prohibited.
- d. Apply removal encapsulants, when used, in accordance with the manufacturer's recommendations and guidelines.
- e. Containerize ACM immediately upon detachment from the substrate. Alternately, ACM may be dropped in to a flexible catch basin and promptly bagged. Detached ACM is not permitted to lie on the floor for any period of time. Excess air within the bag shall be removed before sealing. ACM shall not be dropped from a height of greater than 10 feet. Above 10 feet, dust free inclined chutes may be used. Maximum inclination from horizontal shall be 60-degrees for all chutes.
- f. Exits from the work area shall be maintained, or alternative exits shall be established, in accordance with section 1027 of the New York City Fire Code. Exits shall be checked at the beginning and end of each work shift against blockage or impediments to exiting.
- g. Signs clearly indicating the direction of exits shall be maintained and prominently displayed within the work area.
- h. No smoking signs shall be maintained and prominently displayed within the work place.
- i. At least one fire extinguisher with a minimum rating 2-A:10-B:C shall be required for each work place. In the case of large asbestos projects, at least two such fire extinguishers shall be required.
- j. If the containment area of an asbestos project covers the entire floor of the affected building, or an area greater than 15,000 square feet on any given floor, the installation of a negative air cut off switch or switches shall be required at a single location outside the work place, such as inside a stairwell, or at a secured location in the ground floor lobby when conditions warrant. The required switch or switches shall be installed by a licensed electrician pursuant to a permit issued by the Department of Buildings. If negative pressure ventilation

equipment is used on multiple floors the cut off switch shall be able to turn off the equipment on all floors.

B. Removal of ACM Utilizing Full Containment Procedures shall be as follows:

1. Preparation Procedures:

- a. Ensure that the Third-Party Air Monitor has performed area monitoring and established a background count prior to the preparatory operations for each removal area, as applicable.
- b. Shut down, isolate, and lock out or tag heating, ventilating, and air conditioning (HVAC) systems which serve or which pass through the Work Area. Vents within the Work Area and seams in HVAC components shall be sealed with tape and two layers of fire retardant polyethylene sheeting. Filters in HVAC systems shall be removed and treated as asbestos-asbestos contaminated waste.
- c. Shut down, disconnect, and lock out or tag all electric power to the Work Area so that there is no possibility of its reactivation until after clearance testing of the Work Area.
- d. Provide and install decontamination enclosure systems in accordance with Sections 3.01 and 3.02 of this Section.
- e. Remove ACM that may be disturbed by the erection of partitions using tent procedures and wet removal methods. Removal shall be limited to a one-foot wide strip running the length/height of the partition.
- f. Pre-clean and remove moveable objects from the Work Area. Pre-cleaning shall be accomplished using HEPA-vacuum and wet-cleaning techniques. Store moveable objects at a location determined by the City.
- g. Protect carpeting that will remain in the Work Area.
 - (1) Pre-clean carpeting utilizing wet-cleaning techniques.
 - (2) Install a minimum of two layers of fire retardant 6-mil reinforced polyethylene sheeting over carpeting.
 - (3) Place a rigid flooring material, minimum thickness of 3/8-inch, over polyethylene sheeting.
- h. Pre-clean all fixed objects to remain within the Work Area using HEPA-vacuum and wet-cleaning techniques.

- i. Seal fixed objects with two individual layers, minimum, of 6-mil fire retardant polyethylene sheeting.
- j. Pre-clean entire Work Area utilizing HEPA-vacuum and wet-cleaning techniques. Methods of cleaning that raise dust; such as dry sweeping or use of vacuum equipment not equipped with HEPA-filters, is prohibited.
- k. Install isolation barriers (i.e., sealing of all openings, including but not limited to windows, corridors, doorways, skylights, ducts, grills, diffusers, and other penetrations within the Work Area) using two layers of 6-mil fire retardant polyethylene sheeting and duct-tape.
- l. Construct rigid framework to support Work Area barriers.
 - (1) Framework shall be constructed using 2-inch by 4-inch wooden or metal studs placed 16 inch on center when existing walls and/or ceiling do not exist for all openings greater than 32 square feet. Framework is not required except where one dimension is one foot or less or the opening will be used as an emergency exit.
 - (2) Apply a solid construction material, minimum thickness of 3/8-inch to the Work Area side of the framing. In secure interior areas, not subject to access from the public or building occupants, an additional layer of 6-mil fire retardant polyethylene sheeting may be substituted for the rigid construction material.
 - (3) Caulk all wall, floor, ceiling, and fixture joints to form a leak tight seal.
- m. Seal floor drains, sumps, shower tubs, and other collection devices with two layers of 6-mil fire retardant plastic and fire rated plywood, as necessary, and provide a system to collect all water used by the asbestos abatement contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
- n. Remove ceiling mounted objects not previously sealed that will interfere with removal operations. Mist object and surrounding ACM with amended water prior to removal to minimize fiber dispersal. Clean all moveable objects using HEPA-vacuum and wet-cleaning techniques prior to removal from the Work Area.

- o. Fiberglass insulation with intact coverings shall be protected in place during abatement activities. These materials shall be protected with two layers of 6-mil fire retardant polyethylene sheeting as isolation barriers and two additional layers of 6-mil fire retardant polyethylene sheeting serving as primary and secondary surface barriers.
- p. Install and initiate operation of AFDs to provide a negative pressure and a minimum of four air changes per hour within the Work Area relative to surrounding non-Work Areas. Do not shut down AFDs until the Work Area is released to the City following final clearance procedures. The use of HEPA-filtered vacuum to produce a negative air pressure inside the enclosure is prohibited.
- q. Maintain emergency and fire exits from the Work Areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with florescent paint or other effective designations to permit easy location from anywhere within the Work Area. Cutting tools (e.g., knife, razor) shall be attached to the work area side of the sheeting for use in the event that the barrier must be cut open to allow egress. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
- r. Temporary lighting within the Work Area and decontamination system shall be provided as required to achieve minimum illumination levels.
- s. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be manufacturer-equipped with HEPA filtered local exhaust ventilation.
- t. Prior to being plasticized, the Work Areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall not be used.
- u. Plasticize the area after pre-cleaning, using the following procedures.
 - (1) Cover floors with one layer of 6-mil fire retardant polyethylene sheeting, turning layer a minimum of 6 inches up wall, and seal layer to wall.

- (2) Cover walls with one layer of 6-mil fire retardant polyethylene sheeting, overlapping wall layer a minimum of 6 inches, and seal layer to floor layer.
 - (3) Cover floors with a second layer of 6-mil fire retardant polyethylene sheeting, turning layer a minimum of 12 inches up wall, and seal layer to wall.
 - (4) Cover walls with a second layer of fire retardant 6-mil polyethylene sheeting, overlapping wall layer a minimum of 12 inches, and seal layer to floor layer.
 - (5) In areas where demolition is required to access ACM, a layer of fire retardant 6-mil reinforced polyethylene sheeting shall be placed on the floor of the enclosure.
 - (6) Perform demolition required to access ACM. Debris resulting from demolition activities shall be disposed of as ACM waste as described in this Specification.
 - (7) Repeat preparation of areas accessed by demolition activities as described above.
- v. Suspended ceiling tiles and T-grid components shall remain in place until the preparation of the Work Area below the ceiling tiles are completed and personnel and equipment decontamination enclosures have been constructed.
- w. Scaffolds shall be provided for workers engaged in work that cannot safely be performed from the ground or other solid Work Area surface.
- x. Means of egress shall not be obstructed by hardwall barriers.
- y. Pre-Removal Inspections.
- (1) Prior to removal of any ACM, the asbestos abatement contractor shall notify the Third-Party Air Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.
 - (2) Asbestos abatement contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.

- (3) Following the Third-Party Air Monitor's approval of the Work Area preparations, removal of ACM may commence.
2. Removal of ACM Within Full Containment:
 - a. Mist material with amended water. Allow sufficient time for the amended water to penetrate the material to be removed.
 - b. Remove the material using hand tools such as scrapers or putty knives. Wire-mesh or wood lathe reinforcing, when present, shall be cut into manageable pieces and disposed of as ACM.
 - c. Remove any residual material from the substrate using wet cleaning methods and nylon-bristled hand brushes.
 - d. Place the removal material immediately into a properly labeled fire retardant 6-mil polyethylene bag. All material shall be properly containerized and decontaminated prior to removal from the Work Area.
 - e. Following the completion of removal of insulation, all visible residue shall be removed from the substrate.
3. Following Removal of ACM utilizing Full Containment Procedures:
 - a. First Cleaning:
 - (1) Remove any visible accumulation of asbestos material and debris. HEPA-vacuuming and wet cleaning shall be performed on all surfaces inside the Work Area. All sealed drums, plastic bags, and equipment used in the Work Area shall be removed from the Work Area.
 - (2) Upon request of the asbestos abatement contractor, the Third-Party Air Monitor will perform a visual inspection. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.
 - (3) Remove first layer of plastic sheathing inside the Work Area. The isolation barriers and decontamination facility shall remain in place and be utilized.
 - b. Second Cleaning:
 - (1) After the first cleaning, the Work Area shall be vacated for twelve hours to allow fibers to settle.

- (2) All objects and surfaces in the Work Area shall be HEPA - vacuumed and wet cleaned for a second cleaning.
- (3) A thin coat of lockdown encapsulant shall be applied to all plastic covered surfaces in the Work Area.
- (4) When the encapsulant is dry, second layer of polyethylene sheeting on the walls, ceiling and floors shall be removed. Do not remove seals from doors, windows, Isolation Barriers or disconnect the negative pressure equipment.

c. Third Cleaning:

- (1) A minimum of four hours after the second cleaning, all the surfaces in the Work Area shall be HEPA-vacuumed and wet cleaned for a third cleaning.
- (2) Upon the request of the asbestos abatement contractor, the Third-Party Air Monitor will do final visual inspection for re-occupancy. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.
- (3) When the Work Area passes the Third-Party Air Monitor's visual re-occupancy inspection, air sampling shall not begin until at least one hour after the completion of the third cleaning. The Third-Party Air Monitor shall perform air monitoring using aggressive testing techniques. The Third-Party Air Monitor will approve re-occupancy if the specified fiber count in the Work Area is achieved according to the Third-Party Air Monitor.
- (4) When the Work Area passes the re-occupancy test, all controls and seals established shall be removed.
- (5) The cleaned layer of the surface barriers shall be removed from walls and floors.
- (6) The isolation barriers shall remain in place throughout cleanup. Decontamination enclosure systems shall remain in place and be utilized. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

- d. Final Barrier Removal:
 - (1) Upon receipt of acceptable clearance testing results, polyethylene sheeting and Isolation Barriers shall be removed and disposed accordingly as asbestos-containing material.
 - (2) The area surrounding the abatement work place shall be cleaned of any visible debris utilizing HEPA vacuum and wet methods.
 - e. The Third-Party Air Monitor will conduct a final visual observation. Approval must be granted prior to break down of decontamination facility and asbestos abatement contractor demobilization.
- C. Removal of ACM Utilizing NYC DEP § 1-106 Tent Containment Procedures shall be as follows:
- 1. Preparation Procedures:
 - a. Ensure that the Third-Party Air Monitor has performed area monitoring and established a background count prior to the preparatory operations for each removal area, as applicable.
 - b. Shut down, isolate, and lock out or tag heating, ventilating, and air conditioning (HVAC) systems which serve or which pass through the Work Area. Vents within the Work Area and seams in HVAC components shall be sealed with tape and two layers of polyethylene sheeting. Filters in HVAC systems shall be removed and treated as asbestos contaminated waste.
 - c. Shut down, disconnect, and lock out or tag all electric power to the Work Area so that there is no possibility of its reactivation until after clearance testing of the Work Area.
 - d. Provide and install decontamination enclosure systems in accordance with PART 3 - EXECUTION, Sections 3.01 and 3.02 of these Specifications Decontamination facilities may be remote from the Work Areas.
 - e. Construct rigid framework to support Work Area barriers. Framework shall be constructed using 2-inch by 4-inch wooden or metal studs placed 16 inch on center when existing walls and/or ceiling do not exist.
 - f. Seal floor drains, sumps, shower tubs, and other collection devices with two layers of fire retardant 6-mil plastic and minimum 3/8" fire rated plywood, as necessary, and provide a system to collect all water

used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer. Any opening greater than 32 square feet shall be framed with 2-inch by 4-inch studding placed 16 inches on center.

- g. Install and initiate operation of AFDs to provide a negative pressure and a minimum of four air changes per hour and negative pressure of -0.02" of water column within the Work Area relative to surrounding non-Work Areas. Do not shut down AFDs until the Work Area is released to the City following final clearance procedures. The use of HEPA-filtered vacuums to produce a negative air pressure inside the enclosure is prohibited.
- h. Maintain emergency and fire exits from the Work Areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with florescent paint or other effective designations to permit easy location from anywhere within the Work Area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
- i. Temporary lighting within the Work Area and decontamination system shall be provided as required to achieve minimum illumination levels.
- j. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be manufacture equipped with HEPA filtered local exhaust ventilation.
- k. Prior to being plasticized, the Work Areas shall be cleaned using HEPA-vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall not be used.
- l. There shall be an airlock at the entrance to the tent, unless there is an attached worker or waste decontamination system.
- m. Plasticize the area after pre-cleaning, using the following procedures. Do not apply polyethylene sheeting to the wall and ceiling surfaces that will be demolished to access ACM.
 - (1) Cover floor with one layer of fire retardant 6-mil polyethylene sheeting, turning layer a minimum of 12 inches up wall, and seal layer to wall.

- (2) Cover walls with one layer of fire retardant 6-mil polyethylene sheeting, overlapping wall layer a minimum of 12 inches, and seal layer to floor layer.
 - (3) Cover ceilings with one layer of fire retardant 6-mil polyethylene sheeting, overlapping wall layer a minimum of 12 inches, and seal layer to wall layer.
 - (4) Repeat procedure for second layer. All joints in polyethylene sheeting shall be glued and taped in such a manner as to prohibit air passage. Joints on plastic layers shall be staggered to reduce the potential for water to penetrate.
 - (5) In areas where demolition is required to access ACM, a layer of fire retardant 6-mil reinforced polyethylene sheeting shall be placed on the floor of the enclosure.
 - (6) Perform demolition required to access ACM. Debris resulting from demolition activities shall be disposed of as ACM as described in this Specification.
 - (7) Repeat preparation of areas accessed by demolition activities as described above.
 - (8) Suspended ceiling tiles and T-grid components shall remain in place until the preparation of the Work Area below the ceiling tiles are completed and personnel and equipment decontamination enclosures have been constructed.
 - (9) Protect non-ACM insulation within the Work Area(s) with two individual layers of fire retardant 6-mil polyethylene sheeting. Sheeting shall remain in-place until satisfactory clearance air monitoring results are achieved.
- n. Pre-Removal Inspections
- (1) Prior to removal of any ACM, the Contractor shall notify the Third-Party Air Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.
 - (2) Contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.
 - (3) Following the Third-Party Air Monitor's approval of the Work Area preparations, removal of ACM may commence.

2. Removal of ACM Utilizing Tent Containment Procedure:

- a. Tent procedures shall be limited to the removal of less than 260 linear feet and 160 square feet of ACM and shall not result in disturbance of ACM during tent erection.
- b. Mist material with amended water and/or foam. Allow sufficient time for the amended water to penetrate the material to be removed.
- c. Cut bands, wire or other items placed over insulation or ACM.
- d. Remove the ACM using hand tools such as knives or scrapers.
- e. Exercise caution when removing ACM.
- f. Remove any residual asbestos-containing material from the substrate using wet cleaning methods.
- g. Seal exposed ends of remaining insulation or ACM with a "wetable cloth" and/or encapsulant.
- h. Place the removed material immediately into a properly labeled fire retardant 6-mil polyethylene bag. All material shall be properly containerized and decontaminated prior to removal from the Work Area.
- i. Following the completion of removal of ACM, all visible residues shall be removed from the substrate.

3. Following Removal of ACM Utilizing Tent Containment or Tent Procedure:

- a. Clean all visible accumulations of loose ACM. Metal shovels shall not be used within the Work Area.
- b. Accumulations of dust shall be cleaned continuously until completion of clean up.
- c. After removal of all visible accumulations of ACM, the area shall be:
 - (1) Wet cleaned using rags, mops or sponges.
 - (2) Permitted sufficient time to dry, prior to HEPA vacuuming all substrates.
 - (3) Lightly encapsulated to lockdown residual asbestos. A thin coat of an encapsulating agent shall be applied to any surfaces in the Work Area which were not the subject of removal or other remediation activities. In no event shall encapsulant be

applied to any surface that was the subject of removal or other remediation activities prior to obtaining satisfactory clearance air monitoring results. Contractor shall request and pass a visual inspection performed by the consultant before proceeding to the next step. Documentation of passing this inspection shall be recorded in a daily logbook.

- (4) The Third-Party Air Monitor will conduct a visual observation of the Work Area to verify the absence of asbestos-containing waste materials.
 - (5) If the Work is accepted by the Third-Party Air Monitor based on the inspection, Contractor shall be notified. Conduct the following activities in accordance with the contract and all applicable laws, codes, rules and regulations.
 - (a) All waste shall be removed from the Work Area and holding areas.
 - (b) All tools and equipment are to be removed and decontaminated in the decontamination enclosure system.
 - (6) If the Work is not approved, the Third-Party Air Monitor will inform Contractor who will then HEPA-vacuum and/or wet-clean the Work Area. The Third-Party Air Monitor will then perform a subsequent visual observation. This process will continue until the Third-Party Air Monitor accepts the Work Area as clean.
 - (7) The Work Area shall be vacated for a minimum of one hour to allow fibers to settle prior to clearance air monitoring, when required.
- d. Final Barrier Removal
- (1) Upon receipt of acceptable clearance testing results polyethylene sheeting (inside layers) and Isolation Barriers shall be removed and disposed accordingly as ACM. The tent shall be collapsed inward, enclosing the contaminated clothing. This contaminated material shall be disposed of in another plastic bag. The HEPA vacuum shall be decontaminated and sealed.
 - (2) The area surrounding the abatement work place shall be cleaned of any visible debris utilizing HEPA-vacuum and wet methods.

- e. The Third-Party Air Monitor will conduct final visual. Approval must be granted prior to break down of decontamination facility and contractor demobilization. Other Information: Extra time required to clean Work Areas in order to achieve clearance criteria shall not be considered grounds for an extension of time for contract completion.
- D. Removal of ACM from Vertical Exterior Surfaces utilizing NYCDEP Title 15, Chapter 1 §1-109 Abatement from Vertical Exterior Surfaces procedures shall be as follows:

Preparation procedures: This procedure shall apply to the abatement of asbestos-containing materials from vertical exterior surfaces such as, but not limited to caulking or glazing compounds, asphaltic materials or tar, cement siding or shingles (including transite), paints, sealants coping stone caps or clay roof tiles.

- a. The entire surface to be abated and ground-level perimeter shall be considered the work area unless partitions and warning tape are used to define the work area.
- b. A restricted area shall be established using warning tape extending at least 25 feet from the affected areas of the building or to the nearest vertical obstruction or the curb.
- c. The restricted area may be entered only by certified workers or authorized visitors.
- d. Before plasticizing, the restricted area shall be inspected for ACM debris and, if necessary, pre-cleaned using HEPA vacuums and wet methods.
- e. All openings to the building or structure's interior which are within 25 feet of the affected ACM shall be closed and sealed.
- f. Scaffolding erected to access the ACM shall be constructed, maintained, and used in accordance with applicable federal, state, and city laws.
- g. Horizontal surfaces beneath the affected ACM shall be covered with two layers of fire-retardant 6-mil plastic to a width of six feet.
- h. Elevated platforms being used to access the affected ACM shall be plasticized with two layers of fire-retardant 6-mil plastic, which shall extend up from the platform to at least the height of the mid-rail on three sides, and shall be attached directly to the building just below the surfaces under abatement.

- i. The ground-level restricted area shall be cleared of all moveable objects and plasticized with two sheets of fire-retardant 6-mil plastic, which shall be extended one foot up the side of the building. The plasticized area shall be ten feet wide for every floor up to a maximum width of thirty feet, or to the curb. This plastic shall be cleaned, replaced, and disposed of as asbestos waste at the end of each shift.
 - j. Sidewalk bridges in the restricted area shall be covered with two layers of fire retardant 6-mil plastic, placed over and secured to the bridge, spread across the full width, draped over the side to ground level, and extended to a width of at least thirty feet.
 - k. Establish a remote decontamination unit in accordance with Section 3.01 within the restricted area.
 - l. Construct all elevated work platforms a minimum of one foot below the surface to be abated.
 - m. Pre-Removal Inspections
 - (1) Prior to removal of any ACM, the asbestos abatement contractor shall notify the Project Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.
 - (2) Asbestos abatement contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.
 - (3) Following the Project Monitor's approval of the Work Area preparations, removal of ACM may commence.
2. Removal of ACM Materials:
- a. Mist material with amended water. Allow sufficient time for the amended water to penetrate the material to be removed.
 - b. Remove the caulk using hand tools such as knives or scrapers.
 - c. Exercise caution when removing caulking material to prevent damage to windows or skylight openings.

- d. Remove any residual asbestos-containing caulking material from the substrate using wet cleaning methods and nylon-bristled hand brushes. The use of metal bristled brushes is prohibited.
 - e. Place the removed material immediately into a properly labeled 6-mil polyethylene bag. All material shall be properly containerized and decontaminated prior to removal from the Work Area.
 - f. Following the completion of removal of caulking, all visible residues shall be removed from the substrate.
 - g. Air sampling shall be conducted in compliance with NYC DEP Title 15 Chapter 1, §1-41 Air Sampling Schedule. This sampling shall be performed by the Third Party Air Monitoring Firm.
3. Following Removal of ACM :
- a. The stripped substrate shall be HEPA vacuumed and wet-wiped.
 - b. A visual clearance inspection shall be conducted by the asbestos handler supervisor and project monitor after the work area dries, to ensure the absence of ACM residue or debris in the work area.
 - c. After the inspection is completed, the warning tapes and barriers may be removed.
 - d. The clearance inspection shall be documented in the log and the project air sampling log.
 - e. Air monitoring shall be conducted in accordance with relevant provisions.
 - f. Asbestos abatement contractor shall request and pass a visual inspection performed by the consultant before proceeding to the next step. Documentation of passing this inspection shall be recorded in a daily logbook.
 - g. The Third-Party Air Monitor will conduct a visual observation of the Work Area to verify the absence of asbestos-containing waste materials.
 - h. If the Work is accepted by the Third-Party Air Monitor based on the inspection, asbestos abatement contractor shall be notified. Conduct the following activities in accordance with the contract and all applicable laws, codes, rules and regulations:
 - (1) All waste shall be removed from the Work Area and holding areas.

- (2) All tools and equipment are to be removed and decontaminated in the decontamination enclosure system.
- i. If the Work is not approved, the Third-Party Air Monitor will inform Asbestos abatement contractor who will then HEPA-vacuum and/or wet-clean the Work Area. The Third-Party Air Monitor will then perform a subsequent visual observation. This process will continue until the Third-Party Air Monitor accepts the Work Area as clean.
- j. Final Barrier Removal
 - (1) Upon receipt of acceptable observation results, polyethylene sheeting and barrier tape shall be removed and disposed accordingly as ACM.
 - (2) The area surrounding the abatement work place shall be cleaned of any visible debris utilizing HEPA vacuum and wet methods.
 - (3) The Third-Party Air Monitor will conduct final visual inspection. Approval must be granted prior to break down of decontamination facility and asbestos abatement contractor demobilization. Other Information: Extra time required to clean Work Areas in order to achieve clearance criteria shall not be considered grounds for an extension of time for contract completion.

4.02 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS

- A. Ensure that barriers are installed in a manner appropriate to the expected weather conditions during the project and for its duration. Repair damaged barriers and remedy defects immediately upon their discovery. Visually inspect barriers at the beginning and end of each work period.
- B. Visually inspect non-Work Areas and the decontamination enclosure system for water leakage. Check the floor below, ceiling and walls, and view beneath/or around the decontamination enclosure system, for signs of leakage. Perform the visual inspection a minimum of two times for each 8-hour work shift.

PART 5 – ASBESTOS WASTE MANAGEMENT

5.01 ACM WASTE REQUIREMENTS

- A. The asbestos abatement contractor and all sub-asbestos abatement contractors are specifically alerted to the illegal practice of combining asbestos-containing waste (ACW) from one project with the ACW of other projects without using the services of a permitted waste transfer station as defined by 6 NYCRR Part 360 and 364. As part of the shop drawing submittals, the Asbestos abatement contractor must submit for approval the proposed method of transportation and disposal that will be utilized to manage the ACW of this Contract. If a permitted transfer station is to be used, the cost shall be included in the work. The asbestos abatement contractor must submit a waste manifest consistent with whatever approved method is utilized as part of the invoicing and payment procedures.
- B. The asbestos abatement contractor shall maintain compliance with the strictest set of regulations of Title 15, Chapter 1 of RCNY, NYC LL 70/85, NYS DOL ICR 56, USEPA, Asbestos Regulation 40 CFR Section 61.152, 29 CFR 1926.1101, 29 CFR 1910.1200 (F) of OSHA's Hazard Communication Standards, and other applicable standards.

NOTE: Any penalties incurred for failure to comply with any of the above regulations will be the sole responsibility for fines imposed due to negligence of the Asbestos abatement contractor.

- C. When presenting ACW for storage at the generation site, the Asbestos abatement contractor shall:
1. Wet down ACW in a manner sufficient to prevent all visible emissions of dust into the air.
 2. Seal material in a leak tight container while wet.
 3. Keep ACW separate from any other waste.
- D. When presenting ACW for storage away from the site of generation, the Asbestos abatement contractor shall:
1. Ensure that ACW has been properly packaged as per requirements above.
 2. Examine the containers of ACW to ensure that there are no breaks in the containers and that no visible dust is being released into the air.

3. If examination reveals damage to a container of ACW the Asbestos abatement contractor or person accepting the waste shall immediately wet down the ACW and repackage it into a clean leak tight container. The subsequent repackaging shall be the financial responsibility of the Asbestos abatement contractor and occur at no extra cost to the City.
 4. Keep ACW separate from any other waste.
- E. When storing ACW – The Asbestos abatement contractor shall:
1. Ensure that the ACW has been sufficiently wetted down in tight containers.
 2. Re-wet and repackage any damaged containers.
 3. Maintain at storage site an adequate supply of spare leak tight containers.
 4. Maintain at storage site an adequate supply of amended water.
 5. Keep ACW separate from any other waste.
 6. Keep ACW in a secured, enclosed, and locked container.
 7. If the Asbestos abatement contractor has intention of sorting a quantity of ACW greater than or equal to 50 cubic yards, the Asbestos abatement contractor shall:
 - a. Submit a written request and receive written approval from the City.
- F. When presenting for transport, the Asbestos abatement contractor shall:
1. Ensure that ACW has been sufficiently wetted down.
 2. Examine the integrity of the container's airtight seal.
 3. Re-wet and repackage any damaged containers.
 4. Keep ACW separate from all other waste.
 5. Ensure that a person transporting asbestos waste holds a valid permit issued pursuant to law.
 6. Frequency of Waste Removal:
 - a. Properly packaged and labeled asbestos waste shall be removed from the site on a daily basis. Under no circumstance shall asbestos waste be stored on site without written approval from the City. The Waste Hauler and landfill shall be as indicated on the notifications to regulatory agencies.

- G. Waste Load-out Through Equipment Decontamination Enclosure (Full Decontamination Facility): Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick polyethylene sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA-vacuuuming in a designated part of the Work Area. Move wrapped asbestos waste to the equipment washroom, wet clean each bag or object and place it inside a second disposal bag, or a second layer of 6-mil polyethylene sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight with tape.
1. The clean containerized items shall be moved to the equipment decontamination enclosure holding area pending load-out to storage or disposal facilities.
 2. Workers who have entered the equipment decontamination enclosure system from the uncontaminated non-Work Area shall perform load-out of containers from the decontamination enclosure holding area. Dress workers moving asbestos waste to storage or disposal facilities in clean overalls of a color different than from that of coveralls used in the Work Area. Ensure that workers do not enter from uncontaminated areas into the equipment washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the equipment decontamination enclosure system.
 3. Thoroughly clean the equipment decontamination enclosure system immediately upon completion of the waste load-out activities, and at the completion of each work shift.
 4. Labeled ACM waste containers or bags shall not be used for non-ACM debris or trash. Any materials placed in labeled containers or bags, including those turned "inside-out", shall be handled and disposed of as ACM waste.
- H. All asbestos materials, wastes, shower water, polyethylene, disposable equipment and supplies shall be disposed of as asbestos contaminated waste, in accordance with the EPA regulation (40 CFR, Section 61.150) and those requirements of the New York Department of Environmental Conservation and New York City Department of Sanitation.
- I. All asbestos materials shall be prepared for transportation in accordance with this specification and all applicable Federal, State, County and City Regulations. asbestos abatement contractor shall submit the following documentation:
1. Where applicable, an EPA Generator's identification number which has been obtained from the EPA for all asbestos waste generated from the project.
 2. Applicable State Waste Hauler license and registration numbers.

3. Federal Hazardous Materials Waste Hauler number.
 4. Designated landfill EPA Permit numbers.
- J. Prior to loading asbestos waste the enclosed cargo areas (dumpster) shall be prepared as follows:
1. Clean via HEPA-vacuum and wet wipe techniques the enclosed cargo areas of all visible debris prior to preparing with polyethylene.
 2. Line the cargo area with two layers of 6-mil polyethylene sheeting to prevent contamination from damaged or leaking containers. Floor sheeting shall be installed first and extend up the walls a minimum of 24-inches. Wall sheeting shall be overlapped and taped securely into place.
- K. Asbestos-containing waste shall be placed on level surfaces in the cargo area of the dumpster and shall be packed tightly to prevent any shifting or tipping of the waste during transportation.
- L. Asbestos-containing waste shall not be thrown into or dropped from the dumpster. All material shall be handled carefully to prevent rupture of the containers.
- M. All personnel engaged in handling and loading of asbestos contaminated waste outside of the Work Area shall wear protective clothing. The disposable clothing shall include head, body and foot protection and color of clothing shall be different from abatement personnel in the Work Area. Minimum respiratory protection shall be half face, dual cartridge, air purifying respirators with HEPA-filters.
- N. Asbestos abatement contractor shall immediately clean debris or residue observed on containers or surfaces outside of the Work Area. Cleaning shall be via HEPA equipped wet/dry vacuums only.
- O. All asbestos-containing waste shall be transported from the abatement site to the landfill by a registered Waste Hauler. When transporting ACW:
1. Ensure that the ACW has been sufficiently wetted down in a leak tight container.
 2. Re-wet and repackage any damaged containers.
 3. Maintain at storage site an adequate supply of spare leak tight containers.
 4. Maintain at storage site an adequate supply of amended water.
 5. Keep ACW separate from any other waste.
- P. Keep ACW in a secured, enclosed, and locked container.

- Q. Waste transport documents shall conform to the requirements of the U.S. Department of Transportation, Hazardous Materials Transportation Regulation, 49 CFR Part 173 and EPA 40 CFR 61.150 (d)(1)(2). Shipping documents shall be clearly marked with the required designation "RQ Asbestos". Asbestos abatement contractor shall provide a copy of this document to the City.
- R. A uniform hazardous waste manifest shall be prepared by the asbestos abatement contractor and signed by the asbestos abatement contractor each time the asbestos abatement contractor ships a dumpster load of Asbestos-Containing Waste Material. The uniform hazardous waste manifest shall include the site of waste generation, the names and addresses of the Transporter, the asbestos abatement contractor, and the landfill operator with information on the type and number of asbestos-waste containers, time and date. Asbestos abatement contractor shall provide the Construction Project Manager, Third-Party Air Monitor or authorized designated representative with signed copies of the waste manifest before each departure.
- S. Asbestos abatement contractor or his registered hazardous Waste Hauler shall transport asbestos-containing waste material from the abatement site directly to the specified disposal site. Asbestos abatement contractor or their Waste Hauler shall not accept material from any other site when transporting asbestos-containing waste material from the abatement site. The authorized DDC representative or Construction Project Manager reserves the right to travel with asbestos abatement contractor's Waste Hauler to the waste disposal site. No intermediate storage of waste material (i.e., asbestos abatement contractor's warehouse) shall be permitted.
- T. Final or progress application for payments will not be processed unless all hazardous waste manifests generated to date have been received and reviewed by the Construction Project Manager.
- U. All asbestos materials, wastes, shower water, polyethylene disposable equipment and supplies shall be disposed of as asbestos contaminated waste, in accordance with the EPA regulation (40 CFR, Section 61.150) and those requirements of the New York State Department of Environmental Conservation and the New York Department of Sanitation.
- V. Asbestos abatement contractor shall transport all sealed drums to a landfill disposal site approved by the Department of Environmental Conservation and the EPA. Transportation shall be performed by a New York State registered Waste Hauler, where required. When presenting the ACW for disposal the Asbestos abatement contractor or sub Asbestos abatement contractor shall:
1. Ensure that waste container is properly labeled according to the National Emission Standard for Hazardous Air Pollutants (NESHAP); Asbestos Revision, 40 CFR, Part 61, Subpart M. The labels shall include the name of the waste generator and the location where the waste was generated.

2. Comply with all applicable orders issued pursuant to asbestos disposal.
 3. Ensure that ACW has been sufficiently wetted down.
 4. Re-wet and repackage any damaged containers.
 5. Keep ACW separate from all other wastes.
- W. Asbestos abatement contractor shall notify the waste disposal site, at least 24 hours prior to transportation of asbestos contaminated waste to be delivered. Asbestos abatement contractor shall determine if a larger notification period is required.
- X. At the site asbestos abatement contractors or Waste Hauler trucks shall approach the dump location as close as possible for unloading asbestos waste. Containers shall be carefully placed in the ground. Do not throw containers from truck.
- Y. Asbestos abatement contractor or Waste Hauler shall inspect containers as they are unloaded at the disposal site. Material in damaged containers shall be repacked in empty containers, as necessary.
- Z. Asbestos abatement contractor or Waste Hauler shall not remove asbestos-containing waste Material from drums unless required to do so by the disposal site City. Used drums shall be disposed of as asbestos-asbestos contaminated waste.
- AA. All personnel engaged in unloading of the containers at the waste site shall wear protective clothing. The disposable clothing shall include head, body and foot protection. Minimum respiratory protection shall be half face, dual cartridge, air purifying respirators with HEPA-filters. Workers shall remove their protective clothing at the disposal site, place it in labeled disposal bags and leave them with the deposited waste shipment.
- BB. For the compaction operation, the asbestos abatement contractor shall ensure that disposal sites personnel have been provided with personal protective equipment by the disposal operator. If the disposal site City has not provided this protective equipment, the asbestos abatement contractor shall supply protective clothing and respiratory protection for the duration of this operation (PAPR respirators are mandatory).
- CC. If containers are broken or damaged, the asbestos abatement contractor or Waste Hauler shall, using personnel who are properly trained and wearing proper protective equipment, shall repackage the waste in properly labeled containers. Asbestos abatement contractor shall then clean the entire truck and its contents using HEPA-vacuums and wet cleaning techniques until no visible residue is observed.

- DD. Following the removal of all containerized waste, the asbestos abatement contractor shall decontaminate the truck cargo area using HEPA-vacuums and/or wet cleaning techniques until no residue is observed. All 6-mil polyethylene sheeting shall be removed and discarded as asbestos-containing waste material along with contaminated cleaning material and protective clothing, in containers at the disposal site.
- EE. The transporter(s) of all asbestos waste shall not back-haul any items on his return from landfill/disposal site.
- FF. All asbestos waste shall be disposed of in an approved Asbestos Landfill site only.
1. NO PERSON UNDER ANY CIRCUMSTANCES SHALL ABANDON ACW. The same shall be disposed of only by certified persons in approved landfills.
 2. A manifest form will be signed by the Landfill documenting receipt and acceptance of the asbestos-containing waste. This manifest will be furnished to the City of New York within thirty calendar days from the project completion date.
 3. It is the responsibility of the Asbestos abatement contractor to determine current waste handling, transportation and disposal regulations for the work site and for each waste disposal landfill. The Asbestos abatement contractor must comply fully with these regulations and all appropriate U.S. Department of Transportation, EPA and other Federal, State and Local entities' regulations and all other current legal requirements.
 4. The asbestos abatement contractor shall obtain an agreement from the transporter (s) that the practice of "Back-Hauling" will not be engaged in, with respect to any and all waste loads taken from this site during the work.
 5. The asbestos abatement contractor will document actual disposal of the waste at the designated landfill by having completed a Disposal Certificate and will provide a copy of the same to the Department of Design and Construction.

PART 6 – ACCEPTANCE

6.01 ACCEPTANCE

Upon satisfactory completion of all decontamination procedures, a certificate will be issued by the Construction Project Manager with copies to all parties.

- A. A letter of Compliance stating that all the work on the project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations.
- B. All warranties as stated in the Specifications.

END OF SECTION 028213



SECTION 03 01 30
CONCRETE RESTORATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Provide labor, materials, equipment, and services to provide for the structural restoration of concrete members with manufactured structural restoration concrete/mortar as shown on Drawings and as specified herein. Work includes removing spalled concrete and cleaning and coating of exposed steel reinforcement and application of weather-resistant anti-carbonation coating.

1.3 QUALITY ASSURANCE

A. Qualifications

1. Installer: Company specializing in the Work of this Section shall have a minimum of three years of experience with similar projects.
2. Manufacturer: Company specializing in the manufacture of concrete restoration mortars to be used in this Contract shall have a minimum of three years of experience.

B. Manufacturer's Representative

All work of this Section shall be performed under the overall supervision of the restoring material manufacturer's representative. The representative shall attend pre-construction meetings to instruct the contractor on the proper usage of the material and to make regular visits during construction to ensure that surface preparation and method of installation is acceptable.

C. Job Mockups

Prior to performing the work of this Section, prepare a sample panel of not less than 12 sq. ft. of concrete restoration work, including a separate mock-up of the surface preparation and coating. For formed restorations, provide mockup of pour to ensure

Concrete Restoration
03 01 30 - 1



that material will be properly vibrated and finish will be without voids. Do not proceed further with the work until the Commissioner's representative has approved the sample panel. Sample shall be a portion of the area to be restored and may be kept if approved.

1.4 REFERENCE STANDARDS

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 New York City Building Department, 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)
- B. Steel Structures Painting Council (SSPC)
 - 1. "Hand Tool Cleaning - SP2"
 - 2. "Power Tool Cleaning - SP3"
- C. International Concrete Restoration Institute (ICRI)

1.5 SUBMITTALS

A. Product Data

Provide manufacturer's information on the anti-corrosion coating and structural restoration concrete/mortar, including application instructions and specifications.

B. Quality Control Submittals

- 1. Certificates:
 - a. Furnish manufacturer's certification that materials meet or exceed Specification requirements.
 - b. Manufacturer's training certificate: Furnish letter from manufacturer stating personnel performing work have been instructed on the proper usage of the material.
- 2. Restoration Procedure: Furnish written description of restoration procedures and operations sequencing based on manufacturer's requirements prior to commencing the Work.



3. **Manufacturer's Field Reports:** Submit field report from manufacturer of restoration mortar indicating areas of surface preparation and mortar placement inspected.
4. **Contractor Qualifications**

Provide proof of Installer and Manufacturer qualifications specified under "Quality Assurance".
5. **Mock-up:** Provide mock-ups as indicated under Quality Assurance.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Materials specified shall be delivered to the site in sealed, properly labeled containers. Containers shall indicate manufacturer's name, trade name of product, lot number, shelf life of product, and mix ratio (if applicable).
- B. Keep containers tightly closed when not in use. Comply with manufacturer's printed instructions for storing and protecting materials.
- C. Do not store liquid material in hot sun. Keep material from freezing.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply if the temperature is below 50°F or above 85°F unless the material manufacturer is consulted for recommendations.
- B. Do not use frozen materials or materials coated with ice or frost.
- C. Do not apply when there is expectation of rain within 24 hours.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Sto Concrete Restoration Div., Atlanta, GA 30331
- B. Sika Corp, Lyndhurst, NJ 07071
- C. Strongwall Industries, Ridgewood, NJ 07451
- D. KEIM Mineral Coatings of America, Inc.
Charlotte, North Carolina 28273
- E. or approved equal



2.2 MATERIALS

A. Structural Restoration Concrete - Non-formed/overhead Application

1. Shall have non-shrink characteristics and be of high compressive and bond strength. Material shall be non-sag, capable of being troweled in place for vertical and overhead applications without the need of formwork and conform to the following properties:
 - a. Compressive strength of 5000 psi in 28 days when tested in accordance with ASTM C109.
 - b. Bond strength of 2000 psi in 28 days when tested in accordance with ASTM C882 (modified). Results of tests showing failure of base material is acceptable alternative.
 - c. Flexural strength of 1300 psi in 28 days when tested in accordance with ASTM C78 or ASTM C293.
 - d. Maximum linear length change shall be 0.080% when tested in accordance with ASTM C157 (dry cure).
 - e. Modulus of elasticity shall be between 3.0 and 3.5×10^6 when tested in accordance with ASTM C469.
2. Restoration concrete/mortar shall be "CR702 Sto Overhead Mortar" as manufactured by Sto Concrete Restoration Division, "Sikatop 123 Plus" as manufactured by Sika Corporation, or "SW-88" as manufactured by Strongwall Industries, or approved equal.

B. Structural Restoration Concrete/Mortar - Horizontal Application

1. Shall have non-shrink characteristics and be of high compressive and bond strength. Material shall be capable of being poured or troweled in place for horizontal applications and for formed applications of sufficient dimensions to allow for proper placement of material and conform to the following properties:
 - a. Compressive strength of 5000 psi in 28 days when tested in accordance with ASTM C109.
 - b. Bond strength of 2000 psi in 28 days when tested in accordance with ASTM C882 modified). Results of tests showing failure of base material is acceptable alternative.



- c. Flexural strength of 1600 psi in 28 days when tested in accordance with ASTM C78 or ASTM C293.
 - d. Maximum linear length change shall be maximum of 0.08% at 28 days when tested in accordance with ASTM C157.
 - e. Modulus of elasticity shall be between 3.0 and 3.5×10^6 when tested in accordance with ASTM C469.
2. Restoration concrete/mortar shall be "CR701 Sto Trowel-Grade Mortar" as manufactured by Sto Concrete Restoration Division, "Sikatop 122 Plus" as manufactured by Sika Corporation, or "SW-81/SW-81F" as manufactured by Strongwall Industries, or approved equal.
- C. Structural Restoration Concrete/Mortar - Formed Application
1. Shall have non-shrink characteristics and be of high compressive and bond strength. Material shall be flowable, capable of being poured in formed restorations of small dimensions without forming voids and conform to the following properties:
 - a. Compressive strength of 5000 psi in 28 days when tested in accordance with ASTM C109.
 - b. Bond strength of 2000 psi in 28 days when tested in accordance with ASTM C882 modified). Results of tests showing failure of base material is acceptable alternative.
 - c. Flexural strength of 1500 psi in 28 days when tested in accordance with ASTM C78 or ASTM C293.
 - d. Maximum linear length change shall be maximum of 0.08% at 28 days when tested in accordance with ASTM C157.
 - e. Modulus of elasticity shall be between 3.0 and 3.5×10^6 when tested in accordance with ASTM C469.



2. Restoration concrete/mortar shall be "CR745 Sto Flowable Mortar" as manufactured by Sto Concrete Restoration Division, "Sikatop 111 Plus" as manufactured by Sika Corporation, or "SW-81F" as manufactured by Strongwall Industries, or approved equal.

D. Anti-corrosion Coating

1. Corrosion-inhibiting, epoxy/acrylic resin, protective coating for steel reinforcing bars that will not form a vapor barrier or bond break with the restoration mortar with the following properties:
 - a. Bond strength of 1800 psi in 2 hours when tested in accordance with ASTM C882.
 - b. Flexural strength of 2000 psi in 28 days when tested in accordance with ASTM C78.
 - c. Tensile strength of 800 psi in 28 days when tested in accordance with ASTM C190.
2. Anti-corrosion coating shall be "CR246 Sto Bonding and Anti-corrosion Agent" by Sto Concrete Restoration Division or "Armatec 110" as manufactured by Sika Corporation, or approved equal.

E. Miscellaneous Materials

1. Water: Potable water, ASTM C94
2. J hooks: 1/4" diameter threaded rod, Type 316 stainless steel
3. Epoxy paste adhesive: ASTM C882
4. Coarse aggregate: Clean, washed crushed stone, 3/8" maximum size, conforming to ASTM C33.

F. Weather-resistant anti-carbonation coating

1. Sol silicate acrylic one-component paint with high protection from carbonation for opaque protective concrete coating.

PART 3 - EXECUTION

3.1 EXAMINATION



- A. Examine all adjoining work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Commissioner any conditions that prevent the performance of this Work.
- B. The Contractor shall determine the most suitable material indicated in Part 2 of this Specification to be used for each application to achieve the most structural sound restoration with appropriate finish, unless specifically indicated on the Drawings. As an example, the Contractor may decide to form an application on a vertical surface in lieu of using the overhead restoration mortar. The contractor shall include in the restoration work procedure what materials will be used where and how the restoration will be achieved for both the structural integrity of the patch and the correct finish.

3.2 PREPARATION AND PROTECTION

A. Protection

Protect adjacent surfaces not to be restored. Protect sills, ledges, and projections from material droppings.

B. Surface Preparation

1. Remove spalled and weak concrete and remove all loose and foreign material. Chip substrate by bush hammering or other mechanical means acceptable to the restoration concrete/mortar manufacturer to obtain a minimum aggregate-fractured surface profile of $1/8_{+}$ " conforming to an ICRI CSP 7 or greater surface preparation. Minimum depth of restoration shall be $1/2$ ", with the perimeter of the edge having a minimum of $1/8$ " in depth. Feather edging is not permitted.
2. If steel reinforcing is exposed, chip out behind the reinforcing steel. Chip a minimum of $1/2$ " behind the bar and 3" past the point where the bar is exposed. Concrete behind bars shall be removed enough to allow for the entire circumference of the bar to be cleaned. Remove concrete to the point past where sound material begins.
3. Exposed steel reinforcement and steel beams shall be free of all rust, scale, oil, paint, grease, loose mill scale, and all other foreign matter that will prevent bonding with the restoration concrete. Use power chipping or power driven brushes and clean to an SSPC-SP2 or SP3 surface preparation.
4. Where additional reinforcement is not shown to be anchored in and for patches greater than $1\frac{1}{2}$ " in depth and overhead patches, install stainless steel threaded J hooks set in epoxy paste adhesive. Anchor is to be $3/4$ " clear minimum from finished face of restoration. Hooks are to be embedded a minimum of 3" into concrete, installed diagonally to plane of concrete

Concrete Restoration



surface. Holes are drilled 1/8" larger than rod diameter and shall be cleaned thoroughly. Space hooks at 16" o.c.

3.3 ANTI-CORROSION COATING APPLICATION

- A. Mix anti-corrosion coating in accordance with manufacturer's instructions. Apply to dry reinforcing steel using a stiff bristle brush. Brush in well to ensure continuous coverage. Apply in two coats of approximately 10 mils each or as per manufacturer's latest recommendations.
- B. Protect coated steel from weather and allow to dry a minimum of 30-45 minutes between coats or restoration concrete/mortar application. However, apply restoration material within 24 hours after last coating. If 24 hour period elapses, reapply bonding agent and allow drying as above.

3.4 RESTORATION CONCRETE/MORTAR APPLICATION

- A. Mix structural restoration concrete in accordance with manufacturer's instruction. Follow time limits set by manufacturer to prevent hardening of material prior to placement. For material requiring extension with aggregate due to depth of restoration, provide 3/8" aggregate of proportions specified by the restoration mortar manufacturer.
- B. Prior to application of material, thoroughly saturate surface with water. Remove any standing water prior to patching.
- C. Apply a scrub coat of the restoration material of proportions determined by manufacturer (indicate in written restoration procedure). While still damp, apply restoration concrete/mortar.
- D. Apply material behind and around rebars first to completely fill void.
- E. Overhead/Vertical Restorations - Apply restoration concrete/mortar, non-formed/overhead application, on vertical and overhead members with a trowel or other such device, all in accordance with the manufacturer's recommendations. Apply in lifts of up to 2" or as determined by material manufacturer at a consistency that the material will not slump. Follow manufacturer's instructions for scoring, curing, priming, and approximate time between layers. Do not leave voids. Trowel exposed surface smooth and to same shape and finish as the adjacent existing surface.
- F. Horizontal Restorations - Pour or trowel restoration concrete/mortar, horizontal application, into hole until it is to the same level and at the same pitch as the surrounding slab. For deep restorations, extend mortar with clean aggregate by the amount recommended by the manufacturer. Provide finish as follows:

Concrete Restoration

03 01 30 - 8



1. Surfaces to receive bonded applied cementitious applications such as full-set terrazzo and vitreous ceramic tile: Darby and float surface and follow with a rough broom finish.
2. Surfaces to receive floor coverings such as resilient flooring, thin-set terrazzo and vitreous ceramic tile, carpeting, wood floors, or surfaces which are intended as walking surfaces such as exposed or painted (cement finish), unless specified otherwise: Steel trowel surface to a smooth plane finish, free of score marks, grooves, depressions and ripples with a tolerance no greater than $\pm 1/8$ " in ten feet.
3. Surfaces intended to receive roofing, waterproofing membranes: Darby and float surface. Leave surface free from depressions, bulges, rough spots, and other defects.
4. Ramps, Exterior Concrete Steps: Level surface with wood float and follow with a broom finish perpendicular to direction of traffic.

G. Formed Restoration

1. Apply restoration concrete, horizontal application, on vertical members where formwork can be utilized to confine the concrete and the width of patch area permits its proper installation.
2. Apply flowable restoration mortar for patches to be formed, especially for thin patches.
3. Place so as not to leave voids. Vibrate forms with pencil vibrator to removed air bubbles. Remove formwork as soon as possible and trowel exposed surface smooth and to same shape and finish as the adjacent existing surface.

3.5 CURING

- A. As soon as surface of patch has hardened, cure patch a minimum of 48 hours by applying water-based acrylic curing compounds conforming to ASTM C309 or C1315, misting, wet burlap, etc. For patches to be covered with other material, only use curing compounds acceptable to the finish material manufacturer, unless the compound is removed prior to placing the finish material in a manner acceptable to the finish manufacturer.
- B. Follow manufacturer's latest recommendations for any other recommendations. The curing provision of A above shall not be waved unless manufacturer does not permit it.

3.6 COATING APPLICATION

- A. Apply coating as per manufacturer's recommendations.

3.7 PROTECTION AND CLEANING

- A. Clean all adjacent areas of excess material and clean all floors and walls of powder and droppings. Remove misplaced materials from surfaces immediately.
- B. Protect material from freezing and from rainfall prior to final set.

3.8 FIELD QUALITY CONTROL

- A. The Commissioner will inspect surfaces and reject any that contain cracks or other defects. The restoration will be tested for soundness and structural integrity. Any defective areas shall be fixed at Contractor's expense. Notify the Commissioner in advance of the concrete patches. The Commissioner will review the mixing, surface preparation and proper application of all materials.
- B. Engage the services of the material manufacturer's representative to inspect the surface preparation, instruct in the proper usage of the material and to inspect the work throughout the project.

END OF SECTION



SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes all labor, materials, equipment, and services necessary to complete the work of cast-in-place concrete as shown on the Drawings and specified herein, including reinforcement, concrete materials, mix design, placement procedures, and finishes.

1. Structural concrete slabs and normal and lightweight floor fill systems on decking supplied by others.
2. Supply, fabricate and place all required reinforcing bars, mesh and other reinforcement for concrete where shown, called for, and/or required complete with proper supporting devices.
3. Erection and removal of all formwork required to properly complete the work.
4. Finishing of all concrete work as hereinafter specified.
5. Curing and protection of all concrete and cement work.
6. Floor sealers and dustproofing of all areas exposed and/or covered with carpet.
7. Cutting, patching, grouting, restoring and pointing up as required.
8. Equipment pads as required.
9. Completing all other work and supplying all other materials as indicated on the drawings or as may be reasonably inferred and needed to make the work of this section complete.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and



whose work has resulted in construction with a record of successful in-service performance.

- B. **Manufacturer Qualifications:** A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- C. **Source Limitations:** Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- D. **Comply with ACI 301, "Specification for Structural Concrete,"** including the following, unless modified by the requirements of the Contract Documents.
 - 1. General requirements, including submittals, quality assurance, acceptance of structure, and protection of in-place concrete.
 - 2. Formwork and form accessories.
 - 3. Concrete mixtures.
 - 4. Handling, placing, and constructing concrete.
- E. **Laws, Codes, and Regulations:** Perform all work of this Section in compliance with all applicable New York City building code.
- F. **Restoration of Damage:** Restore and/or replace all broken and damaged elements resulting from work of this Section as directed by and to satisfaction of Commissioner at no additional cost to the City of New York.

1.4 SUBMITTALS

- A. **General:** Submit each item in this Article in compliance with the Conditions of the Contract and specification sections. Revise and resubmit each item as required to obtain Commissioner's approval.
- B. **Qualification Data:** Qualification data for firm specified in "Quality Assurance" Article that demonstrates that firm has capabilities and experience complying with requirements specified.
- C. **Product Literature:** Manufacturer's published technical data for each product to be used in work of this Section including recommendations for application and use, test reports and certificates; verifying that product complies with specified requirements, and Material Safety Data Sheets (MSDS).
- D. **Mix Designs:** For each concrete mix.
- E. **Additional Submittals:** Comply with submittal requirements in ACI 301. Number additional submittals sequentially.



PART 2 - PRODUCTS

2.1 FORMWORK

- A. Furnish formwork and form accessories to comply with requirements of ACI 301.

2.2 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Types I or II or Type I/II.
- B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, not exceeding 3/4-inch nominal size.
- C. Water: Potable, complying with ASTM C 94, and free of any substance that might adversely affect installation and durability of concrete or reinforcing.

2.3 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures. Do not use admixtures containing calcium chloride.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.

2.4 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable and free of any substance that might adversely affect installation and durability of concrete or reinforcing.

2.5 CONCRETE MIXES

- A. Comply with ACI 301 requirements for concrete mixtures.
- B. Comply with NYC Mix Design B3200
- C. Prepare design mixes, proportioned according to ACI 301, for normal-weight concrete determined by either laboratory trial mix or field test data bases, as follows:
 - 1. Compressive Strength (28 Days): 4000 psi.
 - 2. Slump: 3 inches.



- D. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 4 to 6 percent.
- E. Contractor is responsible for the TR-3 form for Concrete Design mix:
 - 1. Form TR-3: Technical Report Concrete Design Mix: The Contractor shall be responsible for, and bear all costs associated with the filing and securing of approvals, if any, for Form TR-3: 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.

2.6 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with ASTM C 94.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Construct, erect, and brace formwork to comply with requirements of ACI 301.

3.2 STEEL REINFORCEMENT

- A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.3 CONCRETE PLACEMENT

- A. Comply with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.
- B. Consolidate concrete with mechanical vibrating equipment.

3.4 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scream surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on the surface.



1. Do not further disturb surfaces before starting finishing operations.

3.5 TOLERANCES

- A. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

3.6 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with requirements of ACI 306.1 for cold-weather protection, and comply with recommendations in ACI 305R for hot-weather protection during curing.
- B. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.
- C. Curing Methods: Cure formed and unformed concrete for at least seven days by moisture curing as follows:
 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: City of New York will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Tests will be performed according to ACI 301.
 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.

3.8 RESTORATION

- A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION



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SECTION 04 21 13
BRICK MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the work of brick masonry restoration as shown on the Drawings and specified herein, including, but not limited to, the following:
1. Dismantle areas of brick masonry as indicated on Drawings. Salvage brick for reuse. Rebuild areas of brick masonry using salvaged bricks where possible and new bricks matching existing original bricks where salvaged bricks are not available and where use of new matching brick is indicated. Provide ties, anchors, and flashing required to ensure structurally sound, solidly anchored masonry with flashing to direct water to exterior of wall above all openings.
 2. Restore damaged brick masonry as indicated.

1.3 QUALITY ASSURANCE

- A. Source of Materials: Obtain each type of material required for brick masonry restoration from a single source to ensure a match in quality, performance, and appearance.
- B. Replace all broken and damaged brick masonry resulting from work of this Section to satisfaction of Commissioner, at no additional cost to the City of New York.

1.4 SUBMITTALS

- A. General: Submit each item in this Article in compliance with the Conditions of the Contract and DDC General Conditions. Revise and resubmit each item as required to obtain Commissioner's approval.



- B. **Qualification Data:** Submit qualification data for firm specified in "Quality Assurance" Article that demonstrates that firm has capabilities and experience complying with requirements specified.
- C. **Program of Work:** Submit a written program for each type of brick masonry restoration required by this Section.
 - 1. Include detailed description of materials, methods, and equipment to be used for each type of work.
 - 2. Include written descriptions, drawings, and diagrams, outlining proposed methods and procedures for protection of personnel, the public, and the existing construction during work of this Section.
- D. **Product Literature:** Submit manufacturer's published technical data for each product to be used in work of this Section including recommendations for application and use. Include test reports and certificates verifying that product complies with specified requirements.
- E. **Samples**
 - 1. **Bricks:** Sets of each type of brick required to match existing brick including sufficient numbers of brick to show full range of colors and textures to be expected in completed work.
 - 2. **Anchors and Fasteners:** Each type and configuration specified and/or required for work of this Section.
 - 3. **Flashing:** Each type and configuration specified and/or required for work of this Section.
- F. **Shop Drawings:** Detailed drawings showing installation of the following:
 - 1. **Anchors and Reinforcements:** Each type and condition at 3 in. equals 1 ft. minimum scale.
 - 2. **Flashings:** Each condition at 1 in. equals 1 ft. minimum scale.
- G. Prepare mockups as specified in Article "Mockups," below.

1.5 MOCKUPS

- A. **General:** Before beginning general brick masonry restoration work, prepare mockups to provide standards for work of this Section. Do not proceed with brick masonry restoration until Commissioner has approved mockups.
 - 1. Locate mockups as directed by Commissioner.



2. Provide 48 hours notice to Commissioner prior to start of each mockup.
3. Commissioner will monitor mockups.
4. Perform mockups using crew that will be executing the work and following requirements of this Section.
5. Allow each mockup involving mortar to stand until mortar is thoroughly dry and has reached its natural color. Notify Commissioner that panel is ready for inspection.
6. Repeat mockups as necessary to obtain Commissioner's approval.
7. Protect approved mockups to ensure that they are without damage, deterioration, or alteration at time of Substantial Completion.
8. Approved mockups in undamaged condition at time of Substantial Completion may be incorporated into the Work.
9. Approved mockups will represent minimum acceptable standard for brick masonry restoration work. Subsequent work that does not meet standard of approved mockups will be rejected.

B. Mockups: Provide the following mockups:

1. In-Place Removal and Rebuilding Brick Masonry: One location, minimum full height of masonry to be rebuilt by 4-feet long.
2. Brick Replacement: One area, including replacing deteriorated bricks and pointing.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store materials in manufacturers' original sealed containers or packaging, clearly labeled with manufacturer's name, address, and product identification, including grade, type, and color. Immediately reseal containers after partial use.
- B. Store materials in spaces designated by Construction Manager. Such spaces shall comply with applicable New York City Building Code.
 1. Maintain temperatures in storage spaces within range recommended by manufacturer of material being stored in each case. Protect liquid components from freezing.
 2. Store products and materials at least 4 in. above floor and protect them from water, dampness, or high humidity.



- C. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign material.
- D. Discard and remove from site deteriorated or contaminated materials and products that have exceeded their expiration dates. Replace with fresh materials.

1.7 PROJECT CONDITIONS

- A. Laws and Regulations: Perform work of this Section in compliance with applicable federal, state, and local laws and regulations.
- B. Protection of Persons: Take necessary measures to protect persons, whether or not they are involved with work of this Section, from harm resulting from work of this Section.
- C. Protection of Building: Protect building elements and finishes from damage or deterioration resulting from work of this Section. Restore damage to materials or finishes to satisfaction of Commissioner at no additional cost to City of New York.
- D. Coordination: Coordinate all work required to ensure proper completion.
- E. Contract Drawings:
 - 1. Drawings are two-dimensional representations of three-dimensional objects and do not show all surfaces. Perform work on surfaces of projections, reveals, ornament, and other elements associated with areas on which work is indicated.
 - 2. Field measure dimensions before preparing shop drawings or beginning work. Contractor is responsible for all dimensions.
- F. Access for Inspection and Approvals: Provide Commissioner access on a regular basis to all locations on which quality control panels are being carried out, on which work is ongoing, and where work has been completed to allow for inspections and approvals. Provide means of access and safety precautions required to facilitate inspections and approvals.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not use any material in brick masonry restoration work unless air and masonry temperatures are within range recommended by material manufacturer.
 - 1. Masonry work shall not proceed when temperatures are below 40 degrees Fahrenheit



2. Remove masonry work determined by Commissioner to have been damaged by freezing and replace with new work following these specifications to Commissioner's satisfaction.
- B. Hot Weather Masonry Work: Protect work during hot weather from premature or rapid curing by use of dampened fabric coverings.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Grade and Quality: Materials shall conform to requirements of this Section and shall be new, free from defects, and of recent manufacture.
- B. Ready-Mixed Products: Wherever a ready-mixed product is specified for use, containers shall bear labels giving exact formula of mixture. Manufacturer shall guarantee formula, and product shall be subject to chemical analysis by laboratory selected by Commissioner at Contractor's expense.
- C. Manufacturer's Instructions: Comply with material manufacturer's instructions for use of products (including surface preparation, mixing, applying, drying, etc.). In case of conflict with requirements of this Section, the more stringent requirements shall govern.

2.2 BRICK

- A. Common Brick: Replacement brick for back-up construction shall match existing bricks as closely as possible, and shall conform to ASTM C 216, grade SW, Type FBS.
- B. Face Brick: Replacement face brick shall match existing face brick in hardness and weatherability, size, color, and surface texture and reflectance. Provide replacement face brick custom made to match existing bricks if required to provide an exact match to existing units to Commissioner's satisfaction.
- C. Provide Brick from one of the following:
 1. The Belden Brick Company
PO Box 20910
Canton, Ohio 44701-0910
1-330-451-2031
 2. Glen-Gery Brick
1166 Spring Street
P.O. Box 7001



Wyomissing, PA 19610-6001
1-610-562-3076

3. General Shale
P.O. Box 3547
Johnson City, TN 37602
1-800-414-4661
4. or approved equal

2.3 TIES, ANCHORS AND REINFORCING ROD

- A. General: All ties, anchors, and similar accessories shall be of AISI Type 316 stainless steel. All elements to be welded shall be of AISI Type 316L stainless steel.
- B. Wire Anchors: 1/8-in. diameter wire.
- C. Brick Ties: 18 gage corrugated stainless steel.
- D. Brick Tie Anchors: 1/4 in. diameter, 1 in. long Hybrid Adhesive Anchors.
- E. All other ties, anchors, and reinforcing rods shall be of form required to provide secure attachment and as approved by Commissioner.

2.4 MISCELLANEOUS MATERIALS

- A. Flashing: Sheet copper, minimum 20-oz./sq. ft. weight and of heavier weight as indicated on Drawings.
- B. Round Plastic Weep Tubing: Medium-density polyethylene, 3/8 in. O.D. by 4 inches long.
- C. Masonry Cleaner to Remove Excess Mortar: Job-mixed detergent solution of 1/2-cup dry measure tetrasodium polyphosphate and 1/2-cup dry measure laundry detergent dissolved in 1 gal. of water.

PART 3 - EXECUTION

3.1 GENERAL

- A. Preparation: Inspect conditions before beginning brick masonry restoration. Correct any conditions that might adversely affect work of this Section. Contractor shall be fully responsible for proper execution and performance of work described herein.



- B. Protection: Before leaving fresh or unfinished work, fully cover and protect wall against rain and wind in an approved manner. Before continuing, sweep clean previously laid work.
- C. Wetting Bricks and Existing Masonry: Thoroughly wet brick and existing masonry prior to installation to ensure that brick and masonry are nearly saturated but free of surface water when laid.
- D. Full Joints: Ensure that all bed, head, and collar joints in brick masonry are shoved full so that there are no voids in brickwork.

3.2 DISMANTLING BRICK MASONRY

- A. General: Carefully dismantle brick masonry to be rebuilt. Avoid damaging masonry to remain.
- B. Remove mortar from joints before removing bricks. Remove bricks once mortar has been removed from accessible joints and gentle tapping has broken bond at other joints.
- C. Salvage bricks for reuse. Clean mortar from bricks using care to avoid damaging bricks. Remove all mortar.

3.3 REBUILDING BRICK MASONRY

- A. General: Lay brick plumb, level, and true to line in full beds of mortar with bond pattern matching original bond pattern and joints meeting those of adjacent remaining brickwork. Provide supports, anchors, and reinforcing to ensure solid, stable construction and flashing to ensure that water is directed to exterior of wall above openings and penetrations.
- B. Fill all joints in brick masonry and joints between brick masonry and other materials with mortar as each course is laid.
 - 1. Bed Joints: Form bed joints in one of the following ways:
 - a. Apply a thick layer of smooth or slightly furrowed mortar on top of units previously laid and shove brick in place.
 - b. Apply a full coat of mortar to bottom of brick and shove it into place.
 - 2. Head and Collar Joints: Form head and collar joints by applying a full coat of mortar to entire end or entire side as case requires and then shoving mortar covered end and/or side of brick tightly against bricks previously laid. Apply 3/8-in.-coat of mortar to back of facing brick before brick is installed.



- C. Build in supports, anchors and fasteners as shown on approved shop drawings. Anchor fasteners solidly into sound masonry.
- D. Install flashing as shown on Drawings and approved shop drawings. Provide flashing with end dams to ensure water is directed to exterior wall surface.
- E. Install weep tubes in head joints of first course above flashing, spaced at 16 inches o.c.
- F. Jointing of rebuilt masonry shall match that of existing masonry. Each course shall align with and be flush with existing work.
- G. Where brick is to be cut to size, make cuts neatly with a power-driven saw. Do not expose cut face to weather.
- H. Joints shall be uniform and shall match pointing sample approved by Commissioner. Tool with stainless steel jointer after becoming "leather" hard. Enlarge any holes or voids, except weep holes, and completely fill with mortar.
- I. Remove masonry units disturbed after laying and relay in fresh mortar. If adjustments are required, do not pound brick ends but remove and reset in fresh mortar.
- J. Remove and replace brick that are loose, chipped, broken, stained, or damaged by freezing or for any other reason, or if units do not match adjoining units as intended. Furnish new units to match adjoining units and install in fresh mortar, pointed to eliminate evidence of replacement.

3.4 ADJUST AND CLEAN

- A. Clean masonry prior to final setting of mortar. Remove mortar and stains from face of brickwork with dry, stiff bristle brushes. Additional cleaning procedures may be required by Commissioner, if masonry staining occurs. Keep walls clean as work progresses. After mortar has cured, perform final cleaning, using clean water only and stiff fiber brushes.
- B. Remove work of this Section that does not comply with requirements of this Section or does not match approved mockup as determined by Commissioner. Provide new work matching requirements of this Section and approved mockup to Commissioner's satisfaction at no additional cost to City of New York.

END OF SECTION



SECTION 04 22 00
CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Section Includes:
1. Concrete masonry units

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
- C. Samples for Verification: For each type and color of the following:
1. Masonry Units
- D. Qualification Data: For testing agency.
- E. Material Certificates: For each type and size of the following:
1. Masonry units.



- a. Include data on material properties and material test reports substantiating compliance with requirements.
 - b. For masonry units, include data and calculations establishing average net-area compressive strength of units.
2. Cementitious materials. Include name of manufacturer, brand name, and type.
 3. Anchors, ties, and metal accessories.
- F. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.
- G. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.
- B. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects.
1. Build sample panels for each type of exposed unit masonry construction. To match proposed sizes.
 2. Where masonry is to match existing, build panels adjacent and parallel to existing surface.
 3. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Commissioner in writing.
 - a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless Commissioner specifically approves such deviations in writing.
- C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.



1. Build mockup of typical CMU installation as shown on Drawings.
2. Build mockups for each type of exposed unit masonry construction, including face and backup wythes and accessories.
3. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
 - a. Approval of mockups is also for other material and construction qualities specifically approved by Commissioner in writing.
 - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Commissioner specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Concrete pavers shall be delivered to site in steel-banded, plastic-banded, or plastic-wrapped cubes on wooden pallets capable of transfer by fork lift.
- B. Pavers shall be unloaded at job site in such a manner that no damage occurs to the product.
- C. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- D. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of work with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 1. Extend cover down both sides of work, and hold cover securely in place.



- B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- C. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

2.2 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.
 - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.

2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
 - 1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable NYC Department of Buildings.



2.4 CONCRETE MASONRY UNITS

A. CMUs: ASTM C 90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi.
2. Density Classification: Normal weight.
3. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.
4. Exposed Faces: Provide color and texture matching the range represented by Commissioner's sample.

2.5 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least 1-1/2 inches into masonry but with at least a 5/8-inch cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
1. Mill-Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M, with ASTM A 641/ A 641M, Class 1 coating.
 2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M, with ASTM A 153/ A 153M, Class B-2 coating.
 3. Stainless-Steel Wire: ASTM A 580/A 580M, Type 316.
 4. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 316.
- C. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. Verify that substrates are free of substances that would impair mortar bond.



- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For dimensions in cross section or elevation, do not vary by more than plus or minus 1/4" inch.
 - 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/4 inch.
- B. Lines and Levels:
 - 1. For lines and surfaces, do not vary from straight by more than 1/16 inch in 4 feet maximum.
 - 2. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.
- C. Joints:
 - 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 3/8 inch.
 - 2. For head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.4 LAYING MASONRY WALLS

- A. Lay out CMU in advance for accurate spacing of surface bond patterns with uniform joint thicknesses. Avoid using less-than-half-size units where possible.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions.



- C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
 - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 - 2. Bed webs in mortar in all courses.
- B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush.

3.6 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:
 - 1. Provide an open space not less than 1/2 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
 - 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.

3.7 LAYING MASONRY PAVERS

- 1. Concrete pavers to be loose laid as ballast material at flashing pan.

3.8 FIELD QUALITY CONTROL

- A. Testing and Inspecting: The city of New York under separate contract will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.



- B. Testing Prior to Construction: One set of tests.
- C. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.

3.9 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Commissioner's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 5. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

END OF SECTION

SECTION 05 10 00

STRUCTURAL STEEL

PART I - GENERAL

1.1 RELATED DOCUMENT:

- 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. GENERAL DESCRIPTION

- A. Work of this Section shall conform to the requirements of the General Conditions, Supplementary General Conditions and Special Requirements.

1.3. DESCRIPTION

- A. Work included: Structural steel required for this work is indicated on the drawings and includes, but is not limited to the following:

1. Beam
2. Shop or field painting and field touch-up.
3. Surveying of erected steel.
4. All connections.
5. All other work which may reasonably be inferred as making the work of this Section complete.

1.4. QUALITY ASSURANCE

- A. Standards and Codes:

1. Except as modified by the requirements specified herein, the following codes and standards (latest editions and revisions unless noted) shall apply to the work of this Section:
 - a. New York City Building Code.
 - b. AISC - "Specification for Structural Steel Buildings."
 - c. AISC - "Code of Standard Practice", Latest Edition. As modified within this specification.



- d. AISC - "Specifications for Structural Joints Using ASTM A325 or A490 Bolts," including commentary section.
- e. American Society for Testing and Materials - ASTM Standards.
- f. AWS - "Structural Welding Code," D1.1 - including all supplements, addenda, and special rulings applicable to building construction, except amendments to sections or inspection specified herein.
- g. SSPC - "Steel Structures Painting Manual"
- h. Welding Rules 13 thru 17 New York City Board of Standards and Appeals, Cal. No. 1-38 Sr, Volume II.
- i. Occupational Safety and Health Act of 1970 (OSHA), as amended to date.

B. Testing and Inspection:

- 1. Manufacturer's certification or letter of compliance of bolt, nut, washer and filler material for welding shall be furnished, to the Commissioner.
- 2. Testing and inspection of structural steel will be performed by an independent testing agency retained and paid for by the City of New York under a separate contract. The inspection service shall be provided with the following:
 - a. A complete set of approved shop and erection drawings.
 - b. Full and ample means of assistance for testing inspection of material.
 - c. Proper facilities, including scaffolding, temporary work platforms, etc., for inspection of the work in shop and field.
- 3. Each bolting crew and welder shall be assigned an identifying symbol or mark and all shop and field connections shall be so identified that the inspector can refer back to the crew or person making the connection.
 - a. Testing and Calibration: Apparatus and procedure for measuring torque and tension for calibrating wrenches shall be furnished and maintained by the Contractor, and shall be approved by the Commissioner's Inspection Agency. Impact wrenches shall be calibrated each day at beginning of work, each time the bolt size or length of pressure hose is changed, and at such other times as the inspection service may direct.

4. Field inspection will consist of, but not limited to the following:
 - a. Certification of welders.
 - b. Inspection and testing of bolting and welding in accordance with Contract Documents, Specifications and Codes.
5. All welding inspection for shop and field will, in general consist of complete visual inspection, and the following:
 - a. Magnetic Particle Inspection - as per ASTM E709.
 - (1) Manual Fillet Welds - Random testing approximately 10% linear inches of weld made.
 - b. Ultrasonic Inspection - As per AWS Section 6, Part C and Section 8.15.3.
 - (1) Manual Groove Welds - Ultrasonic testing, all welds - 100% tension.
 - (2) Tension Welds - Ultrasonic inspection of all welds
 - (3) Compression welds automatic 25% of all welds - manual - all welds.
 - (4) Procedures for testing prior to welding in regard to base material, shall be in accordance with ASTM A-435. Restore (or replace) rejected material at no cost to the City of New York. Restore (or replace) restored material if rejected after welding, at no cost to the City of New York.
 - (5) Liquid penetration as per ASTM E-165, if required.
6. Inspection by the Commissioner's Inspection Service does not relieve the Contractor of his responsibility to perform the work and provide the materials required.
7. If material or workmanship is rejected by the Commissioner's Inspection Service, the following procedures shall be adhered to:
 - a. Any and all material or workmanship which is rejected at the shop or building shall be promptly replaced without additional cost to the City of New York.
 - b. If arrangements for replacements are not made after seven days, notice of rejection, the Commissioner will have the option to replace rejected material no cost to the City of New York.



- c. Rejected steel shall be removed from the site within three working days of notice of rejection without additional cost to the City of New York.

C. Reports:

1. Reports on shop and field welding and bolting and structural steel shall include the following:
 - a. Name of inspectors.
 - b. Description of work.
 - c. Description of type of inspection.
 - d. Type of weld (or bolts).
 - e. Condition of weather.
 - f. Welding operator's name and number.
 - g. Type of welding equipment (or bolt size).
 - h. Total inches of welds made (or bolted locations), inspection, rejection, acceptance.
 - i. Remarks.
2. Immediately after tests or inspections have been made, the laboratory shall furnish copies of all tests and inspection reports to:

Commissioner
3. Permanent records of the details of all tests shall be maintained by the laboratory.
4. Laboratory data records and field books shall be available for examination by authorized parties upon request.



1.5. SUBMITTALS

- A. The Contractor shall retain an engineer licensed in the State of New York to prepare detailing data regarding all connections.
- B. From the design drawings the Contractor shall submit to the Commissioner for approval prior to fabrication full dimensioned drawings of all items in this Section.
- C. Drawings shall include all fabrication, erection plans, member details
 - 1. Substitutions of shapes or sections, or modifications of details, or both and all deviations from the Structural Design Drawings, and the reasons therefore, shall be submitted with shop drawings for approval and shall be specifically called to the attention of the Commissioner.
 - 2. The Contractor alone shall be responsible for all errors of detailing, fabrication, and for the correct fitting of the structural members.
 - 3. All individual piece drawings shall clearly reference the appropriate job standard and shall clearly show the provided connection reaction or force.
- D. The Contractor shall be responsible for the correct coordination of his work where it comes in conjunction and/or contact with any other work. Dimensions are the responsibility of the Contractor.
- E. Fabrication of any material or performance of any work shall not proceed until shop drawings have been approved by the Commissioner.
- F. Final Drawings: Drawings at completion of the structural steel work shall be submitted.

1.6. DELIVERY AND STORAGE

- A. Structural steel shall not be handled until paint has thoroughly dried. Care must be exercised to avoid abrasions and other damage.
- B. Material shall be stocked out of mud and dirt and proper drainage shall be provided. Structural steel must be protected from damage or soiling by adjacent construction operations.



PART 2 – PRODUCTS

2.1 MATERIALS

- A. All materials shall conform to the requirements of the current editions of the ASTM and other specifications and standards listed below.

2.2 STRUCTURAL STEEL

- A. Steel shall comply with requirements of the following specifications:
1. Steel shall be ASTM A36, A992 Grade 50, or other, as noted on the drawings.
 2. A certificate of conformance shall be submitted to the Commissioner by the steel manufacturer certifying that the steel is new steel conforming to the above referenced ASTM specification.

2.3 BOLTS

- A. Bolts shall comply with requirements of the following specifications:
1. High Strength Bolts (carbon steel) - ASTM A325.
 2. All ASTM A325 bolts shall be preferably cold-forged and with rolled threads. Note: Type 2 A325 bolts are not to be used.
 3. All heavy hex nuts for high strength bolts must be ASTM A194 2H or ASTM A563 DH for use with plain (uncoated) bolts or nuts under ASTM A194 or A536 that have a minimum proof stress not below 175,000 psi. No other nuts are acceptable, and nuts must show both the manufacturer's mark and the relevant symbol.

2.4 WASHERS

- A. Round washers shall conform to the American Standard B27, Type B. Washers in contact with high strength bolt heads and nuts shall be hardened in accordance with ASTM Designation A325. Beveled washers shall be furnished in accordance with the specifications of the "Research Council on Riveted and Bolted Structural Joints."
- B. Hardened round washers in contact with high strength bolt heads and nuts must be manufactured to ASTM F436 which requires a hardness of 38 to 45 HRC and must show manufacturer's mark. Washers for use with short slotted or oversized holes on over 1" A490 bolts must also be 5/16" thick or thicker.

2.5 ELECTRODES AND FLUX

- A. Electrodes and flux for carbon steel shall be low hydrogen (E70) and shall conform to the requirements of the current edition of the American Welding Society's Standard Code for Welding in Building Construction (D1.1) and current rules and regulations of the New York City Building Code.

2.6 PAINT

- A. Paint for coating of steel for exposed exterior structural steel: Tnemec Series 27 FC, Steel-Tech High Performance Epoxy Coating or Sherwin Williams Recoatable Epoxy Primer or approved equal.

2.7 FABRICATION

- A. Size of Holes:
1. Ordinary holes shall be nominal bolt diameter plus 1/16".
 2. Members with shear connections only may have elongated holes of nominal bolt diameter plus 3/16" in direction perpendicular to load.
 3. Holes, slots and openings required by other trades and contracts shall be provided, together with necessary reinforcing as shown on the drawings. Suitable templates for proper location shall be used.
 4. Manual oxygen cutting shall be done only with a mechanically guided torch. Any unguided torch may be used provided cut is not within 1/2" of the finished dimension and final removal is completed by means such as chipping or grinding to produce a surface quality equal to that of the base metal.
 5. Exposed exterior structural steel shall have exposed sharp edges and corners ground off smooth and rounded or chamfered. Where water will collect in members, drain holes at low points with chamfered edges shall be provided.

2.8 CONNECTIONS

- A. Connections shall be a minimum of 3/4" dia. with a minimum of 2 bolts. Minimum connections shall conform to appropriate tables headed "Uniform Load Constants" shown in the manual of steel construction of AISC. Composite beam reactions will be greater. Criteria for determining minimum connection capacity required is shown on the structural drawing.
- B. Shop connections not indicated on the structural drawings shall be prepared by fabricator and submitted to the Commissioner for review. Where connections are indicated on the structural drawings, no deviation from the



approved type and method thereof shall be made without the approval of the Commissioner. Single angle, one-sided, or other type of eccentric connections will not be permitted unless specifically approved by the Commissioner.

C. Bolted connections: Bolts shall be driven accurately into the holes without damaging the thread, and bolt heads and nuts shall rest squarely against metal. Bolt heads shall be protected from damage during driving.

1. All bolts shall be drawn up to a bolt tension not less than that specified in Table 3 of the AISC Specification for Structural Joints using ASTM A325 or A490 bolts, and the Specifications for Structural Joints Research Council on Riveted and Bolted Structural Joints. An approved, calibrated, manual or power torque shall be used to obtain the proper torque and tension.
2. Bolts shall be of a length that will extend not less than 1/4" beyond the nuts.
3. All bolts shall be high strength slip critical bolts.
4. In addition to all other requirements, a hardened washer shall be installed between all bolt heads or nuts and material having elongated holes.

D. Welded Connections:

1. Before welding, particular attention shall be paid to surface preparation, fit up and cleanliness of surface to be welded.
2. Minimum preheat and interpass temperatures for structural steel welding shall be as specified in the American Welding Society Standard for Welding in Building Construction, except that no welding shall be performed when ambient temperature is lower than 0 degrees F. The temperature shall be measured from the side opposite that upon which preheat is applied.
3. Welding shall be done by the American Welding Society's approved methods.
4. The head, input, length and sequence of weld shall be controlled to prevent distortions. The surfaces to be welded and the filler metals to be used shall be subject to inspection before any welding is performed.
5. No welding shall begin until joint elements are bolted in intimate contact and adjusted to dimensions shown on the drawings, or both, with allowance for any weld shrinkage that is expected. Heavy sections and those having a high degree of restraint with low hydrogen type electrodes shall be welded. No members are to be spliced without prior approval of the Commissioner.
6. Welds shall be sounded throughout. There shall be no defect in any weld or welds pass.
7. Welds shall be free from overlap.
8. Craters shall be filled to the full cross section of the weld.



9. Exposed exterior structural steel shall have joints seal welded.

- E. The contact surface of high strength bolted and welded connections shall be cleaned and left unpainted. The several pieces forming any built-up or joint shall be straight and close fitting, free from twists, bends or open joints in the finished assembly.

2.9 SHOP PAINTING AND COATING

A. Preparation:

1. Structural steel exposed to the exterior shall be cleaned in accordance with SSPC-SP6 Commercial Blast Cleaning.
2. All steel shall be cleaned in accordance with SSPC-SP2 Hand Tool Cleaning.

B. After fabrication, all steel shall receive a shop coat of paint, except for the following:

1. Areas within 2" of field welds.
2. Contact surfaces of high strength bolted friction type connections.

C. Application:

1. Paint shall be applied to dry surfaces, when temperatures are above dew point, thoroughly and evenly, strict accordance with manufacturer's label instructions, to provide a dry film thickness of 4.0 - 6.0 mils for exterior steel. Paint shall be dry before handling or loading steel for shipment.
2. Surfaces inaccessible after assembly or erection shall receive a second coat of the shop paint.

D. Machined surfaces shall be protected by an approved rust-inhibitive coating, readily removable prior to erection, or of a type not requiring removal.

E. Complete painting details shall be included in the shop drawings.

F. Field Touch-Up:

1. After erection, all damaged areas in the shop coat, loosened scale, rust, exposed surfaces of bolts, nuts and washers, and all field welds and unpainted areas shall be cleaned to the same standards as the shop coat and painted with the same paint used for the shop coat, at same film thickness.



PART III- EXECUTION

3.1 LAYOUT

- A. Installation of Work under This Contract: The Contractor shall be responsible for the accurate placement of his work in accordance with the location and elevations shown on the drawing.
- B. Dimensions and Levels: Before starting the work, the Contractor shall verify all dimensions and levels.

3.2 ERECTION

- A. Anchor bolts and other required anchorage items shall be verified for proper size and accurate location prior to erection of steel work.
- B. Errors in shop fabrication or deformation resulting from handling and transportation that prevent the proper assembly and structural fitting of parts shall be reported immediately to the Commissioner, and approval of the method of correction shall be obtained. Approved corrections shall be made at no additional cost to the City of New York.
- D. Field connections shall be made as herein before specified.
- E. As erection of the steel progresses, the work shall be fastened securely to take care of all dead load, wind and erection stresses. Poor matching of holes shall be corrected by drilling to the next larger size, and the use of larger size bolts. Welding or re-drilling will not be permitted without approval of the Commissioner. Hammering which will injure or distort the members will not be permitted.
- F. Cutting of Steel: The use of flame, cutting torches, in the field for correction of fabrication errors will not be permitted on any member in the structural framing.

3.3 PLUMBING AND LEVELS

- A. All members shall be aligned, leveled and adjusted accurately prior to final fastening. Tolerances shall conform to the AISC Code of Standard Practice except as modified below.

3.4 FIELD PAINTING

- A. Preparation:
 - 1. All steel shall be cleaned in accordance with SSPC-SP2 Hand Tool Cleaning.
- B. After erection of structural steel exposed on exterior of building, all abrasions, bolt heads and surfaces left uncoated for welding and bolting shall be touched



up with special epoxy-zinc coating or painted with the same paint (at same film thickness) of a different color.

END OF SECTION



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SECTION 055100

METAL STAIRS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Provide all metal stairs, platforms and railings as indicated on the Drawings and as specified herein.

1.3 QUALITY ASSURANCE

- A. Fabricator's Qualifications: The fabricator shall be experienced in metal stair work and shall be subject to the approval of the Commissioner.
- B. Inspection: Shop and field quality assurance inspection may be made by the City of New York. If quality assurance inspection is made by the City of New York, it shall not relieve the fabricator and erector of responsibility for their own quality control programs.
- C. Galvanizing: Stamp galvanized items with galvanizer's name, weight of coating, and applicable ASTM number.

1.4 REFERENCES

- A. Unless otherwise shown on Drawings or Specifications, the Work of this Section shall meet the requirements of the following:
1. Design, Fabrication, and Erection: "Specification for Structural Steel Buildings, Allowable Stress Design and Plastic Design" adopted by the American Institute of Steel Construction, June 1, 1989 (AISC Specification).
 - a. Design and Fabrication of Cold-Formed Shapes: "Specification for the Design of Cold-Formed Steel Structural Members", by the American Iron and Steel Institute (AISI Specification).



2. Welding: "Structural Welding Code - Steel, AWS D1.1", or "Structural Welding Code - Sheet Steel, AWS D1.3", by the American Welding Society (AWS Codes).
3. High Strength Bolting: "Specification for Structural Joints Using ASTM A325 or A490 Bolts, August 14, 1980", by the Engineering Foundation's Research Council on Riveted and Bolted Structural Joints (Specification for Structural Joints).

B. Organizations:

1. AISC: American Institute of Steel Construction, One East Wacker Dr., Suite 700, Chicago, IL 60601-1802, 866-275-2472, www.aisc.org.
2. AISI: American Iron and Steel Institute, 1140 Connecticut Ave., NW, Suite 705, Washington, D.C. 20036, (202) 452-7100, www.steel.org.
3. AWS: American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126, (800) 443-9353, www.aws.org.
4. ANSI: American National Standards Institute, 1819 L Street, NW, 6th Floor, Washington, DC 20036, (202) 293-8020, www.ansi.org.
5. ASME: ASME International, 3 Park Ave., New York, NY 10016-5990, (800) 843-2763, www.asme.org.
6. ASTM: ASTM International, 100 Barr Harbor Dr., PO Box C700, West Conshohocken, PA, 19428-2959, (610) 832-9500, www.astm.org.
7. MPI: The Master Painters Institute Inc., 2808 Ingleton Ave., Burnaby, BC, V5C 6G7, (888) 674-8937, www.specifypaint.com.
8. SSPC: The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh PA 15222-4656, (877) 281-7772, www.sspc.org.

1.5 SUBMITTALS

- A. Shop Drawings: Show application to project. Machine duplicated copies of Contract Drawings will not be accepted. Shop drawings shall be standard 24 inch by 36 inch size sheets. The fabricator's name and address shall be indicated in the title block on each drawing.
1. Include anchor bolt location plan (if any), erection drawings, and detail drawings of all components.
 2. Indicate shop and field welds by standard AWS welding symbols in accordance with AWS A2.4.
 3. When shop drawings are marked "Approved as Noted", promptly resubmit copies of corrected shop drawings for formal approval and record.
- B. Product Data:
1. Paint: Manufacturer's name and printed product literature, including storage and application instructions.



2. Grating Treads and Platforms: Manufacturer's specifications.
- C. Quality Control Submittals:
 1. Fabricator's Qualifications Data: Name and experience of fabricator.

1.6 WELDING PROCESS

- A. Use only shielded metal arc welding.
- B. Shielded metal arc welding procedures that comply with the provisions of the AWS Code shall be considered to be pre-qualified.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Steel Shapes, Plates, and Bars: ASTM A36.
- B. Steel Plates to be Bent or Cold-Formed: ASTM A283, Grade C.
- C. Steel Bars and Bar-Size Shapes: ASTM A675, Grade 70; or ASTM A36.
- D. Merchant Quality Steel Bars: ASTM A575, grade as selected by fabricator.
- E. Cold-Finished Steel Bars: ASTM A108, grade as selected by fabricator.
- F. Hot-Rolled Carbon Steel Sheet and Strip: ASTM A569, pickled and oiled.
- G. Cold-Rolled Carbon Steel Sheet: ASTM A366, oiled.
- H. Galvanized Steel Sheet: ASTM A526, with G90 hot-dip process zinc coating complying with ASTM A653.
- I. Steel Tubing: Hot-formed, welded or seamless, structural tubing; ASTM A501.
- J. Cold-Drawn Steel Tubing: ASTM A512, buttwelded, cold-finished carbon steel tubing, sink drawn and stress relieved.
- K. Cast Iron Castings: ASTM A48, gray iron castings, Class 30.
- L. Malleable Iron Castings: ASTM A47, grade as selected by fabricator.



- M. Steel Castings: ASTM A27, grade and class as required by use of item.
- N. Steel Pipe: ASTM A53, type as selected, Grade A; black finish unless galvanizing is required; standard weight (Schedule 40), unless otherwise shown on Drawings or Specifications.
- O. Weld Filler Metal: Weld filler metal for shielded metal arc welding which complies with AWS Specifications A5.1 or A5.5 shall be considered to be pre-qualified.
- P. Anchors: Except where shown or specified, select anchors of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, anchors shall be galvanized or of corrosive-resistant materials.
 - 1. Threaded-Type Concrete Inserts: Galvanized ferrous casting, internally threaded to receive 3/4 inch diameter machine bolt; either malleable iron or cast steel.
- Q. Fasteners: Except where shown or specified, select fasteners of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, fasteners shall be galvanized.
 - 1. Standard Bolts and Nuts: ASTM A 307, Grade A, regular hexagon head.
 - 2. Stainless Steel Fasteners: ASTM A 666; Type 302/304 for interior Work; Type 316 for exterior Work; Phillips flathead (countersunk) screws and bolts for exposed Work unless otherwise shown on Drawings or Specifications.
 - 3. Eyebolts: ASTM A 489.
 - 4. Machine Bolts: ASME B18.5 or ASME B18.9, Type, Class, and Form as required.
 - 5. Machine Screws: ASME B18.6.3.
 - 6. Lag Screws: ASME B18.2.1.
 - 7. Plain Washers: Round, ASME B18.22.1.
 - 8. Lock Washers: Helical, spring type, ASME B18.21.1.
 - 9. Toggle Bolts: Spring Wing Type; Wing AISI 1010, Trunion Nut AISI1010 or Zamac Alloy, Bolt Carbon Steel ANSI B18.6.3.
- R. Bedding Mortar:
 - 1. Cement Grout: One part Portland cement complying with ASTM C150, Type I or III, to 3 parts natural sand complying with ASTM C404, size No. 2, mixed with minimum amount of water required for placement and hydration. Ratio by volume.



- S. Shop Paint (General): Universal shop primer; fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
 - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- T. Shop Paint for Galvanized Steel: Epoxy zinc-rich primer; complying with MPI#20 and compatible with topcoat.

2.2 STAIR FRAMING

- A. Fabricate stringers, headers, and platform framing as shown on the Drawings.
 - 1. Furnish hangers, posts, and miscellaneous items as shown or required.
- B. Connections: Welded or bolted as shown.
 - 1. Use one-sided angle connections only where shown.
 - 2. When framed connections are used, the minimum length of the connection angles shall be as follows:
 - a. Beams 12 to 14 inches deep: 8-1/2 inches.
 - b. Beams 8 to 10 inches deep: 5-1/2 inches.
 - 3. High-Strength Bolted Connections: Amend the Specification for Structural Joints as follows:
 - a. Refer to Item 5 (b): High-strength bolts shall have a hardened washer under the element (nut or bolt head) turned in tightening, regardless of the method of tightening.
 - b. Refer to Item 6: The inspection of bolt tightening shall be as specified under Item 6(d).
- C. Close exposed ends of stringers with continuously welded steel plates.
- D. Newels: Tubular steel newels as shown on the Drawings, equipped with required attachments to other Work.
 - 1. Newels shall be full height of stairwell.
- E. Where masonry walls support steel stair Work, provide temporary supporting struts designed for erection of steel stair components before installation of masonry.

2.3 STAIR DETAILS

- A. Construct stair units to conform to sizes and arrangement indicated on the Drawings. Construct stair units to support a minimum live load of 100 lb/sq ft, unless otherwise shown on Drawings or Specifications.



- B. Steel Floor Plate Treads and Platforms: Raised pattern steel floor plate complying with ASTM A 786; produced from steel complying with ASTM A36. Furnish pattern shown or, if not shown, as selected from manufacturer's standard patterns.
1. Form treads of 1/4 inch minimum thick steel floor plate with integral nosing and back edge stiffener. Weld steel supporting brackets to stringers and weld treads to brackets.
 2. Fabricate platforms of steel floor plate of thickness shown on the drawing, with integral nosing matching that on treads at all landings. Secure floor plates to steel stair framing.

2.4 STAIR RAILINGS AND HANDRAILS

- A. Fabricate stair railings and handrails of 1-5/8 inch (nominal) diameter steel pipe, unless otherwise shown on Drawings.
- B. Railings: Unless otherwise shown on Drawings, railings shall consist of top rail and intermediate rails, with posts spaced not more than 4 feet oc. Close ends of rails which do not terminate with a flange or continuous return.
1. Space rails so that a sphere 4 inches in diameter cannot pass through the openings between the rails.
 2. Join posts, rails, and corners by one of the following methods:
 - a. Flush-type steel railing fittings, welded and ground smooth, with railing splice locks secured with 3/8 inch hexagonal-recessed-head setscrews.
 - b. Welded joints made by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding joints smooth. Butt railing splices and reinforce by a tight-fitting interior sleeve not less than 6 inches long.
 3. Railings may be bent at corners instead of joining, provided the bends are uniformly formed in jigs, with cylindrical cross-section of pipe maintained throughout the entire bend.
 4. Unless otherwise shown on Drawings, fabricate railings and accessories as necessary to secure posts and rail ends to building construction as follows:
 - a. Anchor posts to steel with steel flanges, angle type or floor type as required by conditions, welded to posts and bolted to the steel supporting members.

2.5 FABRICATION

- A. Progress shop fabrication from "APPROVED" or "APPROVED AS NOTED" detail drawings only.



1. When detail drawings are "APPROVED AS NOTED", progress fabrication in strict accordance with notes thereon.
 2. Fabrication progressed from "DISAPPROVED" or "RETURNED FOR CORRECTION" detail drawings will be rejected. The contractor shall have no claim against the City of New York for any costs or delays due to rejection of items fabricated from "DISAPPROVED" or "RETURNED FOR CORRECTION" detail drawings.
- B. Use materials of the sizes and thicknesses indicated on the Drawings. If not indicated, furnish items of size and thickness required to produce adequate strength and durability in the finished product for the intended use.
- C. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown on Drawings or Specifications. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the Work.
- D. Use hot-rolled steel bars for Work fabricated from bar stock, unless Work is indicated to be fabricated from cold-finished stock.
- E. Use flush countersunk screws or bolts for exposed fasteners, unless otherwise shown on Drawings or specified.

2.6 GALVANIZING

- A. In addition to specific items specified or noted to be galvanized, galvanize items attached to or embedded in exterior masonry (including interior wythe of exterior masonry walls) and concrete Work.
- B. Unless otherwise shown on Drawings or Specifications, items to be galvanized shall receive a zinc coating by the hot-dip process, after fabrication, complying with the following:
1. ASTM A123 for plain and fabricated material, and assembled products.
 2. ASTM A153 for iron and steel hardware.

2.7 SHOP PAINTING

- A. **Cleaning Steel:** Thoroughly clean all surfaces of metal. Remove oil, grease, and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning". Remove loose mill scale, loose rust, weld slag and spatter, and other detrimental material in accordance with SSPC SP-2 "Hand Tool Cleaning", SSPC SP-3 "Power Tool Cleaning", or SSPC SP-7 "Brush-Off Blast Cleaning".



- B. Galvanized Items:
 - 1. Galvanized items which are to be finish painted under Section 099123 shall be rinsed in hot alkali or in an acid solution and then in clear water.
 - 2. Welded and abraded galvanized surfaces shall be wire brushed and repaired with a coating of cold galvanizing compound.

- C. Apply one coat of shop paint to all steel surfaces except as follows:
 - 1. Do not shop paint steel surfaces to be field welded and contact surfaces of high-strength bolted connections.
 - 2. Apply 2 coats of shop paint, before assembly, to steel surfaces inaccessible after assembly, except surfaces in contact. Also apply 2 coats of paint to surfaces which are inaccessible after erection. Change color of second coat.
 - 3. Do not paint galvanized items which are not to be finish painted under Sections 099123-Interior Painting.

- D. Apply paint and compound on dry surfaces in accordance with the manufacturer's printed instructions, and to the following minimum thickness per coat:
 - 1. Shop Paint (General): 4.0 mils wet film.
 - 2. Shop Paint for Galvanized Steel: 3.0 mils wet film.
 - 3. Cold Galvanizing Compound: 2.0 mils dry film.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Erect metal stairs in accordance with the AISC Specification, the AWS Codes, and the Specification for Structural Joints, except as otherwise shown on Drawings or Specifications.

- B. Install anchorage devices and fasteners where necessary for securing metal stair items to in-place construction.

- C. Set the Work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing and built-in anchors for items which are to be built into concrete, masonry or similar construction.

- D. Check railings prior to securing in place to insure proper matching at butting joints and correct alignment throughout their length.



- E. Do not make corrections or alterations to fabricated steel without prior written approval by the Commissioner.
- F. Do not use gas or air carbon-arc cutting for cutting or enlarging bolt holes.

END OF SECTION



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SECTION 05 52 13
PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes the following:
1. Painted Steel pipe and tube railings.

1.3 PERFORMANCE REQUIREMENTS

- A. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
1. Steel: 72 percent of minimum yield strength.
- B. Structural Performance: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Handrails:
 - a. Uniform load of 50 lbf/ ft.applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
- C. Thermal Movements: Provide exterior railings that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg, material surfaces.



- D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.4 SUBMITTALS

- A. Product Data: For the following:
1. Manufacturer's product lines of mechanically connected railings.
 2. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer licensed in the State of New York responsible for their preparation.
- C. Samples for Initial Selection: For products involving selection of color, texture, or design.
- D. Samples for Verification: For each type of exposed finish required.
1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
 2. Fittings and brackets.
 3. Assembled Sample of railing system, made from full-size components, including top rail, post, handrail, and infill. Sample need not be full height.
 - a. Show method of finishing and connecting members at intersections.
- E. Welding certificates.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing through one source from a single manufacturer.
- B. Welding: Qualify procedures and personnel according to the following:



1. AWS D1.1, "Structural Welding Code--Steel."

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION AND SCHEDULING

- A. Coordinate installation of anchorages for railings. 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.
- B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Steel Pipe and Tube Railings:
 - a. Pisor Industries, Inc.
 - b. Sharpe Products.
 - c. Wagner, R & B, Inc.; a division of the Wagner Companies.
 - d. Or Approved Equal

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.



2.3 STEEL AND IRON

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
- B. Tubing: ASTM A 500 (cold formed).
- C. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - 1. Provide galvanized finish for exterior installations and where indicated.
- D. Plates, Shapes, and Bars: ASTM A 36/A 36M.
- E. Castings: Either gray or malleable iron, unless otherwise indicated.
 - 1. Gray Iron: ASTM A 48/A 48M, Class 30, unless another class is indicated or required by structural loads.
 - 2. Malleable Iron: ASTM A 47/A 47M.

2.4 FASTENERS

- A. General: Provide the following:
 - 1. Steel Railings: Type 316 stainless-steel fasteners.
- B. Fasteners for Interconnecting Railing Components:
 - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
- C. Anchors: Provide torque-controlled expansion anchors, fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Zinc-Rich Primer: Complying with SSPC-Paint 20 or SSPC-Paint 29 and compatible with topcoat.



1. Use primer with a VOC content of 420 g/L (3.5 lb/gal.) or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Benjamin Moore & Co.; Epoxy Zinc-Rich Primer CM18/19.
 - b. Tnemec Company, Inc.; Tneme-Zinc 90-97.
 - c. Sherwin Williams: Zinc Clad 4100.
 - d. Or approved equal.
- C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.6 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded connections, unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.



1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove flux immediately.
 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Form changes in direction as follows:
1. By bending or by inserting prefabricated elbow fittings.
- J. Retain first paragraph below unless all bends are made with elbow fittings.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work, unless otherwise indicated.
1. At brackets and fittings fastened to plaster or gypsum board partitions, provide fillers made from crush-resistant material, or other means to transfer wall loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
- N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

2.7 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.



- C. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.8 STEEL AND IRON FINISHES

- A. Galvanized Railings:
 - 1. Hot-dip galvanize steel and iron railings, including hardware, after fabrication.
- B. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
- C. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- D. Preparation for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic-phosphate process.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
- C. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.



3.2 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in Part 2 "Fabrication" Article whether welding is performed in the shop or in the field.

3.3 ANCHORING POSTS

- A. Anchor posts with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:
 - 1. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

3.4 ATTACHING HANDRAILS

- A. Attach handrails to walls, floors and steps with pre-fabricated brackets. Provide brackets with 1-1/2-inch clearance from inside face of handrail and finished wall surface.
 - 1. Use type of bracket with predrilled hole for exposed bolt anchorage.
- B. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- C. Secure wall brackets to building construction as follows:
 - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.

3.5 ADJUSTING AND CLEANING

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 painting Sections.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and restore galvanizing to comply with ASTM A 780.

3.6 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in



the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION



**Department of
Design and
Construction**

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SECTION 05 70 00
ORNAMENTAL METAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION OF WORK

- A. Provide ornamental metal Work as indicated on the Drawings and as specified herein, including, but not limited to the following:
1. Subway Type Grating
 2. Miscellaneous Ornamental Metal Work
 3. Hardware
 4. Painting

1.3 QUALITY ASSURANCE

- A. All fabricated items

Fabricator shall have a minimum of three (3) years successful experience in the fabrication of items of type specified.

- B. Shop assemble items wherever possible.

- C. The installer shall have a minimum of three (3) years successful experience installing work of the type specified.

Installer shall be acceptable to the fabricator.

- D. Engineer Qualifications: Professional engineer licensed to practice in New York City and experienced in providing engineering services of the kind indicated that have resulted in the successful installation of metal items similar in material, design, and extent to that indicated for this project.



- E. Zinc metallizer: The company or individual responsible for application of zinc metallizing shall be certified as qualified to perform this process by one of the following:
 - 1. Certification in accordance with Mil Std 2138 or Mil Std 1687 by a branch of the U.S. Dept. of Defense, or by a company that is certified by the Dept. of Defense in accordance with either one of these military standards.
 - 2. Thermal Spray Certification by the Society for Protective Coatings (SSPC).

1.4 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 Welding Society (AWS).
- D. National Association of Architectural Metal Manufacturers (NAAMM).
- E. Federal Specifications (FS).
- F. The Society for Protective Coatings (SSPC, formerly Steel Structures Painting Council).

1.5 SUBMITTALS

- A. Product Data: Manufacturer's technical data for products and processes used, including finishes and anchorage materials.
- B. Shop Drawings
 - 1. Show all locations, markings, quantities, materials, sizes and shapes.

Show full size details of fabrication and installation for each ornamental metal item required including plans, elevations, profiles of fittings, connections, anchors, details of components and attachments to other units of Work.



- a. Indicate materials, profiles of each ornamental metalwork member and fitting, joinery, finishes, fasteners, anchorages and accessory items.
 - b. Include setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed as unit of Work of other Sections.
2. Do not fabricate before approval of Shop Drawings.
- C. Calculations
- Where metal items are required to comply with certain design loadings, submit structural design, structural calculations, materials properties, and other information needed for structural analysis, signed and sealed by the New York State licensed Professional Engineer responsible for their preparation.
- D. Samples
1. Submit sample of each item of hardware provided in this Section.
 2. Upon request of the Commissioner, submit one sample of each item included in this Section, for approval.
 3. Samples for verification: Prepare samples of each type of metal finish required on metal of same thickness and alloy indicated for final work. Where finish involves normal color and texture variations, include sample sets composed of two (2) or more units showing limits of such variations expected in completed work.
 - a. Include 6 inch long samples of linear shapes
 - b. Include 6 inch square samples of plates.
 - c. Include full-size samples of castings and forgings.
- E. Qualification data for firms and persons specified in Article titled "Quality Assurance" to demonstrate their capabilities and experience.
1. Provide proof of Zinc Metallizer's qualifications specified under "Quality Assurance"; certification of qualifications meeting Military Standard by one of the following:
 - a. A branch of the U.S. Dept. of Defense(DoD),or



- b. A company certified by U.S. Dept. of Defense; submit DoD certification for this company, or
 - c. The Society for Protective Coatings (SSPC).
- F. Test Reports

Submit test reports for zinc metallizing and coating system as specified herein, paragraph titled "Galvanizing by the Zinc Metallizing Process".

1.6 PRODUCT HANDLING

- A. Tag all items to agree with shop drawing designations.
- B. Brace and support large components to prevent deformation in transit, and store in dry area.
- C. Before shipment to the job, all finished metal shall be adequately protected for transporting and erecting periods.
- D. Store aluminum, bronze, and stainless steel components and materials in clean, dry location, away from uncured concrete and masonry. Cover with waterproof paper, tarpaulin or polyethylene sheeting in a manner that permits air circulation within covering.
- E. Replace damaged items, with the approval of the Commissioner, and at no additional cost to the City of New York.

1.7 JOB CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of ornamental metalwork. Do not delay job progress; allow for adjustments and fitting where taking of field measurements before fabrication might delay Work.
- B. Determine location of supporting construction provided by other trades.
- C. Interface With Other Systems: Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchors, including concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, which will be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.
- D. Coordinate with other trades in scheduling delivery and installation.



1.8 SYSTEM PERFORMANCE REQUIREMENTS

- A. Definitions in ASTM E985 for railing-related terms apply to this Section.
- B. Structural Performance: engineer, fabricate, and install the following ornamental metal items to withstand not less than the following structural loads without exceeding the allowable design working stress of the materials involved, including anchors and connections. Apply each load to produce the maximum stress in each respective component of each item. In cases where local requirements are more stringent they shall apply. Where railings support fixtures or other imposed loads, allowance shall be made for the additional loads.
 - 1. Handrails
 - a. Uniform load of 50 lb/ft applied in any direction.
 - b. Concentrated load of 200 lb applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Top Rail of Guardrail Systems
 - a. Uniform load of 50 lb/ft applied horizontally and concurrently with 100 lb/ft applied vertically.
 - b. Concentrated load of 200 lb applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 3. Infill of Rail Systems: panels, balusters, intermediate railings, and other elements composing the infill area.
 - a. Concentrated load of 100 lb applied horizontally on an area of 1 sq. ft. at any point in the system.
 - b. Uniform load of 25 lb/sq ft applied horizontally.
 - c. Uniform load on intermediate rail of 40 lb/ft applied horizontally and concurrently with 50 lb/ft applied vertically.
 - d. Infill loads and other loads need not be assumed to act concurrently.



PART 2 – PRODUCTS

2.1 MATERIALS

A. Metals

1. Steel and Iron: Provide steel and iron in the form indicated, complying with the following requirements:
 - a. Tubing: Cold-formed, ASTM A500; or hot-rolled, ASTM A501
 - b. Steel Plates, Shapes and Bars: ASTM A36
 - c. Gray Iron Castings: ASTM A48, Class 30
 - d. Malleable Iron Castings: ASTM A47, grade as recommended by fabricator for type of use indicated
 - e. Steel rods: ASTM A108
2. Stainless Steel: Provide austenitic stainless steel in form indicated, complying with the following requirements.
 - a. Plate, Sheet and Strip: ASTM A167, Type 302/304
 - b. Tubing: ASTM A554, Grades MT 301, MT 302, or MT 304, as standard with manufacturer.
 - c. Pipe: ASTM A312, Grade TP 304
 - d. Bars and Shapes: ASTM A276
 - e. Castings: ASTM A743, Grade CF 8 or CF 20
3. Aluminum: Provide alloy and temper recommended by aluminum producers or finisher for type of use and finish indicated, and with not less than the strength and durability properties of the alloy and temper designated below for each aluminum form required.
 - a. Extruded Bar and Shapes: ASTM B221, 6063-T6
 - b. Extruded Pipe and Tube: ASTM B429, 6063-T6
 - c. Drawn Seamless Tube: ASTM B483, 6063-T832



- d. Plate and Sheet: ASTM B209, 6061-T6 [3003-H16]. [Use alloy 5005-H16 for anodic coatings.]
 - e. Castings: ASTM B26 or ASTM B108
4. Bronze: Provide copper alloy of type and form indicated to comply with the following requirements:
- a. Extruded Shapes: ASTM B455, alloy C38500 (architectural bronze)
 - b. Plates and Bars: alloy C28000 (Muntz metal) composed of 58 to 61 percent copper, maximum 0.35 percent lead, maximum 0.25 percent tin, maximum 0.15 percent iron; 0.10 percent maximum other elements; and remainder: zinc.
 - c. Seamless Pipe: ASTM B43, alloy C23000 (red brass, 84-86 percent copper)
 - d. Seamless Tube: ASTM B135, alloy C23000 (red brass, 85 percent copper), or C28000 as required for color.
 - e. Sand Castings: ASTM B62 and ASTM B584, alloy C83600 (lead red brass)
 - f. Forgings: ASTM B124 or ASTM B283, alloy 377
- B. Paint
- 1. Shop Primer, interior Work: Tnemec Co. No. 10-99 Tnemec primer, Carboline Carbocoat 115-SG or Benjamin Moore Ironclad Retardo Rust Inhibitive Paint No. 163, or approved equal.
 - 2. Shop Primer, exterior Work except galvanized items: primer for epoxy coat system as specified in Section 099123-Interior Painting.
 - 3. Finish Paint – Refer to Section 099123.
- C. Galvanizing by the Hot-dip Method
- Items indicated to be painted shall not be hot—dip galvanized.
- 1. Galvanize structural shapes in accordance with ASTM 123.
 - 2. Galvanize hardware in accordance with ASTM A153.



- 3. Galvanizing repair paint for regalvanizing welds and damaged areas shall conform to ASTM A780 and comply with Military Specification MIL-P-21035, such as ZRC Cold Galvanizing Compound.

D. Galvanizing by the Zinc Metallizing Process; and Finish Coating

- 1. Zinc/aluminum metallizing (referred to herein as zinc metallizing) is the process of thermally applying an 85/15 zinc-aluminum wire over the surface of steel. Zinc metallizing and finish coating system shall have the following performance characteristics and results of tests performed on representative samples (hot dip galvanizing is not acceptable):

- a. Adhesion: Test zinc metallizing with complete finish coating (epoxy coating system or powder coating system) in accordance with ASTM D4541, Test Method E. Pull-off strength throughout the system shall be not less than 750 psi before and after environmental cycling.

Environmental cycling shall be 10 cycles of the following: 4 hrs at 100% humidity per ASTM D1735; 16 hours below 0°F; and 4 hours at 140°F.

- b. Corrosion resistance of zinc metallizing with epoxy coat system or powder coating: A rating of 10 after 1000 hours salt fog (prohesion method) when tested in accordance with ASTM D1654, Procedure A. Scribe shall be cut through all coatings to bare steel substrate. Expose specimens in accordance with ASTM G85.

- c. Powder coating complying with the following ASTM standards:

Flexibility conical mandrel	D522
Pencil hardness test	D3363(H-2H)
Impact resistance test	D2794
Overbake resistance test	D2454
Abrasion resistance test	D4060 (Mod)
Humidity resistance test	D2247
Weatherability test	D822

- 2. Galvanizing repair paint for regalvanizing welds and damaged areas shall conform to ASTM A780 and comply with Military Specification MIL-P-21035, such as ZRC Cold Galvanizing Compound.



E. Miscellaneous Materials

1. **Welding Electrodes and Filler Metal:** Provide type and alloy of filler metal and electrodes as recommended by producer of metal to be welded, complying with applicable AWS specifications, and as required for color match, strength, and compatibility in fabricated items.
2. **Fasteners:** Use fasteners of same basic metal as the fastened metal, unless otherwise indicated. Do not use metals which are corrosive or incompatible with materials joined.
 - a. Provide concealed fasteners for interconnection of ornamental metal components and for their attachment to other work except where exposed fasteners are unavoidable or are the standard fastening method for ornamental metal system indicated.
 - b. Provide Phillips truss or pan-head machine screws for exposed fasteners, unless otherwise indicated.
 - c. Provide vandal resistant fasteners where indicated on the drawings.
3. **Anchors and Inserts:** Provide anchors of type, size, and material required for type of loading and installation condition shown, as recommended by manufacturer, unless otherwise indicated. Anchors installed in concrete shall have current ICC-ES listing for performance in cracked concrete as per Section BC 1913 of the 2008 NYC Building Code. For those anchors exposed to the elements, provide galvanized, stainless steel, or brass depending on the material being anchored.
4. **Grout and Anchoring Cement**
 - a. **Nonshrink Metallic Grout:** Premixed, factory-packaged, ferrous aggregate grout complying with Federal Specification CE CRD-C 621 specifically recommended by manufacturer for heavy-duty loading applications of type specified in this section.
 - b. **Nonshrink Nonmetallic Grout:** Premixed, factory-packaged, nonstaining, noncorrosive, non-gaseous grout complying with Federal Specification CE CRD-C 621. Provide grout specifically recommended by manufacturer for interior and exterior applications of type specified in this section.
 - c. **Erosion-Resistant Anchoring Cement:** Factory-prepackaged, nonshrink, nonstaining, hydraulic controlled expansion cement formulation for mixing with water at project site to create pourable anchoring, patching, and grouting compound. Provide formulation



that is resistant to erosion from water exposure without need for protection by a sealer or waterproof coating and is recommended for exterior use by manufacturer.

- d. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Nonshrink Metallic Grouts:
 - a. "Hi Mod Grout", Euclid Chemical Co.
 - b. "Embeco 885 and 636", Master Builders
 - c. "Ferrolith G Red-Mix and G-NC", Sonneborn Building Products Div., Rexnord Chemical
 - d. Or approved equal
 - 2) Nonshrink Nonmetallic Grouts:
 - a. "Euco N-S Grout", Euclid Chemical Co.
 - b. "Crystex", L & M Construction Chemicals, Inc.
 - c. "Masterflow 713", Master Builders
 - d. "SonogROUT", Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
 - e. "Five Star Grout", U.S. Grout Corp.
 - f. Or approved equal

2.2 METAL FINISHES

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations and designations of finishes, except as otherwise indicated.
- B. Stainless Steel Finishes:
 - 1. Polished and Buffed Finish: Fine grit followed by buffing.
 - 2. AISI No. 4 Finish: (App. 80 Grit directional satin finish)
 - 3. AISI No. 6 Finish: (App. 120 Grit directional satin finish)
 - 4. AISI No. 8 Finish: (Mirror-like, reflective, non-directional polish)
- C. Aluminum Finishes:
 - 1. Class 1 Clear Anodized Finish: AA-M32C22A41 (medium satin directional textured mechanical finish; chemical etch, medium matte; 0.7 mil min. thick clear anodic coating) complying with AAMA 607.1.



2. Class 1 Color Anodized Finish: AA-M12C22A42/44 (mechanical finish, nonspecular as fabricated; chemical etch, medium matte; 0.7 mil min. thick electrolytically deposited or integrally colored anodic coating) complying with AAMA 606.1 or AAMA 608.1. Color as selected by the Commissioner.

D. Bronze Finishes:

1. Natural Hand-Rubbed Finish: M31-M34 (fine satin directional texture mechanical finish followed by hand-rubbed directional textured mechanical finish).
2. Statuary Finish: M32-C55 (medium satin directional textured mechanical finish, sulfide conversion coating for chemical finish). Color as selected by the Commissioner.

E. Painted Finishes:

Refer to Articles 2.4 and Section 099123 for interior painting and Article 2.5 for galvanizing.

2.3 FABRICATION

A. General

1. Fabricate ornamental metal to design, dimensions and details shown. Provide ornamental metal members in sizes and profiles shown, and not less than required to comply with requirements indicated for structural performance.
 - a. Fabricate surfaces exposed to view from materials that are smooth and free of surface blemishes.
 - b. Do not use materials which have strains, imperfections and discolorations, including welds at metal surfaces.
 - c. Fabricate and assemble items with directional finishes so that finish is uniform and in the same direction, unless otherwise indicated.
2. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature, in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and night time sky heat loss.



- a. Temperature Change (Range): 100°F (55.5°C).
3. Form exposed work true to line and level, with flush surfaces and accurate angles. Ease exposed edges to radius of approximately 1/32 inch, unless otherwise indicated. Miter exposed corner joints unless otherwise indicated, and machine fit to hairline joint.
4. Complete cutting, fitting, forming and drilling, including grinding of metal work, prior to cleaning, finishing, surface treatment and application of finishes.
5. Provide reinforcement and anchorage required to fulfill performance requirements. Provide brackets and miscellaneous components required for complete installation. Provide reinforcement sufficient to withstand the anticipated loading and stresses at anchorage and fastener locations, and hardware connections.
6. Provide brackets, plates and straps with each assembly, as required for proper support and anchorage to other work.
7. Cut, reinforce, drill and tap ornamental metal work to receive hardware and similar items.
8. Nonwelded Connections: Fabricate ornamental metal for interconnection of members by means of concealed mechanical fasteners and fittings unless otherwise indicated. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
9. Conceal fastenings unless otherwise shown and accepted on final shop drawings.
10. Welded Connections: Use welding method which is appropriate for metal and finish indicated and which develops strength required. Finish exposed welds and surfaces smooth, flush, and blended to match adjoining surfaces.
11. Weld corners and seams continuously and in accordance with recommendations of AWS and CDA. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
12. Form changes in direction of ornamental metal members by radius bends, or by mitering.
13. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required;



maintain profile of member throughout entire bend without buckling, twisting, or otherwise deforming exposed surfaces of ornamental metal components.

14. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
15. Shop Applied Finishes: Apply shop finishes to match accepted control samples, with direction of grain as indicated on accepted shop drawings, for uniform appearance unless otherwise shown or directed by the Commissioner.
16. Separate dissimilar metals with separator material or coating recommended by fabricator to prevent corrosion and galvanic action. Do not extend coating onto exposed surfaces.
17. Provide factory applied protective covering as required to protect assemblies from damage during shipping and installation.

B. Trap Pit Doors

Provide trap pit doors and frames flush with the finish floors pavement, grade or as otherwise indicated on Drawings. Doors for interior pits: 1/4" checkered steel plate set in angle frames having mitered and welded corners and angle seat for covers, provided with bronze lifting handles. Provide all doors with locking devices. Provide finish paint.

C. Access Doors to Pipe Trenches

1. Provide checkered or flat steel plate access doors to pipe trenches below cellar floors where indicated on the Drawings. Include angle iron frame, anchors, hardware and any other items needed for a complete installation. Install the steel plate access door flush with the adjoining floors. Hinges: approved bronze flush type. Provide bronze lift handle and approved locking device for each access door.
2. Cover doors with resilient tile where required to match adjacent floor covering. Where cement floors occur top of steel cover shall be flush, but depressed for other finish as required by the thickness of floor finish.
3. All doors under this Section unless otherwise indicated or specified, shall be secured in place with bronze square shank locking device and brass deck plate with slot and socket holes, all as indicated on the Drawings.



Furnish six (6) cast iron keys for square shank and six (6) tempered steel wrenches for brass deck plates for each different size of locking device.

4. Provide shop coat and finish paint.

D. Subway Type Gratings

1. Provide complete with banding bars, over areaways and in Outside Air Intakes where indicated, steel subway gratings Type C, pressure-locked, as manufactured by Borden Gratings, Beeton, Ontario, Canada, or equivalent by Harsco IKG, Channelview, TX. 11/16" x 4" grid, or approved equal. Bearing bars 2½" x 3/16" spaced 11/16" on center. For locations, see Drawings.
2. Provide angle frames and shelf angle supports.
3. Portions of area windows projecting above area gratings shall be provided with subway type window guards where indicated on Drawings.
4. Provide galvanized finish.

T. Hardware

1. The keys to all locks furnished under this Section shall be provided with brass tags attached to the key with a strong metal ring or link. The tags shall have stamped upon them the letters "D. of E." and the name or number of the Room, Closet, or other use, for which the keys are intended.
2. All Type C padlocks mentioned in this Section shall be furnished as specified under Section 08 71 00-Finish Hardware. Rivet padlock chains referred to in this Section in place.

2.4 PAINTING

- A. All miscellaneous ferrous metal work, except those members designated to be hot dip galvanized, before leaving the shop shall be given one shop coat of paint, and coatings as specified herein. For those items to be zinc metallized, apply first paint coat in the shop, and where practical, provide finish paint in the shop also.
- B. Cleaning and Surface Preparation
 1. Clean all steel first in accordance with SSPC-SP1.



2. Clean steelwork not to be painted (except steel work to be galvanized) in accordance with SSPC-SP2.
3. Clean steelwork to be painted within the same day as it will be applied and in accordance with the following methods, determined by location and exposure:
 - a. Interior steel not exposed to view: SSPC-SP2.
 - b. Interior steel exposed to view: SSPC-SP3.
 - c. Cavity wall and exterior steel exposed to weather: SSPC-SP6.

C. Shop Coat

1. Apply steel primer paint (general application) at a rate to provide dry film thickness of 2.0 to 3.5 mils. Apply primer paint (cavity wall and exterior application) at a rate to provide dry film thickness of 4.0 to 6.0 mils. Provide full coverage of joints, corners, edges, and exposed surfaces.
2. Apply to dry surfaces only, when surface temperatures are above dew-point, by brush, spray, or roller, thoroughly and evenly, in strict accord with manufacturer's instructions for every detail of handling.
3. Apply second coat of the approved primer, in a darker shade, to surfaces inaccessible to painting after assembly or erection.
4. Protect machined surfaces with an approved rust-inhibiting coating that is readily removable prior to erection.

D. Finish Paint

Provide as per Section 099123.

2.5 GALVANIZING AND FINISH COATING

A. General

Galvanize the following items:

All miscellaneous ferrous metal Work (except cast iron) exposed to the weather, or located in exterior wall or roof construction, and any other steel members indicated as galvanized on the Drawings or Specifications.

1. Items that are to be finish painted shall be galvanized by the zinc

Ornamental Metal
05 70 00 - 15



metallizing process.

- B. Cleaning and Surface Preparation
1. Hardware (bolts, nuts, etc.): Clean and leave free of mill scale before galvanizing.
 2. Clean all steel first in accordance with SSPC-SP1 if needed.
 3. Steel members: Clean in accordance with SSPC-SP8 before hot-dip galvanizing.
 4. Steel members: Clean in accordance with SSPC-SP10 before zinc metallizing. Surface shall have a 3.0 to 4.0 mil anchor pattern. Moisture cannot be present on steel and temperature cannot be less than 5°F above the dew point. Thermal spray must be applied within 4 hours of blasting.
- C. Shop Coat - Hot-dip Galvanizing – Provide for galvanized items not indicated to receive finish paint coat.
1. Galvanize hardware in accordance with ASTM A153.
 2. Galvanize steel shapes in accordance with ASTM A123. Apply zinc coating as per Thickness Grade specified in ASTM A123.
- D. Shop Coat – Galvanizing by the Zinc Metallizing Process – Provide for all galvanized items indicated to receive finish paint, which includes all galvanized items exposed to public view and other items shown on Drawings or specified herein. Finish paint shall be the epoxy coat system or the powder coat system; producing a smooth, uniform surface, free of bubbles, runs, or sags.
1. Thermally spray metallizing material at a rate of 4.0 to 6.0 mils DFT. Sprayed coating shall be free of lumps, blisters, and loosely adhering particles. Coating shall be capable of passing the inspection requirements of Mil Std 2138A(SH) of 5/13/92, but with adhesion 750 psi minimum per ASTM D4541, Test Method E.
 2. Epoxy Coating System, as specified in Section 099123-interior painting: After the metallizing material has cured, apply a first coat of paint at a rate of 4.0 to 6.0 mils DFT, Polyamide Epoxy Paint. Top coat shall be Acrylic Aliphatic Polyurethane applied at a rate of 2.0 to 3.0 Mils DFT.
 3. Powder Coating System: After the metallizing material has cured, properly prepare the item and apply Tiger Drylac Series 38 Super Durable Powder Coating; or PPG Industries Corafon Ultradurable



Powder Coating; or Sherwin-Williams Powdura Super Durable Powder Coatings Series system, or approved equal.

- a. Oven bake item for 20 minutes at 450°F, and remove all oil and grease. Cool surface to 72°F, clean with an organic solvent. Apply paint within 3 hours of final cleaning.
- b. Apply an out-gas-forgiving primer at the rate of 2-3 mils DFT. Oven cure material at 400°F for 10 minutes.
- c. In order to avoid oxidation, final topcoat must be applied within 12 hours.
- d. Apply a lead-free TGIC polyester powder topcoat finish at a rate of 4.0 to 5.0 mils DFT.
- e. Oven cure at 400°F to 450°F, for 30 minutes, or as recommended by coating manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Make all required measurements in the field to ensure proper and adequate fit.

3.2 DISCREPANCIES

- A. Immediately notify Commissioner.
- B. Do not proceed until fully corrected.

3.3 FURNISHED IN THIS SECTION, INSTALLED IN OTHERS

- A. For items furnished under this Section and installed under other Sections, submit items to installer at such time that will not impede the progress of the installer's other Work.

3.4 ERECTION OR INSTALLATION

- A. Provide anchorage devices and fasteners where necessary for securing ornamental metal items to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.



1. Provide inserts, setting plates, and other items of concealed work required for attachment of ornamental metal work, in a timely manner to facilitate on going construction.
- B. Perform cutting, drilling, and fitting required for installation of ornamental metal work. Set work accurately in location, alignment, and elevation, plumb, level, true, and free of rack, measured from established lines and levels. Do not weld, cut, or abrade surfaces of ornamental metal components that have been coated or finished after fabrication and are intended for field connection by mechanical means without further cutting or fitting.
- C. Fit exposed connections accurately together to form tight, hairline or, where indicated, with uniform reveals and spaces for sealants and joint fillers. Where cutting, welding and grinding are required for proper shop fitting and jointing of ornamental metal items, restore finishes to eliminate any evidence of such corrective work.
- D. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing or provide new units as required.
- E. Install concealed gaskets, joint fillers, insulation and flashings as the work progresses, so as to make work weathertight, soundproof or lightproof as required.
- F. Restore protective coverings that have been damaged during shipment or installation of the work. Remove protective coverings only when there is no possibility of damage from other work yet to be performed at the same location.
 1. Retain protective coverings intact and remove simultaneously from similarly finished items to preclude non-uniform oxidation and discoloration.
- G. Field Welding: Comply with applicable AWS specification for procedures of manual shielded metal-arc welding, for appearance and quality of welds made, and for methods used in correcting welding work. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed welded joints smooth and restore finish to match finish of adjacent surfaces.
- H. Corrosion Protection: Coat concealed surfaces of aluminum and steel which will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- I. Adjust ornamental metal work prior to anchoring to ensure matching alignment at abutting joints.



- J. Install items as detailed in the drawings; for manufactured items, install as recommended by the Manufacturer, unless indicated otherwise.
- K. Coordinate with other trades involved.
- L. Field Touch-Up
 - 1. Painted Members: After erection, clean all damaged areas in shop coat, exposed surfaces of bolts, bolt heads, nuts and washers, abrasions, and all field welds and unpainted areas adjacent to field welds to the same standards as the shop coat and paint with primer paint to same thickness as the shop coat. Finish painting is specified in Section 099123.
 - 2. Galvanized Members: After erection, clean and paint all damaged areas to the galvanizing, welds, and areas adjacent to welds with the galvanizing repair paint complying to ASTM A780. For galvanized members to be painted, finish painting is specified in Section 099123 and shall be the final two coats of the epoxy paint system. If applied in shop, touch up shall be the final two coats. For powder coating system follow instructions of the powder coat manufacturer, to match surrounding undamaged areas.

3.5 PROTECTION

- A. Protect finishes of ornamental metal work from damage during construction period by use of temporary protective coverings approved by ornamental metal manufacturer. Remove protective covering at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so that no evidence remains of correction work. Return items which cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION



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SECTION 07 13 26

SELF-ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Section Includes:
1. Modified bituminous sheet waterproofing.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and restoration.

1.4 SUBMITTALS

- A. Product Data: For each type of product.
1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
- B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.
- C. Samples: For each exposed product and for each color and texture specified, including the following products:
1. 8-by-8-inch square of waterproofing sheet.
- D. Qualification Data: For Installer.



- E. Field quality-control reports.
- F. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are instructed by waterproofing manufacturer.
- B. Mockups: Build mockups to verify selections made under Sample submittals and to set quality standards for installation.
 - 1. Build for each typical waterproofing installation.
 - a. Description: Each type of applied flashing to restored steel framing installation.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Commissioner specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
 - 1. Do not apply waterproofing in snow, rain, fog, or mist.

1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard materials-only warranty in which manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.



PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Source Limitations for Waterproofing System: Obtain waterproofing materials from single source from single manufacturer.

2.2 MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Modified Bituminous Sheet: Minimum 60-mil nominal thickness, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated on one side to a 4-mil-thick, polyethylene-film reinforcement, and with release liner on adhesive side.

1. Provide the following sheet waterproofing material:

- a. Ice and Water Shield by:

Grace
7500 Grace Drive
Columbia, MD 21044
410-531-4000

- b. Deck Guard by:

Polyguard Products
P.O. Box 755
Ennis, TX 75120
214-515-5000

- c. CCW-707 by:

Carlisle Coatings & Waterproofing
900 Hensley Lane
Wylie, TX 75098
800-527-7092

- d. Or Approved Equal.

2. Physical Properties:

- a. Tensile Strength, Membrane: 250 psi minimum; ASTM D 412, Die C, modified.

- b. Ultimate Elongation: 300 percent minimum; ASTM D 412, Die C, modified.

- c. Low-Temperature Flexibility: Pass at minus 20 deg F; ASTM D 1970.

- d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch movement; ASTM C 836.

Self-Adhering Sheet Waterproofing



- e. Puncture Resistance: 40 lbf minimum; ASTM E 154.
 - f. Water Absorption: 0.2 percent weight-gain maximum after 48-hour immersion at 70 deg F; ASTM D 570.
 - g. Water Vapor Permeance: 0.05 perms maximum; ASTM E 96/E 96M, Water Method.
 - h. Hydrostatic-Head Resistance: 200 feet minimum; ASTM D 5385.
3. Sheet Strips: Self-adhering, rubberized-asphalt strips of same material and thickness as sheet waterproofing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the waterproofing.
 - 1. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

3.3 MODIFIED BITUMINOUS SHEET-WATERPROOFING APPLICATION

- A. Install modified bituminous sheets according to waterproofing manufacturer's written instructions and recommendations in ASTM D 6135.
- B. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch-minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure watertight installation.
 - 1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.



3.4 PROTECTION, RESTORE, AND CLEANING

- A. Protect waterproofing from damage and wear during remainder of construction period.
- B. Protect installed waterproofing from damage due to UV light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- C. Correct deficiencies in or remove waterproofing that does not comply with requirements; restore substrates, reapply waterproofing, and restore sheet flashings.
- D. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION



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12/22/2017

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SECTION 07 21 00

INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes the following:
1. Rigid Insulation at inoperable louvers
 2. Batt Insulation at fire-rated partitions

1.3 PERFORMANCE REQUIREMENTS

- A. Plenum Rating: Provide glass-fiber insulation where indicated in ceiling plenums whose test performance is rated as follows for use in plenums as determined by testing identical products per "Erosion Test" and "Mold Growth and Humidity Test" described in UL 181, or on comparable tests from another standard acceptable to NYC Department of Buildings.
1. Erosion Test Results: Insulation shows no visible evidence of cracking, flaking, peeling, or delamination of interior surface of duct assembly, after testing for 4 hours at 2500-fpm air velocity.
 2. Mold Growth and Humidity Test Results: Insulation shows no evidence of mold growth, delamination, or other deterioration due to the effects of high humidity, after inoculation with *Chaetomium globosum* on all surfaces and storing for 60 days at 100 percent relative humidity in the dark.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: Full-size units for each type of exposed insulation indicated.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for insulation products.
- D. Research/Evaluation Reports: For foam-plastic insulation.



1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to NYC Department of Buildings. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Surface-Burning Characteristics: ASTM E 84.
 - 2. Fire-Resistance Ratings: ASTM E 119.
 - 3. Combustion Characteristics: ASTM E 136.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect plastic insulation as follows:
 - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
 - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 Extruded-Polystyrene Board Insulation

- A. Extruded-Polystyrene Board Insulation at Inoperable Louvers: ASTM C578 Type X, 1.3 pcf density, minimum thickness of 5":
 - 1. Foamular 150 Rigid Foam Insulation, by Owens Corning Insulating Systems, LLC, Toledo, OH 43659.
 - 2. Styrofoam Brand Cavitymate™ SC Insulation, by The Dow Chemical Company, 200 Larkin, Midland, MI 48674.



3. CertiFoam 15 Rigid Insulation, by DiversiFoam Products, 9091 County Road 50, Rockford, MN 55373.
4. Or Approved Equal.

2.2 GLASS-FIBER BLANKET INSULATION

A. Manufacturers:

1. CertainTeed Corporation.
2. Johns Manville.
3. Owens Corning.
4. Or Approved Equal.

B. Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft, foil-scrim, or foil-scrim-polyethylene vapor-retarder membrane on 1 face.

C. Where glass-fiber blanket insulation is indicated by the following thicknesses, provide blankets in batt or roll form with thermal resistances indicated:

1. 3-1/2 inches thick with a thermal resistance of 13 deg F x h x sq. ft./Btu at 75 deg F.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.



- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

3.5 INSTALLATION OF VAPOR RETARDERS

- A. General: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
- B. Seal vertical joints in vapor retarders over framing by lapping not less than two wall studs. Fasten vapor retarders to wood framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16 inches o.c.
- C. Patch tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarder.

3.6 PROTECTION

- A. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION



SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the work of sheet metal flashing and trim as shown on the Drawings, specified herein, and as required by conditions and NYC Department of Buildings, including, but not limited to, the following:
1. Lead Coated Copper sheet flashings and accessories.
 2. 20 oz. Flat Seam Sheet Copper flashing pan.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.
1. Provisions for Expansion and Contraction: Provide sheet metal flashing and trim that will accommodate without damage or deterioration expansion and contraction caused by air temperature changes over a range of 120 degrees Fahrenheit and metal temperature changes over a range of 180 degrees Fahrenheit.

1.4 QUALITY ASSURANCE

- A. Standards: Work of this Section shall comply with requirements and recommendations of the following standards, with requirements of this Section, and with requirements of sheet metal products manufacturers. In case of conflict, the most stringent and restrictive requirement shall govern.
1. Revere Copper Products, Inc., *Copper & Common Sense*.
 2. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA), *Architectural Sheet Metal Manual*.



3. Copper Development Association (CDA), *Copper in Architecture -Handbook*
- B. Source of Materials: Obtain each type of material required for work of this Section from a single source to ensure a match in quality, performance, and appearance.

1.5 SUBMITTALS

- A. General: Submit each item in this Article in compliance with the Conditions of the Contract and General Conditions. Revise and resubmit each item as required to obtain Commissioner's approval.
- B. Qualification Data: Qualification data for firm specified in "Quality Assurance" Article that demonstrates that firm has capabilities and experience complying with requirements specified. For firm, provide a list of at least three completed projects similar in size and scope to work required on this project. For each project list project name, address, architect, scope of contractor's work, and other relevant information.
- C. Product Literature: Manufacturer's published technical data for each product to be used in work of this Section including recommendations for application and use. Include test reports and certificates verifying that product complies with specified requirements. Include Material Safety Data Sheets (MSDS) for each chemical product proposed for use in work of this Section.
- D. Shop Drawings: Drawings of each item of work at appropriate scale sufficient to completely describe the work. Drawings shall include, but shall not be limited to:
 1. Plans and Elevations: Show extent of work and locations of leaders, expansion joints, and other relevant information.
 2. Sections: Show profiles, attachments, and interfaces with adjacent elements.
 3. Details: Each condition of jointing, anchoring, and connecting with adjacent elements and materials.
- E. Samples
 1. Lead Coated and Sheet Copper: Each weight to be used, 12 in. x 12 in. pieces.
 2. Cleats: Each type and configuration to be used in each type of metal where cleats are required.
 3. Separation Membrane: 12 in. x 12 in. pieces.
 4. Rosin-Sized Paper: 12 in. x 12 in. pieces.
 5. Anchors, Fasteners, and Accessories: Each type and configuration in each material to be used in work.



6. Seams in Sheet Metal: 12-in. length of each type of seam in each type of sheet metal in which seam is to be used.
 7. Soldered Seams in Sheet Metal: 12-in. length of each configuration in each type of sheet metal.
 8. Intersections of Seams: Section of each condition of intersecting seams including 8-in. length of each seam meeting at intersection in each type of metal.
 9. Expansion Joints and Expansion Provisions: Each type and configuration, minimum 12-in. long.
- F. Mockups: Provide mockups as required in Article "Mockups," below.

1.6 MOCKUPS

- A. General: Before beginning general sheet metal flashing and trim, prepare mockups to provide standards for work of this Section. Do not proceed with sheet metal flashing and trim until Commissioner has approved mock-ups.
1. Locate mockups as directed by Commissioner.
 2. Notify Commissioner 48 hours prior to start of each mockup.
 3. Commissioner will monitor mockups.
 4. Perform mockups using crew that will be executing the work and following requirements of this Section to demonstrate full range of aesthetic effects and workmanship.
 5. Repeat mockups as necessary to obtain Commissioner's approval.
 6. Protect approved mockups to ensure that they are without damage, deterioration, or alteration at time of Substantial Completion.
 7. Approved mockups in undamaged condition at time of Substantial Completion may be incorporated into the Work.
 8. Approved mockups will represent minimum acceptable standards for sheet metal flashing and trim. Subsequent sheet metal flashing and trim work that does not meet standards of approved mockups will be rejected.
- B. Prepare the Following Mockups:
1. Lead Coated Copper flashing: 4'-0" length minimum, each flashing condition.



1.7 DELIVERY, STORAGE, AND HANDLING

- A. General: Deliver, store, and handle all materials to protect them from damage, moisture, dirt, and introduction of foreign matter. Store materials on raised platforms and under ventilated, waterproof cover. Store packaged materials in manufacturer's unopened containers, marked with manufacturer's name and product brand name. Immediately reseal containers after partial use. Remove and replace damaged materials.

1.8 PROJECT CONDITIONS

- A. Safety: Protect all persons, whether involved with work of this Section or not, from any harm resulting from work of this Section.
- B. Protection of Building: Protect building elements and finishes from damage or deterioration caused by work of this Section. Restore any damage to materials or finishes to satisfaction of Commissioner at no additional cost to the City of New York.
1. Cover areas from which roofing has been removed and areas into which water might penetrate at all periods during which work is suspended to ensure materials or finishes are not damaged by water penetration.
 2. Take all necessary precautions to prevent fire and spread of fire.
 - a. At all times when there are open flames or when soldering irons or other heat-generating tools or equipment are in use and for four hours thereafter, provide a worker with an approved fire extinguisher dedicated to preventing fire or spread of fire.
- C. Contract Drawings: The Drawings are two-dimensional representations of three-dimensional objects and do not show all surfaces. Perform work on all surfaces of projections, reveals, parapets, and other elements associated with areas on which work is indicated.
1. Where elements interface with existing work or work that is in place, field measure dimensions of existing and in-place elements before preparing shop drawings or beginning work.
- D. Coordinate work of this Section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance, durability of work, and protection of materials and finishes.

PART 2 - PRODUCTS

2.1 SHEET METAL

- A. General: Provide materials that have been selected for surface flatness, smoothness, and freedom from surface blemishes where exposed to view in finished Work. Exposed to view

Sheet Metal Flashing and Trim



surfaces that exhibit pitting, seam marks, roller marks, rolled trade names or symbols, oil canning, stains, discoloration, or other imperfections will not be accepted.

- B. Lead Coated Copper Sheet: ASTM B 370; temper H00, cold rolled except where temper 060 is required for forming. Provide in weight indicated on Drawings but not less than 16-oz. per sq. ft.
- C. Copper Sheet: ASTM B 370, cold-rolled copper sheet, flat seam, 20 oz.
 - 1. Nonpatinated Exposed Finish: Mill.

2.2 SHEET METAL ACCESSORIES

- A. Cleats: Fabricate of metal being fastened in weight specified for metal, unless otherwise indicated. Cleats shall be at least 2-in. wide and of proper length for intended purpose (3-in. long minimum).
 - 1. Provide expansion cleats of same overall dimensions as fixed cleats formed as recommended by referenced standards and as on approved shop drawings.
- B. Solder for Copper: ASTM B 32, Grade Sn50, used with flux of muriatic acid neutralized with zinc.
- C. Fasteners: Of form and size as indicated or as required to provide secure attachment and as shown on approved shop drawings. Match finish of exposed heads with material being fastened.
 - 1. Material
 - a. Fasteners for Copper: Copper, brass, or bronze, as approved by metal manufacturer.
 - 2. Nails: Minimum No. 12 Stubs gauge (0.109 in. diameter), with large flat head. Provide nails of sufficient length to penetrate roof substrate not less than 3/4 in. Provide longer nails as indicated on Drawings.
 - 3. Rivets: 3/16-in.-diameter, minimum.
 - 4. Screws, Bolts, and Other Fasteners: Compatible with substrate, of type and form to provide secure anchorage.
- D. Anchors for Masonry Substrates: Anchors and inserts of ASTM A 165, 300 series stainless steel suitable for use intended.
 - 1. 1/8-Inch or Less in Diameter: Screws with lead expansion sleeves.



2. Greater Than 1/8-Inch in Diameter: Chemical anchors or expansion anchors, as indicated, suitable for intended use, and as shown on approved shop drawings.
- E. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.

2.3 UNDERLAYMENTS

- A. Self-Sealing Membrane: Polyethylene-sheet-backed rubberized asphalt membrane, 40 mils thick. Provide primer when recommended by underlayment manufacturer. Provide "Ice and Water Shield," by W.R. Grace & Co.; "Deck Guard," by Polyguard Products; "CCW-707," by Carlisle Coatings & Waterproofing; or approved equal.
- B. Separation Membrane: EPDM sheet membrane, ASTM D 3253, 60 mils (0.060 in.) thick. Provide EPDM sheet membrane by Carlisle Syntec Systems, Carlisle, PA; Firestone Building Products, Indianapolis, IN; GAF Materials Corporation, Wayne, NJ; or approved equal.
- C. Paper Slip Sheet: 5-lb/square red rosin-sized building paper conforming to FS UU-B-790, Type I, Style 1b.

2.4 COATINGS AND SEALANTS

- A. Asphalt Mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil dry film thickness per coat.
- B. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- C. Elastomeric Sealant for Sheet Metal Joints: Single-component, high-modulus, elastomeric silicone sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use O. See Specification 079200 "Joint Sealants" for additional information.

2.5 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Lead Wool: Caulking lead formed from fine strands of lead twisted together to make a loose, rope-like yarn, complying with Federal Specification QQ-C-40, Grade C. Provide lead wool by:
 1. Metalico, 740 Lambert Drive, NE, Atlanta, GA 30324;
 2. Mayco Industries, Inc., 18 West Oxmoor Road, Birmingham, AL 35209;
 3. MarShield, 4140 Morris Drive, Burlington, Ontario L7L 5L6, Canada;
 4. or approved equal.
- B. Cleaning Solution to Remove Flux Residue: Solution of detergent and washing soda (10 percent) in water.



1. Detergents:
 - a. "Simple Green," as manufactured by Sunshine Makers, Inc.
 - b. "Formula 409 Degreaser," as manufactured by The Clorox Company.
 - c. "Whistle All Purpose Cleander," as manufactured by JohnsonDiversey.
 - d. or approved equal.
- C. Soldering Coppers: Heavy soldering coppers of blunt design, weighing not less than 10 lbs. per pair, heated evenly, and properly tinned before using. Keep clean and tinned during use.

2.6 FABRICATION, GENERAL

- A. General: Materials shall be fabricated by an experienced fabricator and installed by experienced craftsmen. Materials, methods of fabrication, fitting, assembly, bracing, supporting, fastening, and erection shall be according to Contract Documents, approved shop drawings, referenced standards, and best industry practices, using new and clean materials as specified, having structural properties sufficient to safely sustain or withstand stresses and strains to which materials and assembled work will be subjected. All work shall be accurately and neatly fabricated, assembled, and erected.
 1. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated, unless more restrictive requirements are indicated or required by other referenced standards or manufacturer's recommendations.
- B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Form exposed sheet metal Work that is without oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.
- D. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- E. Expansion Provisions: Space movement joints as recommended by referenced standards. Do not place movement joints within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with mastic sealant (concealed within joints).



- F. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- G. Separate metal from non-compatible metal or corrosive substrates using separation membrane, by coating concealed surfaces at locations of contact with asphalt mastic, or providing other permanent separation as recommended by metal manufacturer.
- H. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- I. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, non-corrosive metal recommended by sheet metal manufacturer.
 - 1. Gage: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.7 SOLDERED JOINTS

- A. Protection: Protect areas of metal not to be soldered from damage or deterioration caused by soldering, including but not limited to contact with flux, spattered solder, and spray caused by cleaning soldering coppers.
- B. Cleaning: Clean surfaces to be soldered, removing oils, coatings, foreign matter, and all other elements that might inhibit formation of optimum solder joint.
 - 1. Protect Coatings: Do not damage coatings on coated metal sheets.
- C. Tinning: Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches, except where pre-tinned surface would show in finished Work. Where surface shows in finished work, tin metal so that no more than 1-inch width of solder will show. Clean and tin areas of metal on which cleats and other fabrications are to be soldered for a width not less than width of element to be applied plus 1/4 inch either side of element.
 - 1. Apply flux, to metal surfaces to receive solder. Use care to prevent flux from touching surfaces not to be soldered.
- D. Soldering: Solder slowly with well-heated coppers to heat sheet thoroughly and to sweat solder completely through full width and all layers of seam. Use ample solder. Seam shall show at least one full inch of evenly flowed solder. Solder shall flow parallel to joint; do not solder across joint. Wherever possible, all soldering shall be done in flat position. Solder seams on slopes steeper than 45 degrees and on vertical surfaces a second time. Flux all surfaces to be soldered. Joints that do not exhibit evidence of smooth, freely flowed solder in direction of joint will be rejected and shall be resoldered or metal shall be removed and new material shall be provided and soldered to comply with requirements of this Section.
 - 1. Do not use torches or flames of any kind for soldering.



- E. Cleaning: Completely remove flux residue from soldered surfaces using specified cleaner.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, referenced standards, and manufacturer's installation instructions. Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level and matching existing construction as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Install exposed sheet metal Work that is without oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Coating Protection: Wear shoes with rubber soles or other soles that will not damage coating on sheet metal. Keep metal clear of sand, dirt, particles of roofing slate, and other substances that might damage coating.
- D. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints as recommended by referenced standards and metal manufacturer's recommendations with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1-1/2-inch deep, filled with mastic sealant (concealed within joints).
- E. Slip Sheet: Install paper slip sheet to separate sheet metal from wood substrate and from self-sealing membrane and separation membrane to ensure that metal is able to move freely without adhering to substrate.
- F. Soldered Joints: Solder joints to provide sound, weatherproof construction. Clean surfaces to be soldered, flux and tin surfaces, and solder. Follow requirements of Article "Soldered Joints" in Part 2, above.
1. Separation Membrane: Provide separation membrane at least 12-inches wide to protect self-sealing membrane from heat of soldering. Do not damage self-sealing membrane during soldering of sheet metal above membrane.



- G. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
- H. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- I. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic, by providing separation gaskets, or by other permanent separation as recommended by manufacturer.
- J. Counterflashings: Coordinate installation of counterflashings with installation of roofing materials and base flashings. Install counterflashings in reglets. Secure in a waterproof manner by means of continuous lead wool pounded solid. Provide bond breaker tape or backer rod and sealant. Lap counterflashing joints a minimum of 2 inches and bed with sealant.

3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.

END OF SECTION



SECTION 07 81 00

SPRAYED FIRE-RESISTIVE MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Provide material, labor, equipment, services to properly install sprayed fire-resistive material (sprayed fireproofing) on steel framing members and deck assemblies at a thickness that will meet the required fire-resistance rating of the prior to 1968 NYC Building Code for Construction Classification Class 1-C.
- B. Provide cementitious type sprayed fireproofing only. The use of sprayed fiber, such as sprayed mineral wool, is not permitted.
- C. Apply manufacturer's recommended latex sealer over all regular weight fireproofing.

1.3 QUALITY ASSURANCE

A. Qualifications

1. **Manufacturer:** Company specializing in the manufacture of sprayed fire-resistive materials to be used in this Contract shall have a minimum of three years of experience.
2. **Applicator:** Company specializing in the application of sprayed fireproofing materials shall have a minimum of three years of experience and shall have worked on with similar materials. Applicator shall be properly trained by the sprayed fireproofing material manufacturer.

B. Regulatory Requirements

1. **Building Code:** Material and application shall meet the requirements for fire resistance ratings for areas to receive the sprayed fireproofing materials in accordance with the NYC Building Code.

Sprayed Fire Resistive Materials



1.4 REFERENCE STANDARDS

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:

E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

E119 Standard Methods of Fire Tests of Building Construction and Materials.

E605 Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members.

E736 Standard Test Methods for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.

E759 Standard Test Methods for the Effect of Deflection on Sprayed Fire-Resistive Materials Applied to Structural Members.

E760 Standard Test Methods for the Effect of Impact on Bonding of Sprayed Fire-Resistive Materials Applied to Structural Members.

E761 Standard Test Methods for the Compressive Strength of Sprayed Fire-Resistive Materials Applied to Structural Members.

E859 Standard Test Method for Air Erosion of Sprayed Fire-Resistive Materials Applied to Structural Members.

E937 Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Materials Applied to Structural Members.

G-21 Standard Test Method to Evaluate Resistance of Synthetic Polymer Materials to Fungi.

B. Underwriters Laboratories, Inc. (UL) Fire Resistance Directory, latest edition.

1.5 DESIGN REQUIREMENTS

A. Thickness of the sprayed fireproofing shall be such as to provide required fire rating in accordance with NYC Building Code and Drawings, but in no case less than .375".



Thicknesses shall be based on unrestrained assemblies. Ratings are shown on Drawings for members and assemblies.

- B. Fire-resistance rating shall be:
1. Beams connected to columns (members that are part structural frame) 2 hours
 2. Beams Supporting more than One Floor... 2 hours
 3. Structural Members Supporting a Fire Rated Wall or Partition..... 2 hours
 4. Floor Construction (Including Beams - those members not part of the structural frame..... 2 hours
 5. Roof Construction (Including Beams - those members not part of the structural frame..... 2 hours)
 6. Floor assembly and columns that are part of a 3-hour enclosure..... 3 hours

1.6 SUBMITTALS

A. Product Data

Submit manufacturer's product information for each type of material including application instructions and specifications.

B. Quality Control Submittals

1. Design Data

- a. For each type of material, submit thickness of material required to give the proper fire rating for each type of assembly or individual member (such as inner angle of lintel assemblages, bracing members, columns, etc.) as prepared by the manufacturer.
- b. For assemblies having limiting ratios such as W/D, submit table from the manufacturer listing the member, W/D ratio, and the thickness of material required to give the required fire rating. Ratings shall be based on unrestrained assemblies. Provide manufacturer with complete set of Drawings to enable correct determination of required thickness for all members and assemblies. Indicate areas that require bonding adhesive for the given assemblies.
- c. From list prepared by manufacturer, provide mark-up of framing plans indicating thickness and type of material for each member.

Sprayed Fire Resistive Materials



2. Certificates

- a. Furnish manufacturer's certification that materials meet or exceed specification requirements for each of the performance tests specified in Part 2.
- b. Furnish applicator's certification that material has been completed as specified to meet fire resistance ratings, thickness requirements, and application requirements.
- c. Furnish UL, BSA, MEA, or OTCR approval of material.
- d. Furnish certificate stating each material is 100% asbestos free.

3. Contractor Qualifications

Provide proof of Manufacturer and Applicator qualifications specified under "Quality Assurance".

C. Guarantee

1. Contractor and installer's installation guarantee.

D. Low Emitting Materials Compliance Submittals.

1. Provide documentation for each sealer to be used on site, indicating that the sealers comply with low V.O.C. requirements.
2. Material must have UL or NYC BSA, MEA or OTCR approval for each fire-tested assembly utilized.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, unopened packages bearing name of manufacturer, product identification, and the proper UL labels for fire hazard and fire-resistance classification.
- B. Reject damaged packages found unsuitable for use and remove from job site.
- C. Store materials off ground, under cover, and away from damp surfaces.
- D. Keep materials dry at all times. Wet material shall be discarded.
- E. Rotate stock material and use prior to expiration date.



1.8 ENVIRONMENTAL REQUIREMENTS

- A. Maintain air and substrate temperature at a minimum temperature of 40°F for 24 hours before, during, and for 24 hours after application of the sprayed fireproofing. Contractor shall provide enclosures with heat to maintain temperatures. If the manufacturer's accelerator is used for regular density material with proper application equipment, these may be adjusted to their written recommendations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer of the fireproofing material is required to have the material for the required fire ratings of all assemblies and individual members used on this project listed and labeled by UL, or have MEA, BSA, or OTCR approval.
1. W.R. Grace & Co. 62 Whittemore Avenue, Cambridge, Mass.
 2. Isolatek International, Furnace St, Stanhope, NJ
 3. Pyrok, Inc., Mamaroneck, NY
 4. Or approved equal

2.2 MATERIALS

- A. Medium Density Sprayed Fire-resistive Material
1. Material
 - a. Material shall be of the cementitious type (Portland cement based) with a density of at least 20 pcf (medium density). The use of sprayed fiber (such as sprayed mineral wool) is not permitted.
 - b. Products
 - 1) Monokote Type Z-106 by W.R. Grace.
 - 2) Cafco 400 by Isolatek International
 - 3) CV 25 by Pyrok, Inc.
 - 4) Or approved equal



- 3. Material shall comply with the following performance test criteria, which shall be tested and reported by UL or approved lab in accordance with the procedures of ASTM E119:
 - a. Density: Dry density of material shall a minimum of 20 lb/ft³ or as listed in the UL approval, whichever is greater. No reduction in average thickness is permitted when the density given in the approval is less than 20 lb/ft³ and provides the required fire resistance.
 - b. Deflection: Material shall not crack or delaminate from the surface to which it is applied when tested in accordance with ASTM E759.
 - c. Bond Impact: Material subject to impact tests in accordance with ASTM E760 shall not crack or delaminate from the surface to which it is applied.
 - d. Bond Strength: Fireproofing, when tested in accordance with ASTM E736, shall have a minimum average bond strength of 1000 psf and a minimum individual bond strength of 750 psf.
 - e. Air Erosion: Maximum allowable weight loss of the fireproofing material within a 24 hour period shall be 0.005 gm/ft² when tested in accordance with ASTM E859.
 - f. Compressive Strength: The fireproofing shall not deform more than 10% when subjected to compressive forces of 10000 psf when tested in accordance with ASTM E761.
 - g. Corrosion Resistance: Steel with applied fireproofing shall be tested in accordance with ASTM E937 and shall not promote corrosion of steel.
 - h. Surface Burning Characteristics: Material shall exhibit the following surface burning characteristics when tested in accordance with ASTM E84.
 - 1) Flame Spread.....0
 - 2) Smoke Development.....0

3. Material shall not contain Asbestos of any form.

4. Material shall be tested in accordance with ASTM Standard G-21 and shall show resistance to mold growth when inoculated with aspergillus niger and



mixed spore cultures (Tappi T487-M54 and ASTM G-21). Mold inhibitor shall be added by the manufacturer.

B. Sealer

1. Material

Sealer is to be a water-based latex material compatible with the sprayed fire-resistive material, providing a firmer surface for regular-density fireproofing material. Sealer is to be either factory tinted or tinted in field.

2. Product

- a. Firebond Concentrate by WR Grace, with green tint added in field
- b. Bond Seal with green tint added in field, or Bond-Seal Type X by Cafco
- c. Or approved equal

C. Water

Shall be clean potable water free of injurious foreign matter conforming to the requirements of Section BC 1903.4 of the 2008 NYC Building Code.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Surfaces to receive sprayed fireproofing shall be free of oil, grease, dirt, paints/primers, loose materials, and other matter that may impair proper adhesion of the fireproofing material to the substrate. Do not begin application of fireproofing until the substrate is acceptable to receive the fireproofing material. Confirm that the substrate temperature is acceptable. Notify the Commissioner and Contractor in writing of any conditions that will prevent the proper completion of the Work. Beginning of installation means applicator accepts existing substrate.

3.2 PREPARATION

A. Protection

- 1. Provide ventilation in area to receive sprayed fireproofing, introducing fresh air and exhausting air continuously during, and 24 hours after, application to

Sprayed Fire Resistive Materials



promote the evaporation of water and optimum drying of applied material. Material must be substantially dry within 30 days of application.

2. Provide temporary enclosures to contain overspray.
3. Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting-off of sprayed fireproofing materials. Protect concrete and masonry surfaces exposed to view from overspray by using masks, drop cloths, or other satisfactory coverings.
4. Provide fire extinguisher and post caution signs warning against smoking and open flame when working with flammable materials.
5. Prevent entry by non-fireproofing personnel into spraying and mixing areas or other areas exposed to the wet material. Post signs such as "Slippery When Wet".

B. Surface Preparation

1. After acceptance of surfaces, maintain substrate clean of dirt, dust, grease, oil, loose material, frost, or other matter that would affect bond of sprayed fireproofing.
2. Clips, hangers, supports, sleeves, and other items required to penetrate the sprayed fireproofing shall be in place before installing fireproofing.
3. Ducts, piping, equipment, or other items that would interfere with application of fireproofing shall not be positioned until sprayed fireproofing work is completed.
4. Prior to application of fireproofing to the underside of metal deck, concrete work above shall be complete.

3.3 APPLICATION

- A. Conform to the material manufacturer's application instructions for equipment and application procedure.
- B. Patch and restore sprayed fireproofing surfaces damaged by other trades. Payment for such is the responsibility of the trades responsible for such damage.
- C. Correct unacceptable work as determined by the Special Inspector and the Commissioner and pay for further testing required to prove acceptability of installation.



- D. Patch areas from which testing samples have been removed to satisfy fire-rating testing requirements.

3.4 FIELD QUALITY CONTROL

A. Tests

1. The City of New York's engaged testing laboratory will verify thickness and dry density of in-place material in accordance with ASTM E605 and verify bond strength in accordance with ASTM E736.
2. Inspections and tests to be done by the testing laboratory as work progresses are as follows.
 - a. Visual inspection of substrate prior to application of fireproofing to verify surface preparation. Visual inspection of material installed to check if material is properly applied or is actually overspray.
 - b. Thickness
 - 1) Thickness of sprayed fireproofing applied to floor and roof assemblies will be by taking the average of not less than four measurements for each 1,000 square feet, or portion thereof, of sprayed area in each story (for each hourly rating and material) in accordance with Section BC 1704.11.3.1. Test locations will be selected at random.
 - 2) Thickness of sprayed fireproofing applied to structural framing members will be performed on not less than 25% of the structural members in each story in accordance with Section BC 1704.11.3.2. Test locations will be selected at random.
 - c. At least one density test on both beams and columns for every 10,000 sq. ft. of floor area, or portion thereof, with a minimum of 6 tests per floor (3 for beam, 3 for column) for each days work.
 - d. Bond Strength
 - 1) Bond strength of sprayed fireproofing applied to floor and roof assemblies will be by taking the average of not less than one sample for each 10,000 square feet, or portion thereof, of sprayed area in each story (for each hourly rating and material) in accordance with Section BC 1704.11.5.1 for each days work. Test locations will be selected at random.



- 2) Bond strength of sprayed fireproofing applied to structural framing members will be performed on not less than one type of structural framing member (for each hourly rating and material) for each 10,000 SF, or portion thereof, in each story in accordance with Section BC 1704.11.5.2 for each days work. Test locations will be selected at random.
 - 3) Bond strength is to consist of a minimum of two tests done at each location, with one being the top of the bottom flange. For steel deck locations, bond strength shall consist of a minimum of two tests done at each location, one being at the top of the flute and one being at the bottom of the flute.
- e. Visual inspection of completed work including patches to cracking and spalling.

B. Inspection

1. Testing Laboratory

- a. The City of New York will engage an approved Testing Laboratory or Special Inspection Agency to inspect and perform the above tests.
- b. The Testing Laboratory will be responsible to and under the supervision of Special Inspector.

2. Special Inspector

The City of New York will assign, under the requirements of Section BC 1704.11 of the 2008 NYC Building Code, a Special Inspector to supervise the testing of the sprayed fireproofing. The Special Inspector will ensure all required testing is done and that application and substrate temperatures are per the specifications and manufacturer's instructions, which ever is more stringent.

3. **Test Results:** Results of above tests will be made available to all parties on a regular basis.
4. When test results indicate fireproofing does not comply with the Contract requirements, additional random testing will be done within the testing area to determine the extent of noncompliance. This additional testing shall be paid for by the Contractor.



C. Nonconforming Fireproofing

1. When test results indicate fireproofing does not comply with the required density and/or bond strength, remove and replace fireproofing at no cost to the City of New York.
2. If fireproofing is less than the required thickness, place additional material in accordance with the manufacturer's recommendations.
3. Areas of restore or replacement will be retested for compliance with the Specifications.

3.5 CLEANING

- A. After completion of fireproofing work clean other surfaces not to be sprayed of any applied fireproofing material.

3.6 PROTECTION

- A. Protect applied fireproofing until permanent covering is installed or, where exposed, until final acceptance.

END OF SECTION



**Department of
Design and
Construction**

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04/18/2018

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*Bellevue Men's Residence New Emergency Generator Installation
and Electrical Infrastructure Upgrade*

**Sprayed Fire Resistive Materials
07 81 00 - 12**



SECTION 07 84 13

THROUGH-PENETRATION FIRESTOP SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes through-penetration firestop systems for penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items.

1.3 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E 814 or UL 1479:
1. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.
 2. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
 - a. Penetrations located outside wall cavities.
 - b. Penetrations located outside fire-resistance-rated shaft enclosures.
 3. L-Rated Systems: Where through-penetration firestop systems are indicated in smoke barriers, provide through-penetration firestop systems with L-ratings of not more than 3.0 cfm/sq. ft at both ambient temperatures and 400 deg F.

Through-Penetration Firestop Systems



- C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
 - 1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 - 2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
 - 3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
- D. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each through-penetration firestop system, submit documentation, including illustrations, from a qualified testing and inspecting agency, showing each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item.
- C. Qualification Data: For Installer.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors."
- B. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:
 - 1. Firestopping tests are performed by a qualified testing and inspecting agency acceptable to NYC Department of Buildings.
 - 2. Through-penetration firestop systems are identical to those tested per testing standard referenced in "Part 1 Performance Requirements" Article. Provide rated systems bearing classification marking of qualified testing and inspecting agency.
- C. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.



PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the through-penetration firestop systems indicated for each application at the end of Part 3 that are produced by one of the following manufacturers:
1. Grace, W. R. & Co. - Conn.
 2. Hilti, Inc.
 3. 3M; Fire Protection Products Division.
 4. Tremco; Sealant/Weatherproofing Division.
 5. Or approved equal

2.2 FIRESTOPPING

- A. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.
- B. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated.

PART 3 - EXECUTION

3.1 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

- A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated..
1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
- C. Install fill materials for firestop systems by proven techniques to produce the following results:

Through-Penetration Firestop Systems



1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

D. Identification: Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. Include the following information on labels:

1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Through-penetration firestop system designation of applicable testing and inspecting agency.
4. Date of installation.
5. Through-penetration firestop system manufacturer's name.
6. Installer's name.

3.2 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to alpha-alpha-numeric designations listed in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. Firestop Systems for Metallic Pipes, Conduit, or Tubing
- C. Firestop Systems for Nonmetallic Pipe, Conduit, or Tubing
- D. Firestop Systems for Electrical Cables
- E. Firestop Systems for Cable Trays
- F. Firestop Systems for Insulated Pipes Firestop Systems for Miscellaneous Electrical Penetrants
- G. Firestop Systems for Miscellaneous Mechanical Penetrants

END OF SECTION



SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the work of sealants as shown on the Drawings, specified herein, and as required by conditions and NYC Department of Buildings, including, but not limited to, sealants for the following applications:

1. Exterior joints in the following vertical surfaces:
 - a. Joints between masonry materials.
 - b. Joints between masonry and metal flashing.
 - c. Other joints as indicated.

- B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 076200 – “Sheet Metal Flashing and Trim”
2. Section 089119 – “Fixed Louvers”
3. Other Sections which affect or are affected by the work of this section.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance.
1. Perform sealing only with workers skilled in techniques of sealant installation who are completely familiar with current published recommendations of manufacturer of sealant being used.



2. Indication of lack of skill on part of sealant installers shall be sufficient grounds for Commissioner to reject installed sealant and to require Contractor to remove all installed sealants, provide proper joint preparation acceptable to manufacturer, and reinstall sealants at no additional cost to the City of New York.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
2. Test elastomeric joint sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.

D. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to joint substrates as follows:

1. Locate test joints where indicated or, if not indicated, as directed by Commissioner.
2. Conduct field tests for each application indicated below:

a. Each type of elastomeric sealant and joint substrate indicated.

3. Notify Commissioner 48 hours in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint sealant manufacturer's technical representative present.

5. Test Method: Test joint sealants by hand-pull method described below:

- a. Install joint sealants in 60-inch- long joints using same materials and methods for joint preparation and joint-sealant installation required for the completed Work. Allow sealants to cure fully before testing.
- b. Make knife cuts from one side of 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.
- c. Use fingers to grasp 2-inch piece of sealant between cross-cut end and 1-inch mark; pull firmly at a 90-degree angle or more in direction of side cuts while holding a ruler along side of sealant. Pull sealant out of joint to distance recommended by sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension; hold this position for 10 seconds.



- d. For joints with dissimilar substrates, check adhesion to each substrate separately. Do this by extending cut along one side, checking adhesion to opposite side, and then repeating this procedure for opposite side.
6. Report whether sealant in joint 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. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
7. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.4 SUBMITTALS

- A. General: Submit each item in this Article in compliance with the Conditions of the Contract and General Conditions. Revise and resubmit each item as required to obtain Commissioner's approval.
- B. Qualification Data: Qualification data for firm and personnel specified in "Quality Assurance" Article that demonstrates that both firm and personnel have capabilities and experience complying with requirements specified.
- C. Product Literature: Manufacturer's published technical data for each product to be used in work of this Section including recommendations for application and use. Include test reports and certificates verifying that product complies with specified requirements.
- D. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- E. Samples for Verification: For each type and color of joint sealant required. Install joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- F. Product Certificates: Signed by manufacturers of joint sealants certifying that products furnished comply with requirements and are suitable for use indicated.
 1. Include certification that products are non-staining on substrates indicated.
- G. Preconstruction Field Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on preconstruction testing specified in "Quality Assurance" Article.



- H. Field Test Report Log: For each elastomeric sealant application. Include information specified in "Field Quality Control" Article.
- I. Compatibility and Adhesion Test Reports: From sealant manufacturer indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- J. Product Test Reports: From a qualified testing agency indicating sealants comply with requirements, based on comprehensive testing of current product formulations.
- K. Warranties: Special warranties specified in this Section.
- L. Preinstallation Conference: Conduct conference at Project site to comply with requirements of the Contract Documents.

1.5 MOCKUPS

- A. General: Before beginning general joint sealant work, prepare mockups to verify selections made under sample Submittals, to demonstrate aesthetic effects and qualities of materials and execution, and to provide standards for work of this Section. Do not proceed with installation of joint sealants until Commissioner has accepted mockups.
 - 1. Locate mockups as directed by Commissioner.
 - 2. Provide 48 hours notice to Commissioner prior to start of each mockup.
 - 3. Commissioner will monitor mockups.
 - 4. Perform mockups using crew that will be executing the work and following requirements of this Section.
 - 5. Repeat mockups as necessary to obtain Commissioner's approval.
 - 6. Protect approved mockups to ensure that they are without damage, deterioration, or alteration at time of Substantial Completion.
 - 7. Approved mockups in undamaged condition at time of Substantial Completion may be incorporated into the Work.
 - 8. Approved mockups will represent the minimum acceptable standard for joint sealant work. Subsequent joint sealant work that does not meet standard of approved mockups will be rejected.
- B. Mockups: Provide the following mockups:
 - 1. Joint in Flashing Reglet: One joint, minimum 6 ft. long.
 - 2. Joint in GFRC cornice and other GFRC components at cornice level as indicated, minimum 6 ft. long (each).



3. Joint at surround of new window louvers, minimum one (1) full assembly.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Install joint sealants only when sealant temperature, ambient temperature, and substrate temperatures are all within middle two-thirds of temperature range recommended for installation by sealant manufacturer or between 50 deg Fahrenheit and 85 deg Fahrenheit, whichever requirements are more restrictive, and are forecast to remain within this range until sealant has cured.
- B. Joint-Width Conditions: Install joint sealants only where joint widths are within the range recommended by joint sealant manufacturer for applications indicated.
- C. Joint-Substrate Conditions: Install joint sealants only under the following conditions:
 1. When joint substrates are free of contaminants capable of interfering with adhesion.
 2. When joint substrates are dry.

1.8 WARRANTY

- A. General: Special warranties specified in this Article shall not deprive City of New York of other rights the City of New York may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Installer's Warranty: Written warranty, signed by Installer agreeing to restore or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: Two (2) years from date of Substantial Completion.
- C. Special Manufacturer's Warranty: Written warranty, signed by elastomeric sealant manufacturer agreeing to furnish elastomeric joint sealants to restore or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: Twenty (20) years from date of Substantial Completion.



- D. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
1. Movement of structure resulting in stresses on sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Commissioner from manufacturer's full range of colors for this type of sealant.

2.2 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Comply with ASTM C 920 and other requirements indicated.
- B. Stain-Test-Response Characteristics: Where elastomeric sealants are to be applied to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- C. General Building Sealant (Exterior Joints, Unless Otherwise Indicated): Low-modulus, high-performance, single-component, non-sag, gun-grade, non-staining, polyurethane-based elastomeric sealant complying with requirements of ASTM C 920, Type S, Grade NS, Class 25 (with movement capability of +100 percent/-50 percent), use T, NT, G, M. Provide in a standard color to match adjacent masonry or sheet metal produced by one of the following:
1. Sikaflex-15 LM sealant, as manufactured by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071.
 2. *Dow Corning* 795 Silicone Building Sealant, as manufactured by Dow Corning Corporation, Corporate Center, PO Box 994, Midland, MI 48686-0994.
 3. Sonolastic NP 1™ sealant, as manufactured by BASF Construction Chemicals, LLC – Building Systems 889 Valley Park Drive Shakopee, MN, 55379.
 4. Or Approved Equal.
- D. Primer: Provide primer where manufacturer recommends or preconstruction testing indicates for optimal adhesion of sealant.



2.3 LATEX JOINT SEALANTS

- A. Latex Sealant Standard: Comply with ASTM C 834.

2.4 JOINT-SEALANT BACKING

- A. General: 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.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C, closed-cell material with a surface skin, of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.5 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for optimal adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION



- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions and the following requirements:
1. Remove from joint substrates all foreign material that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, and surface dirt.
 2. Clean porous joint substrate surfaces by brushing, grinding, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 3. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with requirements specified herein and joint sealant manufacturer's written installation instructions for products and applications indicated. In case of conflict, the more stringent and restrictive requirement shall govern.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.



- E. Install sealants by proven techniques to comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses provided for each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealants from surfaces adjacent to joint.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
 4. Provide flush joint configuration, per Figure 5B in ASTM C 1193, where indicated.

3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with restored areas are indistinguishable from the original work.

END OF SECTION



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SECTION 08 11 13

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the work of steel doors and frames as shown on the Drawings, specified herein, and as required by conditions and NYC Construction Codes, including, but not limited to, the following:

1. Fire-rated door and frame assemblies.

1.3 DEFINITIONS

- A. Steel Sheet Thicknesses: Thickness dimensions, including those referenced in ANSI A250.8, are minimums as defined in referenced ASTM standards for both uncoated steel sheet and the uncoated base metal of metallic-coated steel sheets.

1.4 SUBMITTALS

- A. General: Submit each item in this Article in compliance with the Conditions of the Contract and General Conditions. Revise and resubmit each item as required to obtain Commissioner's approval.
- B. Product Data: For each type of door and frame indicated, include door designation, type, level and model, material description, core description, construction details, label compliance, sound and fire-resistance ratings, and finishes.
- C. Shop Drawings: Show the following:
1. Elevations of each door design.
 2. Details of doors including vertical and horizontal edge details.
 3. Frame details for each frame type including dimensioned profiles.
 4. Details and locations of reinforcement and preparations for hardware.

Hollow Metal Doors and Frames



5. Details of each different wall opening condition.
 6. Details of anchorages, accessories, joints, and connections.
- D. Door Schedule: Use same reference designations indicated on Drawings in preparing schedule for doors and frames.

1.5 QUALITY ASSURANCE

- A. Steel Door and Frame Standard: Comply with ANSI A 250.8, unless more stringent requirements are indicated.
- B. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to NYC Department of Buildings, for fire-protection ratings indicated, based on testing according to NFPA 252.
1. Test Pressure: Test at pressure as required.
 2. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a testing agency acceptable to NYC Department of Buildings that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
 3. Temperature-Rise Rating: Where indicated, provide doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.
- B. Inspect doors and frames on delivery for damage, and notify shipper and supplier if damage is found. Minor damages may be restored provided refinished items match new work and are acceptable to Commissioner. Remove and replace damaged items that cannot be restored as directed.
- C. Store doors and frames at building site under cover. Place units on minimum 4-inch-high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If door packaging becomes wet, remove cartons immediately. Provide minimum 1/2-inch spaces between stacked doors to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Hollow Metal Doors and Frames



- A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames by one of the following or approved equal:
1. Amweld Building Products, Inc.
 2. Ceco Door Products; a United Dominion Company.
 3. Curries Company.
 4. Kewanee Corporation (The).
 5. Republic Builders Products.
 6. Steelcraft; a division of Ingersoll-Rand.

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets: ASTM A 569, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- B. Cold-Rolled Steel Sheets: ASTM A 366, Commercial Steel (CS), or ASTM A 620, Drawing Steel (DS), Type B; stretcher-leveled standard of flatness.
- C. Metallic-Coated Steel Sheets: ASTM A 653, Commercial Steel (CS), Type B, with an A40 zinc-iron-alloy (galvannealed) coating; stretcher-leveled standard of flatness.

2.3 DOORS

- A. General: Provide doors of sizes, thicknesses, and designs indicated.

2.4 FRAMES

- A. General: Provide steel frames for doors and other openings that comply with ANSI A250.8 and with details indicated for type and profile. Conceal fastenings, unless otherwise indicated.
- B. Frames of 0.053-inch- thick steel sheet for Level 2 steel doors.
- C. Frames of 0.067-inch- thick steel sheet for Level 3 steel doors.
- D. Panels: Provide same material and gage as adjacent door.
- E. Supports and Anchors: Fabricated from not less than 0.042-inch-thick, electrolytic zinc-coated steel sheet.
1. Wall Anchors in Masonry Construction: 0.177-inch-diameter, steel wire complying with ASTM A 510 may be used in place of steel sheet.



- F. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where zinc-coated items are to be built into exterior walls, comply with ASTM A 153, Class C or D as applicable.

2.5 FABRICATION

- A. General: Fabricate steel door and frame units to comply with ANSI A250.8 and to be rigid, neat in appearance, and free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site.
- B. Core Construction: Manufacturer's standard core construction that produces a door complying with SDI standards.
- C. Clearances for Fire-Rated Doors: As required by NFPA 80.
- D. Door-Edge Profile: Bevel edge at strike side.
- E. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- F. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.
- G. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- H. Thermal-Rated (Insulating) Assemblies: At exterior locations, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C 236 or ASTM C 976 on fully operable door assemblies.
1. Unless otherwise indicated, provide thermal-rated assemblies with U-value of 0.41 Btu/sq. ft. x h x deg F or better.
- I. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements in ANSI A250.6 and ANSI A115 Series specifications for door and frame preparation for hardware.
- J. Frame Construction: Fabricate frames to shape shown.
1. Fabricate frames with mitered or coped and continuously welded corners and seamless face joints, unless otherwise indicated.
 2. Provide welded frames with temporary spreader bars.
 3. Provide terminated stops, unless otherwise indicated.



- K. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.

2.6 FINISHES

- A. Prime Finish: Manufacturer's standard, factory-applied coat of rust-inhibiting primer complying with ANSI A250.10 for acceptance criteria.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.
- B. Placing Frames: Comply with provisions in SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
 - 1. Provide at least three completed opening anchors per jamb; install adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Set frames and secure to adjacent construction with bolts and masonry anchorage devices.
 - 2. Install fire-rated frames according to NFPA 80.
 - 3. For openings 90 inches or more in height, install an additional anchor at hinge and strike jambs.
- C. Door Installation: Comply with ANSI A250.8. Fit hollow-metal doors accurately in frames, within clearances specified in ANSI A250.8. Shim as necessary to comply with SDI 122 and ANSI/DHI A115.1G.
 - 1. Fire-Rated Doors: Install within clearances specified in NFPA 80.

3.2 ADJUSTING AND CLEANING

- A. Prime-Coat Touchup: Immediately after installation, sand smooth any rusted or damaged areas of prime coat and apply touch up of compatible air-drying primer.
- B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION



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SECTION 08 31 13

ACCESS DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Provide all access doors and frames located in walls and in ceilings, complete with accessories, as indicated on the Drawings and as specified herein.

1.3 QUALITY ASSURANCE

A. Fire rated Doors

1. Fire Rated Access Doors for Walls: Complete assemblies meeting NYC Building Code requirements for 1½ hour rating for a 2-hour wall. Each assembly shall be labeled by an agency approved pursuant to rules of the NYC Dept. of Buildings. The label shall meet Building Code requirements and shall be permanently affixed at the factory.
2. Fire Rated Access Doors for Ceilings: Complete assemblies complying with NYC Building Code requirements for one-hour combustible and one-hour non-combustible floor/ceiling systems. Each assembly shall be labeled by an agency approved pursuant to rules of the NYC Dept. of Buildings. The label shall meet Building Code requirements and shall be permanently affixed at the factory.

1.4 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. New York City Building Code



1.5 SUBMITTALS

A. Product Data

For each type of door and frame indicated. Include catalogue cuts, construction details relative to materials, individual components and profiles, finishes, and fire ratings (if required) for access doors and frames.

B. Shop Drawings

Schedule: Provide complete door and frame schedule, including types, general locations, sizes, construction details, latching or locking provisions, and other data pertinent to installation. Indicate locations of fire rated doors on schedule.

- C. 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 is 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 New York City Building Code requirements.

Fire rated access doors are regulated assemblies.

D. Keys

Furnish 6 keys for all locks

1.6 COORDINATION

- A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed equipment, and indicate on schedule specified in "Submittals" Article.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle access doors and frames as recommended by the Manufacturer, to protect from damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Karp Associates, Inc., Maspeth, NY 11378
B. Milcor, Inc., Lima, OH 45804



- C. Nystrom Building Products, Minneapolis, MN 55413
- D. or approved equal

2.2 NON-FIRE RATED ACCESS DOORS

A. Frames

Minimum 16 gage steel.

1. Flange: Integral exposed flange not less than 3/4" wide around the perimeter.
2. Plaster Applications: Expanded metal lath and exposed casting bead welded to perimeter of frame, in place of integral exposed flange.
3. Acoustical Tile Applications: Frames without exposed flange.
 - a. Finish: Factory-applied rust inhibitive baked enamel primer over phosphate treated steel.
 - b. Anchorage: Predrilled holes in frame for anchoring with fasteners.

B. Flush Type Door Panel

Minimum 14 gage steel.

1. Hinges: Concealed spring type set to open to approximately 175°; sufficient number to support the door size, or continuous type hinge.
2. Finish: Factory-applied rust inhibitive baked enamel primer over phosphate treated steel.

C. Cam Locks (for doors located in ceilings)

Flush, screwdriver operated; sufficient number to hold door panel in flush, smooth plane when closed.

D. Cam Locks (for doors located in walls)

Flush screwdriver or key operated; sufficient number to hold door panel in flush, smooth plane when closed.



1. One lock on each door panel shall be key operated, pin tumbler type. The remaining locks, if any, shall be screwdriver operated type.

2.3 FIRE RATED ACCESS DOORS FOR WALLS

A. Frames

Minimum 16 gage steel, with integral exposed flange not less than 1" wide around the perimeter.

1. Anchorage: Predrilled holes in frame for anchoring with fasteners.

B. Flush Type Door Panel

Minimum 20 gage steel double wall construction with insulation, equipped with automatic closer and inside release mechanism.

1. Hinge: Continuous hinge set to open to approximately 175°.
2. Finish: Factory-applied baked enamel primer over phosphate treated steel.

C. Automatic Latches

Direct action Knurled knob or turn ring, or key operated; sufficient number to hold door panel in flush, smooth plane when closed.

1. One latch on each door panel shall be key operated, pin tumbler type. The remaining latches, if any, shall be knurled knob or turn ring operated type.

2.4 KEYING FOR NON-FIRE RATED ACCESS DOORS AND FIRE RATED ACCESS DOORS FOR WALLS

- A. Key all locks and latches alike. Furnish 6 keys total.

2.5 FIRE RATED ACCESS DOORS FOR CEILINGS

A. Frames

Minimum 16 gage steel, with integral flange 1" wide.

1. Anchorage: predrilled holes in frames for anchoring with fasteners.

B. Flush Type Door Panel



Minimum 20 gage steel double wall construction with insulation, equipped with automatic closer and inside release mechanism.

1. Hinge: Continuous, set to open approximately 175°.
2. Finish: Factory-applied baked enamel primer over phosphate-treated steel.

C. Automatic Latches

Direct action knurled knob or turn ring, of sufficient quantity to hold door panel in flush, smooth plane when closed.

1. One latch on each door panel shall be key-operated, pin tumbler type.
2. Locking Device: Self-latching key operated cylinder lock. Furnish 6 keys total.

2.6 FABRICATION AND MANUFACTURE

A. Manufacture access door assemblies as integral units complete with all parts and ready for installation. Fabricate units of continuous welded steel construction unless otherwise indicated or specified. Grind welds smooth and flush with adjacent surfaces. Attachment devices shall be of size and type required to secure access doors to types of supports indicated on the Drawings.

1. Allowable Size Variations: Manufacturer's standard size units that vary slightly from the sizes indicated may be acceptable, subject to the approval of the Commissioner.

2.7 PAINT

A. Shop Primers: Provide primers that comply with section 09 91 23-Interior Painting.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install the access doors in accordance with the manufacturer's printed installation instructions, except as shown or specified otherwise.
- B. Coordinate access door installation with installation of supporting construction.
- C. Set units accurately in position and securely attach to support with face panel plumb or level in relation to adjoining finish surface.



3.2 ADJUSTMENT

- A. Adjust hardware and doors for proper operation.
- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

3.3 LOCATION

- A. Provide non-fire rated access doors in non-fire rated construction and fire rated access doors in fire rated construction.

END OF SECTION



SECTION 08 34 83

FLOOR DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Provide all floor doors complete with accessories, as indicated on the Drawings and as specified herein.

1.3 QUALITY ASSURANCE

A. Fire rated Doors

1. Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency according to NFPA 288.
2. Assemblies meeting NYC Building Code requirements for 1½ hour rating for a 2-hour enclosure. Each assembly shall be labeled by an agency approved pursuant to rules of the NYC Dept. of Buildings. The label shall meet NYC Building Code requirements and shall be permanently affixed at the factory.

1.4 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 NYC building code, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. New York City Building Code

1.5 SUBMITTALS

- A. Product Data



For each type of door assembly indicated. Include construction details, fire ratings, materials, individual components and profiles, and finishes.

1.6 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's standard warranty. Materials shall be free of defects in material for a period of five years from the date of Substantial Completion. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle access doors and frames as recommended by the Manufacturer, to protect from damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. The Bilco Company, New Haven, CT 06505
B. Nystrom Building Products, Minneapolis, MN 55413
C. Babcock-Davis, Brooklyn Park, MN 55428
D. or approved equal

2.2 FIRE RATED FLOOR DOORS

- A. Performance Characteristics
1. Cover: shall be reinforced to support a minimum live load of 150 psf with a maximum deflection of 1/150th of the span.
 2. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing. Operation of the cover shall not be affected by temperature.
 3. Door and frame assembly shall be tested in accordance with ASTM E119 and NFPA 251 and UL Listed as having a 2-hour fire rating when exposed from the underside. In the closed position, the temperature on the unexposed surface of the door shall not exceed 325 degrees F above ambient for the duration of the 2-hour period. Manufacturer shall submit a test report certifying this performance.



4. Door shall be equipped with a fusible link activated closing system that will automatically close and latch the door leaf in the event of fire when heat parts the UL Listed 165 degrees F fusible link.
- B. Cover: Shall have a 1" fillable pan to receive concrete or a combination of concrete and Vinyl Composition Tiles. Finish flooring up to 1/2" thick can be installed in the 1" pan. The remaining depth must be filled with concrete to maintain the fire rating of the door assembly.
- C. Frame: Shall be extruded aluminum with full anchor flange around the perimeter.
- D. Lifting Mechanisms: Manufacturer shall provide the required number and size of compression spring operators enclosed in telescopic tubes to provide smooth, easy, and controlled cover operation throughout the entire arc of opening and to act as a check in retarding downward motion of the cover when closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe fastened to a formed 1/4" gusset support plate.
- E. A removable exterior turn/lift handle with a spring loaded ball detent shall be provided to open and close the door.
- F. Automatic Closing System: Shall be a self-contained, pneumatic, fusible link activated, closing system that will automatically close and latch the door in the event for fire when heat parts the UL Listed 165 degrees F fusible link.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install products in strict accordance with manufacturer's instructions and approved submittals. Locate units level, plumb, and in proper alignment with adjacent work.
 1. Test units for proper function and adjust until proper operation is achieved.
 2. Restore finishes damaged during installation.
 3. Restore finishes so no evidence remains of corrective work.

3.3 ADJUSTING AND CLEANING



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- A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION



SECTION 08 39 00
FLOOD PROTECTION DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the work of flood protection doors as shown on the Drawings, specified herein, and as required by conditions and NYC Construction Codes, including, but not limited to, the following:

1. Watertight doors with mechanical seals.

1.3 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 New York City Building Department, 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. AWS Structural Welding Code.
5. ASME Structural Welding Code Section IX.

1.4 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 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. Calculations: Submit calculations, prepared by a NYS licensed engineer, to verify the barrier's ability to withstand the design pressure loading.

C. Samples

1. Aluminum and stainless steel finishes

D. Warranties

Provide manufacturer/installer warranty.

E. Closeout Submittals:

Provide Operation and Maintenance data to include methods for maintaining installed products, precautions against cleaning materials and methods detrimental to finishes and performance.

1.5 QUALITY ASSURANCE

The manufacturer of the flood barrier(s) shall present evidence attesting to at least 3 years of successful experience in the design and manufacture of both the flood barrier and flood barrier seal of the type specified.

1.6 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.

1.7 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.

1.8 GAGE STANDARDS

- A. Gages specified are based on U.S Standard Gauge for hot rolled and cold rolled steel sheets.
- B. Gages specified are based on U.S Standard Gauge for hot rolled and cold rolled steel sheets.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Presray, 32 Nelson Hill Road, Wassaic, New York 12592; Tel: (845) 373-6700; Fax: (845) 855-8034
- B. PS DOORS, 1150 S. 48th Street, Grand Forks, ND 58201; Toll Free Tel: 887-446-1519; Tel: 701-746-4519; Fax: 701-746-8340
- C. VR Containment, 176-25 Union Turnpike Suite 175, Fresh Meadows, New York 11366, Tel: 516-673-4961; Fax: 866-286-5616
- D. or approved equal

Obtain all watertight doors and flood plank assemblies from a single manufacturer.

2.2 MATERIALS

- A. Watertight Door with Mechanical Seals shall be EQUAL TO Model #D3DQA
 1. Structural Steel Plates and Shapes: type 316 stainless steel
 2. Finish: HRAP stainless steel.
 3. Door Gasket: Presray type 25 durometer neoprene molded rather than extruded, with fully molded corners, no mitered joints allowed.
 4. Hardware: Hinges: Presray type. Lower hinge to include bronze oil-impregnated thrust bearing. Hinges shall include stainless steel hinge pins, stainless steel mounting bolts, and slotted hinge blades to protect the hinges from the pressure load. Door Latch System: The door latching shall be effected, with minimum effort and time, by rotating the lever 90 degrees from either side. The Handwheel shall actuate a minimum of 6 arms each of which shall have stainless steel rollers, be adjustable for stroke length and position for optimum seal compression. Provide Viewing Panel: Presray type PRS817
 5. Design: Watertight door(s) shall be designed with a minimum 2:1 factor of safety based on material yield strength, and shall provide an effective seal against the design pressure. The design of the door shall allow the pressure on the door to be transmitted to the frame and/or arms. The door shall provide a rectangular opening



- with square corners to facilitate easy passage. Frame shall include suitable anchors for imbedment in concrete
6. Fabrication: The edge coaming contacting the door gasket shall be machined, rather than as rolled, to maximize sealing.
 7. All welds on steel assemblies that may be potential "leak path" shall be liquid penetrant inspected in accordance with ASME section VIII Div. of Appendix 8.
 8. Finished assembly, or assembly similar in design shall be factory leak tested to verify that it will withstand the design hydrostatic pressure

PART 3 - EXECUTION

3.1 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.

3.2 INSTALLATION

- ##### **A. Install doors, frames, and accessories in accordance with the Drawing Details, approved Shop Drawings, and the manufacturer's printed instructions, except as otherwise indicated.**

3.3 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

3.4 CLEANING

- ##### **A. Clean doors, frames, and accessories, leaving free of dirt and other foreign material after completion of installation.**

END OF SECTION



SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Section includes:

1. Mechanical door hardware for the following:
 - a. Swinging doors.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Samples for Initial Selection: For plastic protective trim units in each finish, color, and texture required for each type of trim unit indicated.
- C. Samples for Verification: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule. Submit Samples before, or concurrent with, submission of door hardware schedule.
1. Sample Size: Full-size units.
 - a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.
- D. Other Submittals:
1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.



- a. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
 - b. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
 - c. Content: Include the following information:
 - 1) Identification number, location, hand, fire rating, size, and material of each door and frame.
 - 2) Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - 3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - 4) Fastenings and other pertinent information.
 - 5) Explanation of abbreviations, symbols, and codes contained in schedule.
 - 6) Mounting locations for door hardware.
 2. Keying Schedule: Prepared by or under the supervision of Installer, detailing City of New York's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.
- E. Qualification Data: For Installer.
- F. Warranty: Special warranty specified in this Section.
- G. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers instructed and approved by product manufacturers.
1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- B. Source Limitations: Obtain each type of door hardware from a single manufacturer.



- C. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.
- D. Smoke-and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
 - 1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg of water.
- E. Accessibility Requirements: Comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design for door hardware on doors in an accessible route.
 - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf
 - 2. Comply with the following maximum opening-force requirements:
 - a. Fire Doors: Minimum opening force allowable by NYC Building Code.
 - 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high
 - 4. Closers: Adjust door and gate closer sweep periods so that, from an open position of 90 degrees, the time required to move the door to a position of 12 degrees from the latch is 5 seconds minimum.
- F. Keying Conference: Conduct conference at Project site. In addition to Commissioners, and Contractor, conference participants shall also include Commissioner's security consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:
 - 1. Requirements for key control system.
 - 2. Requirements for access control.
- G. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Inspect and discuss preparatory work performed by other trades.



1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Commissioner.
- D. Deliver keys and permanent cores to Commissioner by registered mail or overnight package service.

1.6 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Set anchoring inserts into concrete.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- C. Security: Coordinate installation of door hardware, keying, and access control with Commissioner's security consultant.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to restore or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 - 2. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.



1.8 SERVICE GUARANTEE

- A. Service Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for City of New York's continued adjustment, service, and removal and replacement of door hardware.
- B. Warranty: Beginning at Substantial Completion, provide six months' full service by properly trained employees of door hardware Installer. Include quarterly preventive service, restore or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Provide parts and supplies that are the same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Provide door hardware for each door as scheduled in Part 3 "Door Hardware Schedule" Article to comply with requirements in this Section.
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products equivalent in function and comparable in quality to named products.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.

2.2 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
 - 1. Provide Hinges from one of the following or approved equal:
 - a. Stanley Commercial Hardware
480 Myrtle St

New Britain, CT 06053

800-622-493
 - b. Baldwin Hardware Corp.



841 E. Wyomissing Blvd

Reading, PA 19612

215-777-7811

- c. Hager Companies
139 Victor St

St. Louis, MO 63157-0300

800-325-9995
- d. Or approved equal.

2.3 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 - 1. Bored Locks: Minimum 1/2-inch latchbolt throw.
 - 2. Mortise Locks: Minimum 3/4-inch latchbolt throw.
- C. Lock Backset: 2-3/4 inches, unless otherwise indicated.
- D. Lock Trim:
 - 1. Description: As indicated on the hardware schedule in Part 3.
 - 2. Levers: Cast.
 - 3. Escutcheons (Roses): Cast.
 - 4. Operating Device: Lever with escutcheons (roses).
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.



F. Mortise Locks: BHMA A156.13; Security Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Provide Locks from one of the following:

a. Sargent Manufacturing
100 Sargent Drive

New Haven, CT 06563-0915

800-727-5477

b. Corbin Russwin Inc.
PO Box 25288

Charlotte, NC 28229-8010

704-283-2101

c. Best Access Systems
6161 East 75th Street

Indianapolis, IN 46250

317-849-2250

d. Or approved equal:

2.4 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

1. Manufacturer: Same manufacturer as for locking devices.

B. High-Security Lock Cylinders: BHMA A156.30; Grade 1; Type M, mechanical; permanent cores that are removable; face finished to match lockset.

2.5 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.

1. Existing System:



- a. Master key locks to City of New York's existing system.

B. Keys: Brass.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE."
2. Quantity: In addition to one extra key blank for each lock, provide the following:
 - a. Cylinder Change Keys: Three.
 - b. Master Keys: Five.

2.6 OPERATING TRIM

- A. Operating Trim: BHMA A156.6; stainless steel, unless otherwise indicated.

2.7 SURFACE CLOSERS

- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Provide Closers from one of the following:

- a. Stanley Commercial Hardware
480 Myrtle St

New Britain, CT 06053

800-622-493

- b. Rixson Specialty Door Controls
Monroe, NC

800-457-5670

- c. Corbin Russwin Inc.
PO Box 25288

Charlotte, NC 28229-8010



704-283-2101

- d. Or approved equal.

2.8 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.

- 1. Provide Touch Bar Exit Device from one of the following:

- a. SARGENT Manufacturing Company
100 Sargent Drive

P.O. Box 9725

New Haven, CT 06536-0915

- b. Yale Security Inc; an ASSA ABLOY Group company
P.O. Box 25288
Charlotte NC 28229-8010

- c. Stanley Commercial Hardware
480 Myrtle St

New Britain, CT 06053

800-622-493

- d. Or approved equal

- 2. All exit devices shall be of touch bar design and be operative over 2/3 of the door's clear opening width
- 3. All exit devices must be listed under "panic Hardware" in the Accident Equipment List of Underwriter's Laboratories, Inc. Where labeled doors are used as exits, they must be equipped with labeled Fire Exit Hardware
- 4. All springs shall be of stainless steel.



5. All exit devices shall be of chassis mounted until construction with removable cover.

2.9 FABRICATION

- A. **Manufacturer's Nameplate:** Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Commissioner.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

- B. **Base Metals:** Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

- C. **Fasteners:** Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. **Concealed Fasteners:** For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2. **Fire-Rated Applications:**

- a. **Wood or Machine Screws:** For the following:

- 1) Hinges mortised to doors or frames
- 2) Strike plates to frames.
- 3) Closers to doors and frames.

- b. **Steel Through Bolts:** For the following unless door blocking is provided:

- 1) Surface hinges to doors.
- 2) Closers to doors and frames.
- 3) Surface-mounted exit devices.

3. **Spacers or Sex Bolts:** For through bolting of hollow-metal doors.



4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."
5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.10 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 2. Custom Steel Doors and Frames: HMMA 831.



- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as directed by Commissioner.
 - 2. Furnish permanent cores to Commissioner for installation.
- E. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant
- F. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of NYC Building Code.
- B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.



- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to instruct Commissioner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes.

3.7 DOOR HARDWARE SCHEDULE

DOOR NO.	TYPE	ACTION	DOOR MAT.	FRAME MAT.	HARDWARE				
					LOCKSET	HINGE	SADDLE	WEATHER-STRIPPING	MISC.
Cellar									
4	Rated	Single Leaf	Hollow Metal	Hollow Metal / Mortar Filled	Stainless Steel Deadbolt Lockset	Three (3) Tamperproof Stainless Steel Hinges	Aluminum w/ Weather-stripping	Bronze Spring Weather-stripping	Panic Hardware
Basement									
1	Rated	Double Leaf	Hollow Metal	Hollow Metal / Mortar Filled	Stainless Steel Deadbolt Lockset at Active Leaf	Three (3) Tamperproof Stainless Steel Hinges per Leaf	Aluminum w/ Weather-stripping	Bronze Spring Weather-stripping	Astragal at Active Leaf/Two (2) Flush Bolts at Inactive Leave. Panic Hardware
2	Rated	Single Leaf	Hollow Metal	Hollow Metal / Mortar Filled	Stainless Steel Deadbolt Lockset	Three (3) Tamperproof Stainless Steel Hinges	Aluminum w/ Weather-stripping	Bronze Spring Weather-stripping	Panic Hardware
3	Rated	Single Leaf	Hollow Metal	Hollow Metal / Mortar Filled	Stainless Steel Deadbolt Lockset	Three (3) Tamperproof Stainless Steel Hinges	Aluminum w/ Weather-stripping	Bronze Spring Weather-stripping	Panic Hardware
5	Rated	Double Leaf	Hollow Metal	Hollow Metal / Mortar Filled	Stainless Steel Deadbolt Lockset at Active Leaf	Three (3) Tamperproof Stainless Steel Hinges per Leaf	Aluminum w/ Weather-stripping	Bronze Spring Weather-stripping	Astragal at Active Leaf/Two (2) Flush Bolts at Inactive Leave. Panic Hardware



6	Rated	Double Leaf	Hollow Metal	Hollow Metal / Mortar Filled	Stainless Steel Deadbolt Lockset at Active Leaf	Three (3) Tamperproof Stainless Steel Hinges per Leaf	Aluminum w/ Weather-stripping	Bronze Spring Weather-stripping	Astragal at Active Leaf/Two (2) Flush Bolts at Inactive Leave. Panic Hardware
9	Rated	Double Leaf	Hollow Metal	Hollow Metal / Mortar Filled	Stainless Steel Deadbolt Lockset at Active Leaf	Three (3) Tamperproof Stainless Steel Hinges per Leaf	Aluminum w/ Weather-stripping	Bronze Spring Weather-stripping	Astragal at Active Leaf/Two (2) Flush Bolts at Inactive Leave. Panic Hardware
9 th Floor									
7	Fire-rated/ Smoke-proof	Double Leaf	Hollow Metal	Hollow Metal / Mortar Filled	Stainless Steel Deadbolt Lockset at Active Leaf	Three (3) Tamperproof Stainless Steel Hinges per Leaf	Aluminum/ Smoke-proof	Smoke-proof	Astragal at Active Leaf/Two (2) Flush Bolts at Inactive Leave. Panic Hardware. Vision Panels.

END OF SECTION



SECTION 08 91 19

FIXED LOUVERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Section Includes:
1. Fixed, extruded-aluminum louvers

1.3 DEFINITIONS

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.
- B. Horizontal Louver: Louver with horizontal blades (i.e., the axes of the blades are horizontal).
- C. Wind-Driven-Rain-Resistant Louver: Louver that provides specified wind-driven rain performance, as determined by testing according to AMCA 500-L.

1.4 SUBMITTALS

- A. Product Data: For each type of product.
1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.
- B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.
1. Show weep paths, gaskets, flashing, sealant, and other means of preventing water intrusion.
 2. Show mullion profiles and locations.
- C. Samples: For each type of metal finish required.



- D. Shop Drawing Submittal: For louvers indicated to comply with structural performance requirements, including analysis data signed and sealed by the New York State licensed professional engineer responsible for their preparation.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed according to AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.
- F. Windborne-debris-impact-resistance test reports.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
 - 2. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.6 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain louvers from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

2.2 PERFORMANCE REQUIREMENTS

- A. Shop Drawings: louvers, including comprehensive engineering analysis by a New York State licensed professional engineer, using structural performance requirements and design criteria indicated.
- B. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act normal to the face of the building.
 - 1. Wind Loads: Determine loads based on a uniform pressure of 30 lbf/sq. ft., acting inward or outward.



- C. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- E. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

2.3 FIXED, EXTRUDED-ALUMINUM LOUVERS

- A. Horizontal, Nondrainable-Blade Louver:
 - 1. Provide Aluminum Louvers from one of the following:
 - a. Cesco Products
450 Riverside Dr

Wyalusing, PA 18853

612-424-4919
 - b. Greenheck Fan Corp
400 Ross Ave

Schofield, WI 54476

715-359-6171
 - c. Airolite Company
114 Westview Ave

Marietta, OH 45750

740-373-7676
 - d. Or approved equal.
 - 2. Louver Depth: 4 inches.



3. Blade Profile: Plain blade without center baffle.
4. Frame and Blade Nominal Thickness: Not less than 0.060 inch for blades and 0.080 inch for frames.
5. Mullion Type: Exposed.
6. Paint louver components to replicate existing historic copper louvers.
7. Louver Performance Ratings:
 - a. Free Area: As shown on the Mechanical Drawings.
 - b. Point of Beginning Water Penetration: Not less than 700 fpm
 - c. Air Performance: Not more than 0.10-inch wg static pressure drop at 650-fpm free-area velocity.

2.4 LOUVER SCREENS

- A. General: Provide screen at louvers indicated.
 1. Screen Location for Fixed Louvers: Interior face and exterior face.
 2. Screening Type: Bird screening at exterior face of formed copper louvers to match historic detailing and Insect screening at the interior of louvers indicated.
- B. Secure screen frames to louver frames with 316 stainless-steel machine screws, spaced a maximum of 6 inches from each corner and at 12 inches o.c.
- C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.
 1. Metal: Same type and form of metal as indicated for louver to which screens are attached.
 2. Finish: Same finish as louver frames to which louver screens are attached
 3. Type: Non-rewirable, U-shaped frames.
- D. Louver Screening for Aluminum Louvers:
 1. Insect Screening: Aluminum, 18-by-16 mesh, 0.012-inch wire.

2.5 BLANK-OFF PANELS

- A. Uninsulated, Blank-Off Panels: Metal sheet attached to back of louver.
 1. 316 Stainless-steel sheet for copper louvers, not less than 0.038-inch nominal thickness, with grain running in same direction as grain of louver blades.



2. Panel Finish: mill finish.
3. Attach blank-off panels with 316 stainless steel sheet metal screws

2.6 MATERIALS

- A. Aluminum Extrusions: ASTM B 221 Alloy 6063-T5, T-52, or T6.
- B. Aluminum Sheet: ASTM B 209 Alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.
- C. Copper Sheet: ASTM B 370; temper H00, cold rolled except where temper 060 is required for forming. Provide in weight indicated on Drawings but not less than 20-oz. per sq. ft.
- D. Fasteners: Use types and sizes to suit unit installation conditions.
 1. Use Phillips flat-head screws for exposed fasteners unless otherwise indicated.
 2. Use 316 stainless-steel fasteners.
- E. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, made from stainless-steel components, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the load imposed for masonry, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
- F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.7 FABRICATION

- A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- B. Vertical Assemblies: Where height of louver units exceeds fabrication and handling limitations, fabricate units to permit field-bolted assembly with close-fitting joints in jambs and mullions, reinforced with splice plates.
 1. Continuous Vertical Assemblies: Fabricate units without interrupting blade-spacing pattern.
 2. Horizontal Mullions: Provide horizontal mullions at joints where indicated.
- C. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.



- D. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
 - 1. Frame Type: Exterior flange unless otherwise indicated.
- E. Include supports, anchorages, and accessories required for complete assembly.
- F. Provide vertical mullions of type and at spacings indicated, but not more than is recommended by manufacturer, or 72 inches o.c., whichever is less.
 - 1. Exposed Mullions: Where indicated, provide units with exposed mullions of same width and depth as louver frame. Where length of louver exceeds fabrication and handling limitations, provide interlocking split mullions designed to permit expansion and contraction.
 - 2. Exterior Corners: Prefabricated corner units with mitered with blades with concealed close-fitting splices and with semirecessed mullions at corners.
- G. Provide subsills made of same material as louvers for recessed louvers.
- H. Join frame members to each other and to fixed louver blades with fillet welds threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.8 ALUMINUM FINISHES

- A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
 - 1. Color and Gloss: As selected by Commissioner from manufacturer's full range to match historic louver color.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.



3.2 PREPARATION

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

- A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- E. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 079200 "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

- A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Restore louvers damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Commissioner, remove damaged units and replace with new units.
 - 1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

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SECTION 09 22 16

NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Section Includes:

1. Non-load-bearing steel framing systems for interior partitions.

1.3 SUBMITTALS

- A. Product Data: For each type of product.

1. Studs and Runners: Provide documentation that framing members' certification is according to SIFA's "Code Compliance Certification Program for Cold-Formed Steel Structural and Non-Structural Framing Members."

- B. Evaluation Reports: For embossed steel studs and runners and firestop tracks, from ICC-ES.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
- C. Horizontal Deflection: For wall assemblies, limited to 1/240 of the wall height based on horizontal loading of 5 lbf/sq. ft.



2.2 FRAMING SYSTEMS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
 - 2. Protective Coating: Coating with equivalent corrosion resistance of ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.
- C. Studs and Runners: ASTM C 645. Use either steel studs and runners or embossed steel studs and runners.
 - 1. Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness: As required by performance requirements for horizontal deflection: 0.0179 inch
 - b. Depth: 3-5/8 inches.
 - 2. Embossed Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness: As required by horizontal deflection performance requirements: 0.0147 inch.
 - b. Depth: 3-5/8 inches.
- D. Slip-Type Head Joints: Where indicated, provide the following:
 - 1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch-deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
- E. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- F. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-metal thickness, with minimum 1/2-inch-wide flanges.
 - 1. Depth: 1-1/2 inches.
 - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.



- G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 - 1. Minimum Base-Metal Thickness: 0.0179 inch.
 - 2. Depth: 1-1/2 inches.

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide the following:
 - 1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.



3.3 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. Single-Layer Application: 16 inches unless otherwise indicated.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 - 3. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
 - 4. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- E. Direct Furring:
 - 1. Screw to wood framing.
 - 2. Attach to masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

END OF SECTION



SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Section Includes:
1. Interior gypsum board.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For the following products:
1. Trim Accessories: Full-size Sample in 12-inch-long length for each trim accessory indicated.
- C. Samples for Initial Selection: For each type of trim accessory indicated.
- D. Samples for Verification: For the following products:
1. Trim Accessories: Full-size Sample in 12-inch-long length for each trim accessory indicated.

1.4 QUALITY ASSURANCE

- A. Mockups: Build mockups of at least 20 sq. ft. in surface area to demonstrate aesthetic effects and to set quality standards for materials and execution.
1. Build mockups for the following:
 - a. One (1) partition around piping as indicated on the plans.
 2. Apply or install final painting on exposed surfaces for review of mockups.



3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Gypsum Wallboard: ASTM C 1396/C 1396M.
Gypsum wallboard is also available in 1/4- and 3/8-inch (6.4- and 9.5-mm) thicknesses for limited applications.
 1. Thickness: 5/8 inch, Type X



2. Long Edges: Tapered.
- B. Acoustically Enhanced Gypsum Board: ASTM C 1396/C 1396M. Multilayer products constructed of two layers of gypsum boards sandwiching a viscoelastic sound-absorbing polymer core.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:
 - a. National Gypsum Company.
 - b. Quiet Solution.
 - c. Temple-Inland Building Products by Georgia-Pacific.
 - d. Or approved equal
 2. Core: 5/8 inch, regular type.
 3. Long Edges: Tapered.

2.4 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet
 2. Shapes:
 - a. Cornerbead.

2.5 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 1. Interior Gypsum Board: Paper.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use all-purpose compound.



- a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound.

2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
 1. Laminating adhesive shall have a VOC content of 50g/L or less.
- C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- C. Locate edge and end joints over supports, where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.



- D. Form control and expansion joints with space between edges of adjoining gypsum panels.
- E. Cover both faces of support framing with gypsum panels in concealed spaces except in chases braced internally.
 - 1. Fit gypsum panels around ducts, pipes, and conduits.
 - 2. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.
- F. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- G. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Wallboard Type: Vertical surfaces unless otherwise indicated.
- B. Multilayer Application:
 - 1. On partitions/walls, apply gypsum 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.
 - 2. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.4 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Commissioner for visual effect.
- C. Interior Trim: Install in the following locations:



1. Cornerbead: Use at outside corners

3.5 FINISHING GYPSUM BOARD

- A. 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.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.

3.6 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Restore surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION



SECTION 09 91 23
INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following exterior substrates:

1. Gypsum Board
2. Steel
3. Plaster

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.
1. Submit Samples on rigid backing, 8 inches square.
 2. Step coats on Samples to show each coat required for system.
 3. Label each coat of each Sample.
 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.



2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.4 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Commissioner will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Commissioner will designate items or areas required.
2. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Commissioner at no added cost to the City of New York.

1.5 DELIVERY, STORAGE, AND HANDLING

- ##### A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.6 EXTRA MATERIALS

- ##### A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.



PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Benjamin Moore & Co.
 - 2. Sherwin Williams
 - 3. Pittsburgh Paints
 - 4. Or approved equal.

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

2.3 BLOCK FILLERS

- A. Interior/Exterior Latex Block Filler: MPI #4.
 - 1. VOC Content: E Range of E2.

2.4 PRIMERS/SEALERS

- A. Interior Latex Primer/Sealer: MPI #50.
 - 1. VOC Content: E Range of E1.
- B. Interior Alkyd Primer/Sealer: MPI #45.
 - 1. VOC Content: E Range of E1.



2.5 LATEX PAINTS

- A. Interior Latex (Flat): MPI #53 (Gloss Level 1).
 - 1. VOC Content: E Range of E1.
- B. High-Performance Architectural Latex (Semigloss): MPI #141 (Gloss Level 5).
 - 1. VOC Content: E Range of E1.
- C. Interior Latex (Low Sheen): MPI #44 (Gloss Level 2).
 - 1. VOC Content: E Range of E1.

2.6 ALKYD PAINTS

- A. Interior Alkyd (Flat): MPI #49 (Gloss Level 1).
 - 1. VOC Content: E Range of E1.
- B. Interior Alkyd (Eggshell): MPI #51 (Gloss Level 3).
 - 1. VOC Content: E Range of E1.
- C. Interior Alkyd (Semigloss): MPI #47 (Gloss Level 3).
 - 1. VOC Content: E Range of E1.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Masonry: 12 percent.
 - 2. Gypsum Board: 15 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.



- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- C. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content of surfaces or alkalinity of mortar joints to be painted exceed that permitted in manufacturer's written instructions.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.



3.4 FIELD QUALITY CONTROL

- A. Testing of Paint Materials: Commissioner reserves the right to invoke the following procedure at any time and as often as Commissioner deems necessary during the period when paints are being applied:
1. Contractor will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 2. Testing agency will perform tests for compliance of paint materials with product requirements.
 3. Commissioner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, restoring, replacing, and refinishing, as approved by Commissioner, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 PAINTING SCHEDULE

- A. Hollow Metal Doors: Alkyd System: MPI EXT 6.3B
1. Prime Coat: Alkyd Primer
 2. Intermediate Coat: Acrylic Alkyd Enamel (Semi-Gloss)
 3. Topcoat: Acrylic Alkyd Enamel (Semi-Gloss)



- B. Gypsum Board Substrates: Alkyd System: MPI EXT 6.2C
1. Prime Coat: Start Alkyd Primer
 2. Intermediate Coat: House and Trim paint (Semi-Gloss)
 3. Topcoat: House and Trim paint (Semi-Gloss)

END OF SECTION



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SECTION 09 96 56

SLIP-RETARDANT EPOXY FLOOR COATING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes surface preparation and the application of slip-retardant epoxy floor coating on interior exposed concrete floors.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data, application instructions and general recommendations for slip-retardant epoxy floor coating specified herein.
- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Samples
1. Submit two 1"x4" samples in color and profile as selected.
- D. Material certificates signed by manufacturer certifying that the slip-retardant epoxy coating floor coating complies with requirements specified herein.
- E. Maintenance Instructions: Submit manufacturer's written instructions for recommended maintenance practices.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain epoxy floor coating materials including primers, slip-retardant aggregates, resins, hardening agents and finish coats from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels containing brand name and directions for storage and mixing with other components.



- B. Store materials to comply with manufacturer's directions to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Comply with slip-retardant epoxy coating manufacturer's directions for maintenance of ambient and substrate temperature, moisture, humidity, ventilation and other conditions required to execute and protect work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Dex-O-Tex, Rancho Dominguez, CA 90221
 - 2. Tnemec Inc., Kansas City, MO 64120
 - 3. Carboline, St Louis, MO 63146
 - 4. Or approved equal.

2.2 PROPERTIES

- A. Colors: As indicated, or if not otherwise indicated, as selected by Commissioner from manufacturer's standard colors.
- B. Physical Properties: Provide floor coating system that meets or exceeds the listed minimum physical property requirements when tested according to the referenced standard test methods in parentheses.

Overall Thickness (Dry Film) to Top of Slip-Retardant Aggregate:

Very Fine Profile	3 mils
Fine Profile	18 mils
Medium Profile	32 mils
Coarse Profile	54 mils
Very Coarse Profile	90 mils



Coefficient of Friction-Rubber Shoe Surface: (MIL-PRF-3134 Test Procedure):

Static Friction:

	<u>Saltwater Solution on Surface</u>	<u>Oil on Surface</u>
Fine Profile	0.95	0.75
Medium Profile	1.03	0.75
Coarse Profile	1.09	0.85
Very Coarse Profile	1.24	0.78

Sliding Friction:

	<u>Saltwater Solution on Surface</u>	<u>Oil on Surface</u>
Fine Profile	0.89	0.44
Medium Profile	0.95	0.45
Coarse Profile	1.00	0.56
Very Coarse Profile	1.04	0.59

Chemical Resistance:

	(Total Immersion – 7 days)
ASTM D-1308	
Citric Acid (70%)	No Effect
Hydrochloric Acid (46%)	No Effect
Sulfuric Acid (96%)	No Effect
Sodium Hydroxide (50%)	No Effect
Lactic Acid	No Effect
Methyl Ethyl Ketone	No Effect
Hydraulic Fluid	No Effect
Butyl Acetate	No Effect

Resistance to Immersion:

MIL-PRF-23003A Para. 4.6.11	No softening, loss of adhesion or other form of deterioration
SAE 10 Oil	
Detergent Solution	

Fire Resistance:

Flame Spread Index - 0

ASTM E162

Smoke Deposited - 2mg

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where slip-retardant epoxy floor coating is to be installed and notify the Commissioner of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected by the Contractor in the manner acceptable to the Commissioner.



3.2 PREPARATION

- A. Substrate: Perform preparation and cleaning procedures according to flooring manufacturer's instructions for particular substrate conditions involved, and as specified. Provide clean, dry, and neutral substrate for flooring application.
- B. Concrete Surfaces: Shot-blast, acid etch or power scarify as required to obtain optimum bond of flooring to concrete. Remove sufficient material to provide a sound surface free of laitance, glaze, efflorescence, and any bond-inhibiting curing compounds or form release agents. Remove grease, oil, and other penetrating contaminate. Restore damaged and deteriorated concrete to acceptable condition. Leave surface free of dust, dirt, laitance, and efflorescence.
- C. Materials: Mix epoxy primer and urethane coating components when required and prepare materials according to manufacturer's instructions.

3.3 APPLICATION

- A. General: Apply each component of slip-retardant epoxy coating system according to manufacturer's directions and to produce a uniform monolithic flooring surface.
- B. Bond Coat: Apply epoxy bond coat over prepared substrate at manufacturer's recommended spreading rate by roller, squeegee, trowel or spray.
- C. Basecoat: Trowel, roller, or squeegee apply two or three coats of slip-retardant epoxy coating as required with appropriate skid resistant profile.

3.4 CURING, PROTECTING AND CLEANING

- A. Cure epoxy floor coating materials according to manufacturer's directions, taking care to prevent contamination during application stages and before completing curing process. Close application area for a minimum of 24 hours.

END OF SECTION



SECTION 10 14 23

ROOM IDENTIFICATION SIGNAGE

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Provide identifying device Work as indicated on the Drawings and as specified herein, including but not limited to cast metal letters, plaques, and seals; etched zinc signs.
- B. Locations of identifying devices shall be as indicated on Drawings and as specified herein. The terms "signs" and "plates" are used interchangeably.

1.3 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 New York City Building Code, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. American National Standards Institute, ANSI A117.1, Providing Accessibility and Usability for Physically Handicapped People
- C. Copper Development Association (CDA)
- D. National Association of Architectural Metal Manufacturers (NAAMM)
- E. Americans with Disabilities Act (ADA), Accessibility Guidelines,
- F. New York City Building Code, Section BC 1026 - Signage.

1.4 SUBMITTALS



- A. Schedule and layouts for all signs, indicating sign type, material, location, text, text letter style, inserts, dimensions, color, Braille transcriptions, and other pertinent information. Submit a photocopy proof of each zinc sign, complete with Braille.
- B. Cast Letters
- Shop Drawing of full text at scale of 3"= 1'-0"; indicate letter style, sizes, spacing and method of securing.
- C. Cast Tablet, Plaque
- Submit full size rubbing of plaque for approval before casting.
- D. Samples
1. Zinc Signs: Submit sample of each type, indicating colors, finishes; complete with acrylic lenses, paper inserts; showing letter style, size, method of attachment, and other pertinent characteristics.
 2. Cast Letters: Submit one full size letter for approval. Approved letter may be used for the Project.
- E. Project Closeout Submittals
1. Touch-up coating kit for zinc signs, to match the original "Brushed Aluminum" color coating; each container labeled by coating manufacturer. Kit shall consist of 3 quarts paint, 1 quart catalyst, 1 quart additive for brush application, 1 five-ounce clear graduated mixing container, 2 touch-up brushes, 1 pint brush cleaning solvent, 4 sheets of abrasive paper for removing scratches, and complete instructions for use of the kit.
- In addition, provide one pint of touch-up paint of each color used for text and background, other than the "Brushed Aluminum" color.
2. Graffiti cleaning solvent for zinc signs, capable of removing permanent marker with minimal effect on sign finish, as recommended by sign coating manufacturer; six 1-pint containers.
 3. Provide four Torx Pin-Head drivers for each size required.
 4. Provide 60 extra Torx Pin-Head mounting screws of each size used.



1.5 QUALITY ASSURANCE

- A. Work of this Section shall be performed by firms experienced in metal casting, signage manufacture and installation of these items.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle products of this Section as recommended by manufacturer or fabricator to protect from damage.

PART 2 - PRODUCTS

2.1 ETCHED ZINC SIGNS, GENERAL

Provide room signs, stair signs, Tactile exit signs, live load signs, standpipe signage, elevator signage, elevator landing signs, and other etched zinc signs as specified herein.

- A. Signs and plates specified herein as zinc shall be chemically etched zinc with raised lettering and pictograms as indicated on the Drawings and as specified. Background area shall be etched to a depth of .032" to .040", to produce raised tactile text, pictograms, and Braille. Signs shall be one-piece solid zinc plate .125" thick prior to etching, unless specified otherwise. For 2"x4" room number plates to be installed on door frame heads the zinc plate shall be .064" thick prior to etching. For signs with changeable inserts, the tactile text portion of the sign shall be a .064" thick zinc plate, permanently laminated to an aluminum extrusion or precision routed aluminum plate for a total thickness of .375" as indicated on the Drawings. Surfaces, edges and corners shall be eased and polished as necessary to eliminate all roughness and sharpness.
- B. Unless indicated otherwise, zinc and aluminum surfaces, including the sign face, edges, area behind inserts, and exposed screw heads, shall receive spray painted Matthews acrylic polyurethane enamel, for a uniform eggshell-matte finish; Matthews Paint Company color name "Brushed Aluminum", color number 41342SP. Raised letters, numerals, and pictograms shall receive black acrylic polyurethane enamel unless indicated otherwise. Prepare and prime metal surfaces prior to finish paint coating as recommended by the paint manufacturer. All finishes shall be baked on as recommended by the coating manufacturer. Exposed screw heads shall be painted without clogging drive sockets.
- C. Where finish is specified as red letters on white background, or other multi-color combination, surfaces shall be painted with polyurethane acrylic enamel paint. If the sign is exposed to the outdoors the paint shall be exterior rated, containing UV inhibitor.



- D. Provide Grade II Braille for all signs unless indicated otherwise, accurately transcribed from letter and numeral characters.
- E. Drilled and countersunk mounting holes, unless indicated otherwise.
- F. Fabricate signs to comply with requirements of Americans with Disabilities Act (ADA) and ANSI A117.1.
- G. Manufacturers
 - 1. Dixie Graphics, Nashville, TN 37211. Phone 615 832-7000.
 - 2. Dutton Architectural, Chattanooga, TN. Phone 423 752-1300.
 - 3. Advance Corp., Braille-Tac Div., St. Paul, MN 55101. Phone 651 771-9297.
 - 4. Etchcraft, Portland, OR 97219. Phone 800 356-7998.
 - 5. Signs and Decal Corp., Brooklyn, NY 11211. Phone 718 486-6400.
 - 6. or approved equal

2.2 ROOM NAME PLATES AND NUMBER PLATES

- A. Provide etched zinc room name plates and number plates with text and location as indicated on Drawings and as specified herein.
 - 1. Material: .125" thick zinc, unless indicated otherwise.
 - 2. Size: As shown on drawings
 - 3. Finish: Acrylic polyurethane enamels
 - 4. Letter Style: Helvetica Regular
 - 5. Mounting: Countersunk tamper-resistant Torx Pin-Head flat head screws and construction adhesive, unless indicated otherwise. Signs less than 75 square inches in area that are located on ceramic tile wall finish shall be mounted with double face acrylic foam tape and construction adhesive, and shall be fabricated without screw holes.

2.3 SIGNS FOR SYMBOLS OF ACCESSIBILITY



- A. Fabricate etched zinc signs to comply with the requirements of Americans with Disabilities Act (ADA), and ANSI A117.1
- B. Provide signs of type and with text and at locations as indicated on the Drawings.
- C. Material: .125" zinc. Finish colors as indicated on the Drawings. Acrylic polyurethane enamels, exterior rated where applicable.
- D. Mounting: Countersunk tamper-resistant Torx Pin-Head flat head screws, and construction adhesive unless indicated otherwise. Signs less than 75 square inches in area that are located on ceramic tile wall finish shall be mounted with double face acrylic foam tape and construction adhesive, and shall be fabricated without screw holes.

2.4 MISCELLANEOUS MATERIALS

A. Construction Adhesive

All adhesives to be used on the building interior shall be low V.O.C.

- 1. Henkel Loctite "PL" Premium Advanced Polyurethane Construction Adhesive
- 2. Liquid Nails "LN-950" Polyurethane Construction Adhesive
- 3. Quikrete Polyurethane Construction Adhesive
- 4. or approved equal

B. Double face acrylic foam tape: 1/2" wide.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Install no Work until surfaces on which Signage, Seals, Tablets, and other Work for this Section are to be placed and attached are completed and free of defects.

3.2 PREPARATION

- A. Surfaces to receive placement of Work of this Section shall be clean and dry.

3.23 INSTALLATION



- A. Install signage, seals, tablets, plaques, and other Work of this Section level and plumb, secured to substrate as detailed on Drawings, as specified, and as recommended by manufacturer. Use concealed attachments where possible for cast letters and plaques, and tamper-resistant fasteners and adhesive for other signs.

B. Mounting Locations

Mount all signs, seals, tablets, plaques, and other Work of this Section as indicated on Drawings and as specified herein.

C. Mounting:

1. The Contractor shall be responsible for the following:
 - a. Coordinating the location and size of metal grounds concealed behind wallboard, to receive the fasteners for the signs.
 - b. Marking the location of all sign fasteners on the wall.
 - c. Drilling the pilot holes.
 - d. Supplying the specified fasteners, masonry anchors and drivers.
 - e. Installing the signs.
2. Zinc signs shall be secured to masonry walls with construction adhesive in addition to tamper-resistant Torx Pin-Head, diameter #10, x 2" long, flat head countersunk masonry anchors. Sand and roughen substrate to receive adhesive as per manufacturer's instructions. Interior anchors to be zinc plated, exterior anchors to be hot dip galvanized.
3. Zinc signs shall be secured to partitions constructed of wallboard, metal studs, and metal grounds, with construction adhesive, in addition to tamper-resistant Torx Pin-Head, diameter #10, flat head countersunk zinc plated sheet metal screws. Drill pilot holes if required. Provide screw length sufficient to penetrate at least 1/2" past wall finish materials, wallboard, and metal grounds. Prepare substrate to receive adhesive and apply as per manufacturer's instructions.

Signs less than 75 square inches in area that are located on ceramic tile wall finish shall be mounted with double face acrylic foam tape and construction adhesive, and shall be fabricated without screw holes. These signs shall be mounted with double face acrylic foam tape and construction adhesive. Apply tape around perimeter of the back of sign,

Room Identification Signage



leaving 1" open on each side, and adhesive covering the remainder of the back. Brace sign until securely adhered.

4. 2"x4" zinc room number plates shall be secured to door frame heads with tamper-resistant Torx Pin-Head, diameter #8, button head zinc plated sheet metal screws.
5. Furnish and install fasteners in such manner that there are no exposed sharp edges in the completed installation. Exposed screw heads shall be painted to match sign, without clogging drive sockets.

3.4 CLEAN-UP AND PROTECTION

- A. Clean surfaces of Work of this Section.
- B. Remove debris resulting from Work of this Section from Work Area.
- C. Remove protection covers and protect Work until Project Completion.

END OF SECTION



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SECTION 13 48 00
SOUND, VIBRATION, AND SEISMIC CONTROL

PART 1. GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Section Includes:

1. Grades of closed-cell and mixed-cell polyurethane vibration mitigation elastomer to be applied between vibration sources and structural building components
2. Polyurethane bearing materials designed specifically to reduce the transfer of vibrations between structural elements of a building, while supporting a structural or architectural load.

1.3 REFERENCES

- A. European Standardization Organizations ETSI (EN)
3. EN ISO 9001:2008 – Quality Management Systems
 4. EN ISO 14001:2004 – Environmental Management System

1.4 SYSTEM DESCRIPTION

- A. Material selection shall demonstrate theoretical vertical natural frequency of the loaded bearings of $f_n < 12$ Hz unless otherwise approved by responsible consultant.

1.5 SUBMITTALS

- A. Product Data: Submit Product Data including manufacturer's product data sheets for specified products, including:
1. Material
 2. Dimensions
 3. Load Deflection
 4. Modulus of Elasticity
- B. Manufacturer Material Selection should include natural frequency calculated per a Single Degree of Freedom (SDOF) model, bearing deflection, and estimated creeping based on input from the commissioner. Material Selection includes the following:



1. Material Selection - specific material products/grades required to meet project requirements to be approved by commissioner.
 2. Material Geometry and Quantities - Specific size and thickness of each material bearing area shall be defined in the material selection and is to be approved by commissioner.
- C. Certificates: Product Certificates signed by the manufacturer certifying materials comply with the specified product data sheets.
- D. Manufacturer's Certifications: Manufacturer shall hold a current certification according to EN ISO 14001:2004, and EN ISO 9001:2008.
- E. Manufacturer's Installation Instructions shall be provided within two weeks of approved purchase order.
- F. Manufacturer's Field Reports:
1. Submit field reports to document proper installation while commissioner is on the construction site.
- G. Closeout Submittals: submit the following:
1. Material Warranty: Submit manufacturer's warranty in accordance to the contract documents.
 2. Typical Details of selected sections: Submit shop drawings showing material placement and typical details used for clarity only.
 3. Loading shall be provided, using load combinations to predict the actual load expected during regular building operations and occupancy to the commissioner. The specific load considered for vibration design may be considerably less than the Design Load and the Service Load based on building occupancy type, live load reductions, etc. The "regular" building occupancy load is only used for vibration design considerations.

1.6 QUALITY ASSURANCE

A. Qualifications:

1. Installer: experienced in performing work of this section that is specialized in installation of work similar to that required for this project.
2. Manufacturer Qualification: Manufacturer shall be capable of delivering specified materials of in quantities and of sufficient quality according to the project documents. Manufacturer shall be capable of providing field service representation during installation of manufacturer material and approving application method. Manufacturer shall hold current certifications in EN ISO 9001:2008, and ISO 14001:2004.
3. Pre Installation Meetings: Conduct pre-installation meetings to verify project requirements, manufacture's installation instructions and manufacturer's warranty requirements. Project meetings shall be conducted and documented as required by the project specification which will ensure material installation meets all applicable drawings, and specification.

1.7 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with Product Requirements Sections.

Sound, Vibration, and Seismic Control



B. Ordering: Must comply with Manufacturer's ordering instructions and lead time requirements to avoid construction delays. All materials quantities must be in accordance to the bill of materials.

C. Delivery, Storage, and Protection

1. Deliver, store and handle materials in accordance with manufacturer's written instructions.
2. Deliver in original packaging with labels and identification in-tact.
3. Inspect items upon delivery to ensure that the specified products have been received.
4. Store items in a secure dry location, protected from weather until ready for installation.

1.8 PROJECT CONDITIONS

A. Materials should be treated according to manufactures install recommendation.

1.9 MAINTENANCE

A. No maintenance required.

PART 2. PRODUCTS

2.1 MANUFACTURER:

- A. Getzner USA Inc., Charlotte, NC 28217
- B. Mason Industries, Hauppauge, NY 11788
- C. Kinetics Noise Control, Dublin, OH 43017
- D. Or approved equal

2.2 PRODUCT(S)

A. Product Description: Materials of different densities are produced to perform under different loading scenarios. Please contact manufacturer for more detailed information provided in the product data sheets.

B. Closed-Cell Polyurethane Vibration Mitigation Materials:

1. Material: Closed-Cell Polyurethane
2. Dimensions: 1 foot x 1 foot
3. Thickness: ~1 inch (min) – 3 inches (max)

C. Mixed-Cell and Closed-Cell Polyurethane Vibration Mitigation Materials:



1. Material: Mixed-Cell and Closed-Cell Polyurethane
2. Dimensions: 4 foot 11 inches x 3 feet 9 inches
3. Thickness: ~1 inch (min)

2.3 SOURCE QUALITY

- A. Materials shall be tested by manufacturer's Quality Control process at a minimum frequency of 1 sample of each material grade. The material selected conforms to the product data sheets provided by the manufacturer.

PART 3. GENERAL

3.1 MANUFACTURER'S INSTRUCTIONS:

- A. Compliance: Comply with manufacturer's written data, including product technical bulletins and product installation instructions
- B. Installation Inspector: Manufacturer's installation inspector shall be on site for the beginning of installation for visual inspection of the substrate, placement of materials, and compliance to installation instructions. Please see Section 3.5 'Field Quality Control' for more information on Manufacturer's Field Services.

3.2 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
- B. Do not begin installation until substrates have been properly prepared.
- C. If substrate preparation is the responsibility of another installer, notify Commissioner of unsatisfactory preparation before proceeding

3.3 PREPARATION

A. Surface Preparation:

1. Material is to be placed on a smooth mud slab (commonly known as rat slab or substratum concrete) free of protrusions greater than 1/4" high.
2. No standing water should be present on the installation surface.
3. Relatively flat protrusions with smooth transitions are not a problem. If there is any doubt please contact m.
4. Adhesives (optional) – Prior to delivery, confirm that only adhesives specifically recommended by the manufacturer of the resilient materials should be used during the installation. Methods used to install any adhesives must comply with the written instructions of the adhesive manufacturer including requirements for operating temperature, humidity, shelf life, working time, and the use of primers.

3.4 INSTALLATION/APPLICATION/CONSTRUCTION

- A. Install in accordance with manufacturer's instructions
- B. Related Products Installation: Refer to other sections listed in Related Sections paragraph herein for related products installation.

3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Installation Inspection:
 - 1. A manufacturer's representative is recommended to be on site for the beginning of the installation process until the installation crew is comfortable. Inspection includes visual inspection of installation surface and placement of vibration material for work observed while inspector is on project site.
 - 2. Schedule site meeting with party responsible for installation of manufacturer's material to visit project site and review installation procedures at least two weeks prior to commencement of installation.
 - 3. Reports shall be submitted in three (3) business days from the end date of inspection.
- B. Written Reports: Manufacturer of products supplied under this Section shall inspect work involved in handling, installation/application, and protection and cleaning of its product(s). Manufacturer shall submit written reports in acceptable format to verify compliance of Work with Contract and manufacturer's warranty, while the Inspector is on site.

END OF SECTION



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SECTION 21 00 03

SCOPE OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide fire protection systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. This specification is not intended to be a complete itemization of fire protection required, but is for guidance of this contractor in estimating his work. This contractor shall examine the architectural, mechanical, electrical, plumbing and fire protection plans for all fire protection work required and shall provide same.
- B. It is intended that all items of material and equipment mentioned in this specification and shown on the plans shall be read as if the work "Provide" was prefixed thereto.
- C. Description of work included:
1. The existing fire standpipe system shall remain complete, fire standpipe system consisting of existing risers and riser control valves, distribution and branch piping, hose valves, hose racks and cabinets, roof manifolds, siamese, pumps and pump controllers, and all associated appurtenances and alarm devices, with new work scope as detailed within the design documents.
 2. The existing wet sprinkler system shall remain complete, with this Contractor monitoring a complete sprinkler system consisting of existing risers and riser control valves, sprinkler heads, siamese, pumps and pump controllers, and all associated appurtenances and alarm devices with new work scope, as detailed with the design documents.



3. Provide a complete combined fire protection system consisting of:
 - a. Standpipe:
 - (1) Maintaining coverage of risers and riser control valves, distribution and branch piping, hose valves, hose racks and cabinets, roof manifolds, siamese, pumps and pump controllers, and all associated appurtenances and alarm devices.
 - b. Sprinkler:
 - (1) Maintaining coverage of the existing sprinkler floor control valve assembly, distribution and branch piping, sprinkler heads, all associated appurtenances and alarm devices, and all new work, as shown on the design documents.
4. System cleaning, balancing, testing, adjusting and inspection.
5. Sound and vibration isolation.
6. Painting.
7. Supports, anchors, hangers and auxiliary structural members required for support of mechanical work. Drawings, templates, structural steel, anchor bolts, isolation materials, formwork for concrete and other equipment supports.
8. Firestopping of pipe penetrations through rated walls, floors, etc., and waterproof sleeves.

1.4 WORK NOT INCLUDED

- A. The items listed below are related to this work but specified under other sections of the contract:
 1. Finish painting, except as penetrating wall or roof.
 2. Base flashing for materials penetrating walls or roof.
 3. Power wiring for motors and motor controllers.
 4. Concrete for equipment, support pads and pipe in casement.
 5. Wire tracing and associated insulation.
 6. Alarm wiring from fire protection alarm devices to fire command station.



7. Incoming City water services including meters, backflow preventors, etc.
8. Connection to supervisory central station.
9. Floor drains and/or drain receptacles for test or drain purposes.

PART 2 - PRODUCTS

2.1 NOT USED.

PART 3 - EXECUTION

3.1 OPERATING INSTRUCTION PERIOD

- A. Provide one day of instructions for standpipe and sprinkler systems.

END OF SECTION



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SECTION 21 05 17

SLEEVES AND SEALS FOR FIRE SUPPRESSION PIPING

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide a U.L. approved firestopping system in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Firestop Compounds.
B. Damming Material.
C. Sleeves

1.4 SUBMITTALS

- A. Submit shop drawings showing proposed material, reinforcement, anchorage, fastenings, and method of installation. Construction details shall accurately reflect actual job conditions.
- B. Submit Material Safety Data Sheets with product delivered to job site.
- C. U.L. Tested Systems: Submit drawings showing typical installation details for the methods of installation. Indicate which firestop materials will be used and thickness for different hourly ratings, and approved UL system number.
- D. Engineering Judgements: Submit manufacturer's drawings for all non-standard applications where no U.L. tested system exists. All drawings must indicate the "Tested" U.L. system upon which the judgement is based so as to assess the relevance of the judgement to some known performance.
- E. Upon completion, installer shall provide written certification that materials were installed in accordance with the manufacturer's installation instruction and details.



1.5 QUALITY ASSURANCE

- A. Firestop system installation shall conform to requirements of qualified designs or manufacturer approved modifications, as supported by engineering reports. Field inspections shall be carried out by the firestop manufacturer to verify that the installation is in accordance with the manufacturer requirements.
- B. Install firestop materials and systems as required by these Contract Documents and meet and be accepted for use by New York City Building Code.
- C. Submit manufacturer's product data, letter of certification, or certified laboratory test report that the material or combination of materials (firestop system) meets the requirements specified in accordance with the applicable referenced standards.
- D. The firestop compound shall not contain any solvents or inorganic fibers. The penetration seal material must be unaffected by moisture and must maintain the integrity of the floor or wall assembly for its rated time period when tested in accordance with ASTM E814 (UL1479). The system shall be U.L. Classified, for up to and including 3 hours.
- E. Firestopping materials shall be asbestos and lead free and shall not incorporate or not require the use of hazardous solvents.
- F. Firestopping sealants must be flexible, allowing for normal pipe movement.
- G. All fire stopping materials shall be manufactured by one manufacturer.
- H. Installation of firestopping systems shall be performed by the Contractor instructed or approved by the firestop manufacturer.
- I. Material used shall be in accordance with the manufacturer's written installation instructions.
- J. Submit a line-by-line statement of compliance or non-compliance with this specification section.

PART 2 - PRODUCTS

2.1 FIRESTOPPING

- A. Provide firestop compounds for caulk, pour, trowel or pump application. Material must be capable of sealing openings around single or multiple pipes against fire, smoke and toxic gases, and maintaining rating with a thickness no greater than the structure.
- B. Provide a damming material, where required, per manufacturer's recommendations and as shown on the Drawings.



- C. Provide a firestop system consisting of a material, or combination of materials, to retain the integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke or gases through penetrations in fire-rated barriers. It shall be used in specific locations as follows:
 - 1. Penetrations for the passage of piping through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor slabs and floor/ceiling assemblies), and vertical service shafts.
 - 2. Locations shown specifically on the drawings or where specified in other sections of these specifications.

D. MATERIALS

- 1. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating item(s) without affecting the adhesion or integrity of the system.
- 2. Firestopping materials shall not require hazardous waste disposal of used containers/packages.
- 3. Provide firestopping materials free of solvents which will not experience shrinkage while curing.
- 4. Firestopping materials shall be unaffected by moisture.

2.2 SLEEVES

- A. Provide sleeves for each pipe passing through walls, partitions, and floors.
- B. Wall and floor sleeves.
 - 1. Sleeve Materials

Type	Sleeve Materials
1	#18 gauge, galvanized steel
2	Standard weight galvanized steel pipe

- 2. Sleeve Sizes
 - a. Sleeves shall be of adequate diameter to allow pipe, insulation, and fire stopping to fit.
 - b. Sleeves shall provide 1" minimum clearance around pipes smaller than 4" and 2" minimum clearance around pipes 4" and larger.



3. Sleeve Lengths

Location	Sleeve Length	Material
Floor	All floor sleeves to extend minimum of 2" above finished floor level.	2
Stair Landing	Equal to depth of construction and terminated flush with finished surfaces.	2
Walls and Partitions	Equal to depth of construction and terminated flush with finished surfaces.	1
Floors with membrane waterproofing	All floor sleeves to extend minimum of 2" above finished floor level.	3

C. Foundation Wall Sleeves

1. The pipe to wall sleeve penetration closure shall be "Pipe Linx." Seals shall be modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and wall sleeve opening. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and nut. After the seal assembly is positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide an absolutely watertight seal between the pipe and wall opening. The seal shall be constructed so as to provide electrical insulation between the pipe and wall, thus reducing changes of cathodic reaction between these two members.
2. Contractor shall determine the required inside diameter of each individual wall opening or sleeve before ordering, fabricating or installing. The inside diameter of each wall opening shall be sized as recommended by the manufacturer to fit the pipe and Pipe Linx to assure a watertight joint. If pipe O.D. is non-standard due to coating, insulation, etc., consult manufacturer for assistance before proceeding with wall opening detail



2.3 MANUFACTURERS

A. Firestopping

1. Specified Technologies, Inc.
2. Dow Corning
3. 3M
4. International Protective Coatings
5. Or Approved Equal

B. Foundation Wall Sleeves

1. Calpico
2. Linkseal
3. HILTI
4. Or Approved Equal

PART 3 - EXECUTION

- 3.1 Deliver materials to site in original unopened containers or packages bearing the manufacturer's name, brand designation, product description and U.L. Classification Mark.
- 3.2 Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job site.
- 3.3 Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.
- 3.4 Comply with recommended procedures, precautions or remedies described in Material Safety Data Sheets as applicable.

3.5 EXAMINATION

- A. Examine areas and conditions under which work is to be performed and notify the Contractor in writing of conditions detrimental to proper and timely completion of the work.
- B. Verify that openings are properly sized and in suitable condition to receive the work of this section.



- C. Verify manufacturer's printed instructions for installation and when applicable, curing in accordance with temperature and humidity. Conform to ventilation and safety requirements.
- D. Verify the condition of the substrates before starting work.
- E. Verify Weather Conditions. Do not proceed with installation of firestop materials when temperatures fall outside the manufacturer's suggested limits.
- F. Verify that firestopping materials are installed so as not to contaminate adjacent surfaces.
- G. Schedule firestopping after installation of penetrants but prior to concealing the openings.
- H. Where firestopping is installed at locations which will remain exposed in the completed work, provide protection as necessary to prevent damage to adjacent surfaces and finishes, and protect as necessary against damage from other construction activities.
- I. Verify that all pipe, conduit, ducting which penetrate fire-rated construction have been permanently installed prior to installation of firestop.

3.6 PREPARATION

- A. Clean substrate of dirt, dust, grease, oil, loose materials, rust or other matter that may affect the proper fitting or adhesion of the firestopping materials.
- B. Clean metal and glass surfaces with a non-alcohol solvent.

3.7 INSTALLATION

- A. Installation of firestops shall be performed by an applicator/installer qualified and instructed by the manufacturer. Installation shall be performed in strict accordance with manufacturer's details installation procedures.
- B. Apply firestops in accordance with fire test reports, fire resistance requirements, acceptable sample installations, and manufacturer's recommendations.
- C. Unless specified and approved, all insulation used in conjunction with through-penetrations shall remain intact and undamaged and may not be removed.
- D. Seal holes and penetrations to ensure an effective smoke seal.
- E. In areas of high traffic, protect firestopping materials from damage. If the opening is large, install firestopping materials capable of supporting the weight of a human.
- F. Insulation types specified in other sections shall not be installed in lieu of firestopping material specified herein.



- G. All combustible penetrants (e.g. non-metallic pipes or insulated metallic pipes) shall be firestopped using products and systems tested in a configuration representative of the field condition.
- H. Dam Construction
 - 1. When required to properly contain firestopping materials within openings, damming or packing materials may be utilized. Combustible damming material must be removed after appropriate curing. Noncombustible damming materials may be left as a permanent component of the firestop system.
- 3.8 Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.
- 3.9 Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation.
- 3.10 Firestop systems do not re-establish the structural integrity of load bearing partitions. Contractor shall consult the Commissioner prior to penetrating any load bearing assembly.
- 3.11 UN-INSULATED COLD PIPES
 - A. Install a pipe sleeve through the wall or slab to be penetrated with an inside diameter large enough to include the pipe and firestopping.
 - B. Install firestop material at each end of sleeve to form a U.L. approved system.
 - C. Mark penetration in an approved manner to verify manufacturer's inspection.
 - D. Cover firestopping with escutcheon cover.
- 3.12 INSULATED PIPES
 - A. Install a pipe sleeve through the wall or slab to be penetrated with an inside diameter large enough to include the specified thickness of insulation.
 - B. Pipe insulation should be continuous through sleeve. Insulation should be covered with a vapor barrier. For depth of wall plus 1" on either side of wall or slab, vapor barrier shall be wrapped with a 26 gauge sheetmetal inner sleeve. Firestop shall be applied between wall sleeve and pipe protection sleeve.
 - C. Install firestop material at each end of sleeve to form a U.L. approved system.
 - D. Mark penetration in an approved manner to verify manufacturer's inspection.
 - E. Cover firestopping with escutcheon cover.



3.13 FIELD QUALITY CONTROL

- A. Prepare and install firestopping systems in accordance with manufacturer's printed instruction and recommendations.
- B. Follow safety procedures recommended in the Material Safety Data Sheets.
- C. Finish surfaces of firestopping which are to remain exposed in the completed work to a uniform and level condition.
- D. All areas of work must be accessible until inspection by the New York City Fire Department.
- E. Correct unacceptable firestops and provide additional inspection to verify compliance with this specification.

3.14 CLEANING

- A. Remove spilled and excess materials adjacent to firestopping without damaging adjacent surface.
- B. Leave finished work in neat, clean condition with no evidence of spill overs or damage to adjacent surfaces.

END OF SECTION



SECTION 21 05 18

ESCUTCHEONS FOR SUPPRESSION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide fire protection systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Escutcheons.

1.4 SUBMITTALS

- A. Product Data: Manufacturers' catalogs, brochures.

1.5 QUALITY ASSURANCE

1. City of New York Building Code.
2. City of New York Fire Department.
3. National Fire Protection Association (NFPA)
4. Underwriters Laboratories (U.L.)
5. Factory Mutual (FM)

PART 2 - PRODUCTS

2.1 GENERAL

- A. The following specifications represent desired design, materials and construction standards for the various items of work. Manufacturer names and model numbers are used to describe specific types, styles and quality.



2.2 ESCUTCHEONS

- A. Provide escutcheons on all exposed piping through walls, floors, partitions and ceilings.
- B. Escutcheons shall be held in place by set screws.
- C. Escutcheon Application

Location	
Finished Spaces	Chrome plated brass
Unfinished spaces: including mechanical equipment rooms.	Cast iron

- D. Two-piece or hinged escutcheons will not be permitted.
- E. Escutcheons shall be installed on both sides of pipe penetrations.

2.3 MANUFACTURERS

- A. Escutcheons
 - 1. H. O. Trerice
 - 2. Weksler Instruments Corp.
 - 3. Taylor Sybron Corp.
 - 4. Or Approved Equal

PART 3 - EXECUTION

3.1 NOT USED.

END OF SECTION



SECTION 21 05 19

METERS AND GAUGES FOR FIRE SUPPRESSION SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide meters and gauges for fire protection systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Gauges.

1.4 SUBMITTALS

- A. Product Data: Manufacturers' catalogs, brochures.
B. Application Schedule: Schedule of locations and pressure gauge range.

1.5 QUALITY ASSURANCE

- A. National Fire Protection Association (NFPA)
B. Underwriters Laboratories (U.L.)
C. Factory Mutual (FM)

PART 2 - PRODUCTS

2.1 GENERAL

- A. The following specifications represent desired design, materials and construction standards for the various items of work. Manufacturer names and model numbers are used to describe specific types, styles and quality.



2.2 GAUGES

- A. Provide pressure gauges where indicated on the drawings and in accordance with the schedule given below. All gauges shall be provided with snubbers. Gauges shall have 4½" diameter dial, white coated with black figures and graduations. Shutoff cock shall be provided between gauge and piping to permit gauge removal while system is under pressure.
- B. Gauges shall have graduation such that at normal working pressure the needle is in the center of the field.
- C. Gauge Schedule
 - 1. Gauge Location
 - Inlet and Outlet of Pumps
 - Sprinkler Floor Control Valves
 - Inlet and Outlet of PRV's
 - Inlet and Outlet of Dry Pipe Valves
 - Main Water Service
 - Top and Bottom of all Risers

2.3 MANUFACTURERS

- A. Pressure Gauges
 - 1. H. O. Terrice
 - 2. Weksler Instruments Corp.
 - 3. Taylor Sybron Corp.
 - 4. Or Approved Equal

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION



SECTION 21 05 20

PIPING AND FITTING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide piping and fitting materials for fire protection systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Pipes.
B. Fittings.
C. Joints.

1.4 SUBMITTALS

- A. Prior to purchase, submit a list of all proposed piping materials including system/material.
B. Submit complete back-up material where manufacturing specification standards of proposed materials differ from those specified.

1.5 QUALITY ASSURANCE

- A. Each pipe length shall have the manufacturer's name cast, stamped or rolled on.
B. Each fitting shall have the manufacturer's name cast, stamped or rolled on.



PART 2 - PRODUCTS

2.1 BLACK STEEL PIPE (SCHEDULE 40)

- A. Pipe: Standard weight black steel pipe, Schedule 40, welded or seamless, with manufacturer's name rolled into each length.
- B. Fittings
 - 1. Threaded: Standard malleable iron couplings with flat band.
 - 2. Welded or Flanged: Standard weight steel.
 - 3. Mechanical Couplings: See Section 2.3.
- C. Joints: Red or white lead and oil or approved compound.
- D. Application
 - 1. Threaded: All sprinkler systems.
 - 2. Welded: All fire standpipe over 175 psi.
 - 3. Mechanical Couplings: Sprinkler and Fire Standpipe (See Section 2.3).

2.2 GALVANIZED STEEL PIPE

- A. Pipe: Standard weight galvanized steel pipe, Schedule 40, with makers name rolled into each length.
- B. Fittings
 - 1. Threaded: Galvanized malleable iron with flat band steam pattern.
 - 2. Mechanical Couplings: See Section 2.3. Rolled groove only.
- C. Joints: Red or white lead and oil or approved compound.
- D. Application: Dry pipe sprinkler system.



2.3 MECHANICAL COUPLINGS

A. The following fittings are taken from the catalog of Victaulic and are representative of the style and construction required.

B. Standpipe

Style	Pipe Weight	Pressure Rating	Sizes
77-Flexible	Schedule 40	0-500 PSI	1"-10"
Firelock - Rigid	Schedule 40	0-175 PSI	2"-6"

C. Sprinkler

Style	Pipe Weight	Pressure Rating	Sizes
77-Flexible	Schedule 10/40	0-500 PSI	1"-10"
Firelock - Rigid	Schedule 40	0-175 PSI	2"-6"
920	Schedule 40	0-175 PSI	2"-3"
921	Schedule 40	0-175 PSI	3"-8"

D. The following products are not acceptable:

1. FIT (Style 96, 963, 969, 719, 966, 960 & 929)
2. Hooker (Style 922)

2.4 MANUFACTURERS

A. Mechanical Couplings

1. Victaulic
2. Anvil International Gruvlock/Anvil Fire
3. Shurfjoint
4. Or Approved Equal



- B. Piping
 - 1. Allied Tube and Conduit Corp.
 - 2. Berger Pipe Co.
 - 3. Wheatland Tube Co.
 - 4. Or Approved Equal
- C. Fittings
 - 1. Flagg
 - 2. Nibco
 - 3. Stockham
 - 4. Victaulic
 - 5. Or Approved Equal

PART 3 - EXECUTION

3.1 JOINTS

- A. Threaded Joints: Do not damage fitting surface, remove burrs and ream smooth. Apply red lead and oil to male threads only. Clean joint thoroughly of excess jointing material.
- B. Flanged Joints: Use matched flange faces and 1/16" thick compressed gaskets.
- C. Welded Joints:
 - 1. Butt welded joints shall be open type by the oxyacetylene torch or electric arc process. Fuse welds thoroughly to the joint edges and extend completely to the bottom of V-groove cut. Weld width to a minimum of 2½ times the pipe wall thickness and to be symmetrical with respect to the center line of joint. Build up welds to obtain a gradual increase in thickness from edge to center and the thickness from edge to center is not to exceed 1¼ times the pipe wall thickness. Make all welds of sound metal, free from laps, gas pockets, slag inclusions, interior protrusions or other imperfections.
 - 2. Qualify welders to the code for Pressure Piping ANSI B31.1 with certification by the Welding Bureau of Heating, Piping and Air Conditioning Contractors National Association. Welding shall not be started until submission of evidence of qualification.



- D. Mechanical (Grooved) Joints: Joints shall be made with neoprene or synthetic rubber gaskets.
- E. Make joints between different piping materials with adaptor fittings of a type suitable for the purpose intended.
- F. Make joints between pipes of dissimilar metals with dielectric union or flanges.

3.2 PIPE AND FITTINGS

- A. Threads shall be full and clean cut and burrs formed in cutting shall be reamed. In screwing up the pipe, care shall be taken that the pipe does not extend into the fitting obstructing the waterway. Joint compound shall be applied to the threads of the pipe and not to the fittings or sprinklers. Pipe shall be straightened before installation to prevent pockets.
- B. A one-piece reducing fitting shall be used wherever a change is made in the size. The use of bushings or reducing flanges will not be permitted.
- C. Unions shall be used only on pipes 2" and smaller, and provided at connections to each piece of equipment for easy dismantling.
- D. Only shoulder nipples shall be used. Close nipples will not be acceptable.
- E. All fittings and couplings shall be made by the same manufacturer.

END OF SECTION



**Department of
Design and
Construction**

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SECTION 21 05 23

FIRE SUPPRESSION VALVES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide valves for fire protection systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. OS&Y Valves.
B. Gate Valves.
C. Ball Valves.
D. Butterfly Valves.
E. Check Valves.
F. Pressure Reducing Valves.
G. Pressure Relief Valve.

1.4 SUBMITTALS

- A. Manufacturers' Specifications and Engineering Data
1. Each type valve.
 2. Materials or all parts.
 3. Pressure ratings.
 4. Schedule of major control valves, check valves and pressure reducing valves.
 5. Certificates: Manufacturers' certification that valves and accessories meet or exceed specification requirements.



1.5 QUALITY ASSURANCE

- A. Each valve shall have the manufacturer's name, size and pressure rating cast or stamped on body.
- B. Each valve shall bear U.L./FM Global label or marking.
- C. Except as noted, type and size of materials and equipment as approved by:
 - 1. NYC Building Code.
 - 2. Underwriter's Laboratory (UL).
 - 3. Factory Mutual.
 - 4. National Fire Protection Association (NFPA).
 - 5. Owner's Insurance Underwriters.
 - 6. New York City Board of Standards and Appeals.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All fire protection water control valves within the building shall be either wedge gate valves with painted iron wheel handles, shall have gland followers in stuffing boxes, and shall be constructed so that they may be repacked while open and under pressure, or slow-closing quarter-turn gear-operated butterfly valves.
- B. All valves shall have the name of the manufacturer and working pressure cast or stamped on body.
- C. All valves are to be U.L. listed and FM Global approved.
- D. All valves shall be with threaded, grooved, or flanged ends as required by the piping system in which they are installed.
- E. Valves shall be selected for the maximum working pressure they will be exposed to (including churn pressure), or as indicated on the drawings.
- F. All fire protection valves shall be provided with tamper switches.



2.2 VALVE SCHEDULE

- A. All fire protection valves shall be U.L. listed and FM Global approved.
- B. The following Stockham Valve Co. numbers are applicable. Valves of corresponding features as indicated on the approved manufacturer paragraph of this section may be submitted for review.
 - 1. Gate Valves:

Size & End	Figure No.	Pressure Rating	Material	Spindle
2" & Smaller	B133	175	Bronze	OS&Y
2½" & Larger	G634	175	IBBM	OS&Y

- 2. Check Valves:

Size & End	Figure No.	Pressure Rating	Material	Spindle
2" & Smaller	B319	200	Bronze	
2½" & Larger	G940	175	IBBM	

- 3. Drain Valves:

Size & End	Figure No.	Pressure Rating	Material	Spindle
2" & Smaller	B115	200	Bronze	Non-Rising Stem

- 4. Butterfly Valves as per Nibco Inc.:

Size & End	Figure No.	PSIG W.O.G.	Disc Material	Actuator
Wafer-Dead end rated	WD3510-4	250	Ductile Iron	Gear Operator
Wafer	WD3510-2	250	Ductile Iron	Gear Operator
Lug-Dead end rated	LD3510-4	250	Ductile Iron	Gear Operator
Lug	LD3510-2	250	Ductile Iron	Gear Operator



2.3 PRESSURE REDUCING VALVE (PRV) – PILOT OPERATED

- A. Valve shall maintain a constant downstream pressure regardless of varying inlet pressure. Valve shall be hydraulically-operated, diaphragm-actuated, globe or angle pattern valve. It shall contain a resilient, synthetic rubber disc, having a rectangular cross-section, contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat.
- B. The diaphragm assembly containing a valve stem shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. This diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm shall consist of nylon fabric bonded with synthetic rubber and shall not be used as a seating surface.
- C. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the valve or pilot controls. All necessary restorations shall be possible without removing the valve from the line.
- D. The pilot control shall be direct-acting, adjustable, spring-loaded, normally open, diaphragm valve, designed to permit flow when controlled pressure is less than the spring setting. The control system shall include a fixed orifice.

2.4 PRESSURE REDUCING VALVES (PRV) – DIRECT ACTING

- A. The valve shall be rated for 400 psi working pressure, and able to be tested to its full rating without damage to any part of the valve. The valve is to be of all bronze construction, with bronze and stainless steel trim, with globe body. The valve shall be U.L. listed and approved by local authorities. The valve is to be set and sealed at the factory. A seal is to be affixed to the valve at the factory for protection against tampering.

2.5 PRESSURE RELIEF VALVE

- A. Furnish and install where indicated on drawings or downstream of all pressure reducing valves a 3/4" cast brass pressure relief valve.

2.6 FIRE PUMP VALVES

- A. Check Valves at Fire Pumps (Suction & Discharge): Williams-Hager Figure 636, 250 psi, w.p., semi-steel/bronze trim or approved equal.
- B. Check Valves at Jockey Pump (Suction & Discharge): Williams-Hager Figure 329, 250 psi, w.p., semi-steel/bronze trim or approved equal.
- C. All fire protection check valves shall be U.L. listed and FM Global approved.



2.7 MECHANICAL COUPLINGS

A. In addition to valves scheduled on the drawings the following Victaulic mechanical coupling valves may be provided:

System	Model No.	Pressure	Size
Sprinkler/ Standpipe	705-W WTS	0-300 psi	2 1/2"-12"
Sprinkler	728 WTS	0-350 psi	1"-2"
Fire Pump	717 Check Valve	0-250 psi	4"-12"

2.8 MANUFACTURERS

A. Threaded and Flanged Valves

1. Stockham
2. Milwaukee
3. Kennedy
4. Nibco
5. Or Approved Equal

B. Mechanical Coupling Valves

1. Victaulic
2. Gustin-Bacon
3. Stockham
4. Or Approved Equal

C. Check Valves

1. Nibco
2. Victaulic
3. Stockham
4. Milwaukee



5. Kennedy
 6. Or Approved Equal
- D. Pressure Reducing Valve – Direct Acting
1. Potter Roemer
 2. Zurn
 3. Ford
 4. Or Approved Equal
- E. Pressure Reducing Valve – Pilot Operated
1. Cla-Val
 2. Or Approved Equal
- F. Pressure Relief Valve
1. Potter Roemer
 2. Zurn
 3. Cla-Val
 4. Or Approved Equal

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All valves shall be installed only in the upright vertical or horizontal positions unless specifically otherwise required by the drawings.
- B. All valves shall be installed in accessible locations to facilitate easy removal for restoration or replacement.
- C. All grooved end valves shall be of the same manufacturer as the grooved couplings and fittings.



D. Pressure Ratings for Check and Gate Valves

1. Vertical Distance From Fire Pump

Vertical Distance From Fire Pump	Class
0-165'	250
165'-400'	150

2. Max. Static Head from Roof Tank

Max. Static Head from Roof Tank	Class
0-115'	150
115'-270'	250
270'-425'	350
425'-657'	500
657'-1122'	800
1122'-Larger	1000

END OF SECTION



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SECTION 21 05 29

HANGERS, SUPPORTS, ANCHORS & GUIDES
FOR FIRE SUPPRESSION SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Work of this Section shall conform to the requirements of the Contract Documents.

1.3 WORK INCLUDED

- A. Hangers and supports.
B. Supports
C. Seismic Restraints

1.4 SUBMITTALS

- A. Manufacturer's literature, catalog data and illustrations.
B. Shop Drawings indicating:
1. Dimensions
2. Construction details of hangers, inserts, anchors and guides
3. Materials
4. Maximum Load
5. Locations
6. Recommended installation procedures



1.5 QUALITY ASSURANCE

- A. Codes and Authorities
 - 1. Federal Specification WW-H171b
 - 2. ASA Code for Pressure Piping
 - 3. ASTM A-575-73
 - 4. MSS SP-58-67
 - 5. MSS SP-69-66
 - 6. Underwriters Laboratories
 - 7. Factory Mutual
 - 8. National Fire Protection Association

PART 2 - PRODUCTS

2.1 HANGERS

- A. All bracket, clamp and rod sizes indicated in this specification are minimum sizes only. All structural hanging materials shall have a built-in safety factor of 5.
- B. Provide rolled-steel auxiliary pipe supports as required.
- C. Anchor points shall be located and constructed to permit the piping system to take up its expansion and contraction freely in opposite directions from the anchored points.
- D. Guide points shall be located and constructed wherever required or shown on drawings and at each side of an expansion joint or loop, to permit free axial movement only in a piping system.
- E. All hangers shall be U.L. listed and FM approved.
- F. C-clamps with locknut and retaining clip will be permitted.



G. Pipe Hanger Schedule

	Carpenter Patterson 'Witch'	& Grinnell	I. Rauch's & Sons
C-Clamp with Retaining Clip and locknut(pipe sizes 2" & smaller	47 with 22	86 with 89	47 with 22
Beam Clamp	293	228	82
Multi-J Hook	---	---	228
J Hook	---	---	221
Clevis Hanger	100	260	100
Clevis Hanger w/Saddle	100SH	---	100SH
180° Shield	265P	168	265P
Single Rod Roll Hanger	140	181	140
Double Rod Roll Hanger	142	171	142
Trapeze	---	46	1600-1700
U-bolt Adjustable Pipe	283	137C	283
Stanchion Saddle	247	259	247
Welded Steel Bracket	84 or 139	199 or 195	84 or 139
Riser clamp	126	261	126
Welded Beam Attachment	113A	66	---
Welded Beam Attachment w/bold & nut	113B	66	113A
Concrete Insert	108	282	180 or 181
Phillips Inserts	513	Phillips Insert	1000



H. Hanger Rod Schedule

Pipe Size	Rod Diameter
4" and smaller	3/8"
5", 6", & 8"	1/2"
10" & above	5/8"

I. Manufacturers

1. I. R. Rauch's & Sons
2. Grinnell Company, Inc.
3. Carpenter & Patterson
4. Or Approved Equal

2.2 FOUNDATIONS

- A. All equipment, piping, etc., shall be mounted on approved foundations, all as specified herein, or as shown on the drawings.
- B. All floor-mounted equipment shall be erected on 12" high concrete pads, provided under a separate section of the specifications, over the complete floor area of the equipment, unless specified to the contrary herein. Hereinafter, wherever vibration eliminating devices and/or concrete inertia blocks are specified, these items shall in turn be mounted upon aforementioned pads unless specified to the contrary herein.
- C. All floor-mounted equipment shall be erected on 12" high concrete pads, over the complete floor area of the equipment, unless specified to the contrary herein. Hereinafter, wherever vibration eliminating devices and/or concrete inertia blocks are specified, these items shall in turn be mounted upon aforementioned pads unless specified to the contrary herein.
- D. All concrete foundations and supports (and required reinforcing thereof) will be by this Contractor. Furnish templates for all concrete foundations and supports, and all required hanger bolts and other appurtenances necessary for the proper installation of equipment. Submit shop drawings showing the complete details of all foundation bases including necessary concrete and steel work, vibration isolation devices, etc.



2.3 SEISMIC RESTRAINTS

- A. All piping systems shall be braced to withstand a $\frac{1}{2}$ " g" seismic acceleration. Spacing of bracing is to be as follows:
1. Piping, lateral, braced at a maximum of 40 foot intervals.
 2. Longitudinal bracing at 80 foot intervals.
 3. Seismic restraints are not required on the following:
 - a. Branch lines 2" and smaller
 - b. All clevis hung pipe suspended by individual non-friction hanger designed to support the imposed static load and the anticipated $\frac{1}{2}$ " g" seismic acceleration 6" in length or less from the top of the pipe support to the bottom of the support for the hanger.
 4. Overstress of the building structure must not occur. Seismic bracing may occur from:
 - a. Flanges and structural beams.
 - b. Cast in place inserts or drilled and shielded inserts in concrete structures.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All piping shall be supported only from building structural steel or galvanized steel inserts imbedded in poured concrete. Where piping revisions are required after slabs are poured, pipes 3" and smaller may be supported at intermediate points by "Phillips" or approved equal $\frac{3}{4}$ " expansion bolts and shields, provided main supports are not less than 20 feet on centers. All inserts, expansion bolts and shields in post-tensioned concrete slabs shall be submitted to the Commissioner for approval prior to commencement of work. Intermediate supports for piping 4" and larger shall be attached to concrete beams or columns by means of 4" x 4" x $\frac{3}{8}$ " (horizontal) and supporting rod at 90° from anchor bolt. It is the intent that inserts are only permitted in poured concrete construction.
- B. Hanger Locations for Horizontal Piping
1. Steel Piping 1 $\frac{1}{4}$ " and Smaller: Every 12 feet.
 2. Steel Piping (Schedule 40 and larger) 1 $\frac{1}{2}$ " and Larger: Every 15 feet.



3. Steel piping (less than schedule 40) 1 1/2" and larger: Every 12 feet.
- C. Support Locations for Vertical Piping
 1. Threaded & Mechanical Joint Piping: At every floor, but in no case greater than 20-foot intervals.
 - D. Hangers shall be installed outside of piping insulation with a semi-cylindrical galvanized shield set between the hanger and insulation.
 - E. All beam attachments shall be installed on clean, smooth, and non-fireproofed sections of the beam.
 - F. All fire protection piping shall be hung individually from the structure.
 - G. All hangers, anchors, rods and supports shall be painted.

END OF SECTION



SECTION 21 05 53

IDENTIFICATION OF FIRE SUPPRESSION PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide fire protection systems identification in accordance with the Contract Documents.
- B. Provide a temporary fire standpipe system during construction.

1.3 WORK INCLUDED

- A. Labeling
- B. Valve and Equipment Tagging

1.4 SUBMITTALS.

- A. Product Data: Manufacturers' catalogs, brochures.
- B. Schedule: Provide schedule of colors to be used on each system.

1.5 QUALITY ASSURANCE

- A. NYC Building Code.
- B. NYC Fire Department.
- C. National Fire Protection Association (NFPA)
- D. Underwriters Laboratories (U.L.)
- E. Factory Mutual (FM)



PART 2 - PRODUCTS

2.1 GENERAL

- A. The following specifications represent desired design, materials and construction standards for the various items of work. Manufacturer names and model numbers are used to describe specific types, styles and quality.

2.2 PIPE LABELING

- A. All piping shall be identified by stenciled lettering, or self adhesive pipe markers which legend conforms to OSHA/ANSI standards including but not limited to the identification of flow direction, pressure, supply/return, pump discharge, sprinkler, fire standpipe, dry sprinkler, etc.
- B. There shall be at least one lettering identification for each pipe in each space and at all valve locations.
- C. For painted identification use color sharply contrasting with background. If necessary, paint a strip background of black or white to obtain contrast.
- D. Vertical piping shall be labeled at each floor. Horizontal piping shall be labeled every 10', both sides of partitions, before and after turns, and close to valves and flanges.
- E. Each set consisting of one (1) band on which the name of the service is printed in black letters not less than 1½ inches high, and one (1) band on which is printed a black directional arrow. Apply bands where they can be easily read and with their long dimension parallel to the axis of the pipe. Provide bands with backgrounds of different colors from the various service groups.
- F. Adhesive Bands: Products from W.H. Brady Company, Seton, Brimar Industries or approved equal.

2.3 VALVE & EQUIPMENT TAGGING

- A. Tag valves with identifying number and system. Number valves by floor level.
- B. For valves, etc., use metal (brass, stainless steel or aluminum) tags, 3" minimum in diameter, with 1½" white painted letters with a red background. Attach tags with chain of same material.
- C. Prepare lists of all tagged valves showing location, floor level, tag number and use. Prepare separate lists for each system. Mount lists under a sheet of clear acrylic in Equipment Room. Include copies in each maintenance manual.
- D. Provide charts showing equipment lubrication points, lubrication required and frequency, and columns for date and initials.



- E. Stencil equipment with identifying letters and numbers as used on drawings. Where space is available use full name of equipment.
- F. Identify all controls such as motor starters, float switches and alarms.

2.4 PAINTING

- A. Exposed black steel piping, pipe covering, equipment and support piping and enclosures shall be given two coats of paint.
- B. All pipe hangers, anchors and supports shall be given a zinc chromate primer before installation.

2.5 MANUFACTURERS

- A. Pipe Labels and Valve Tags
 - 1. W.H. Brady
 - 2. Seton
 - 3. Brimar Industries
 - 4. Or Approved Equals

END OF SECTION



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SECTION 21 11 19

FIRE DEPARTMENT CONNECTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide fire protection connections in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Escutcheons.
B. Fire Department Connections.

1.4 SUBMITTALS

- A. Product Data: Manufacturers' catalogs, brochures.

1.5 QUALITY ASSURANCE

- A. NYC Building Code.
B. NYC Fire Department.
C. National Fire Protection Association (NFPA)
D. Underwriters Laboratories (U.L.)
E. Factory Mutual (FM)

PART 2 - PRODUCTS

2.1 GENERAL

- A. The following specifications represent desired design, materials and construction standards for the various items of work. Manufacturer names and model numbers are used to describe specific types, styles and quality.

Fire Department Connections



- B. All hose threads shall conform with NYC Fire Department requirements.

2.2 FIRE DEPARTMENT CONNECTIONS

- A. Existing FDC connections to remain shall be cast brass body with drop clappers with a polished chrome plated brass plate lettered "AUTO. SPKR.", "STANDPIPE", "DRY STANDPIPE" "AUTO. SPKR. STANDPIPE".

2.3 MANUFACTURERS

- A. Fire Department Connections (Existing to remain)
- B. Black Valve with Automatic Ball Drop
 - 1. Potter-Roemer
 - 2. Elkhart-Brass
 - 3. Croker
 - 4. Or Approved Equal

END OF SECTION



SECTION 21 13 13

WET PIPE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide a complete wet pipe sprinkler system in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Sprinkler Heads.
- B. Water Flow Switch.
- C. Tamper Switch.
- D. Floor Control Valve
- E. Pressure Reducing Valve.
- F. Pressure Relief Valve.
- G. Piping
- H. Inspectors Test Connection

1.4 SUBMITTALS

- A. Shop Drawings
 - 1. Dimensioned sprinkler layouts.
 - 2. Identification chart and tags for valves and alarm devices.
 - 3. Hydraulic calculations.



- B. Permits and Approvals
 - 1. Arrange and pay for all permits, approvals and tests.

1.5 QUALITY ASSURANCE

- A. Factory Mutual
- B. NFPA 13
- C. National Electric Code
- D. NYC Fire Department
- E. NYC Building Code

PART 2 - PRODUCTS

2.1 SPRINKLER HEADS

- A. Spray type, with 1/2" nominal discharge orifice. Ordinary temperature rating 160° - 175° throughout except where special conditions exist which will require higher temperature sprinklers or when indicated on the drawings. All heads shall be U.L. listed and Factory Mutual approved.

2.2 QUICK RESPONSE STANDARD COVERAGE SPRINKLERS

- A. Pendant, upright, horizontal sidewall, and semi-recessed: Sprinklers shall be of all brass frame construction with a coated metal to metal seating mechanism. Sprinklers utilizing non-metal parts in the sealing portion of the sprinkler are strictly prohibited. Sprinklers shall have a quick response frangible bulb type fusible element. Sprinklers to be installed in areas with no ceilings shall be of a brass finish and shall be of adequate temperature for the hazard semi-recessed heads shall have chrome plated recessed escutcheon.
- B. Concealed: Sprinklers shall be of all brass frame construction with a coated metal to metal seating mechanism. Sprinklers utilizing non-metal parts in the sealing portion of the sprinkler are strictly prohibited. Quick response concealed pendant sprinkler orifice shall be standard nominal 1/2" with a K factor of 5.5. Quick response concealed pendant sprinklers shall be listed for installation in an ordinary hazard occupancy if installed in an ordinary hazard occupancy. Concealed pendant sprinkler shall have a cover that is a push-on, thread-off assembly..

2.3 QUICK RESPONSE EXTENDED COVERAGE SPRINKLERS

- A. Pendant: Sprinklers shall be of all brass frame construction with a coated metal to metal seating mechanism. Extended coverage pendant sprinklers shall have a quick



response frangible bulb type fusible element. Extended coverage quick response pendent sprinkler shall be installed in conformance with the manufacturer's listing and installation guidelines. Extended coverage quick response pendent sprinklers shall be UL listed for light hazard occupancies. Extended coverage quick response pendent sprinklers shall have nominal orifices of 1/2" and 17/32" with K factors of 5.5 and 8.0, respectively.

- B. Concealed: Sprinklers shall be of all brass frame construction with a coated metal to metal seating mechanism. Sprinklers utilizing non-metal parts in the sealing portion of the sprinkler are strictly prohibited. Quick response extended coverage concealed pendent sprinkler orifice shall be standard nominal 1/2" with a K factor of 5.5. Quick response extended coverage concealed pendent sprinklers shall be listed for extended coverage application. Concealed pendent sprinkler shall have a cover that is a push-on, thread-off assembly.
- C. Sidewall: Sprinklers shall be of all brass frame construction with a coated metal to metal seating mechanism. Sprinklers utilizing non-metal parts in the sealing portion of the sprinkler are strictly prohibited. Sidewall sprinklers shall have a quick response frangible bulb type fusible element. Quick response horizontal sidewall sprinkler shall be installed in conformance with the manufacturer's installation guidelines.

2.4 STANDARD RESPONSE, STANDARD COVERAGE

- A. Upright, pendant, semi-recessed and concealed: Sprinklers shall be of all brass frame construction utilizing a coated metal to metal seating mechanism. Sprinklers utilizing non-metal parts in the sealing portion of the sprinkler are strictly prohibited. Sprinkler orifices shall be standard nominal 1/2" and 17/32" with K factors of 5.5 and 8.0, respectively. Sprinklers shall have a frangible bulb type fusible element. Sprinklers to be installed in areas with no ceilings shall be of a brass finish and shall be of adequate temperature for the hazard. Sprinklers to be installed through a ceiling shall be a finished pendent sprinkler with an adjustable semi-recessed escutcheon of same specified finish. Sprinklers shall be UL listed and Factory Mutual approved. Sprinklers shall be from approved manufacturer Model.
- B. Sidewall: Sprinklers shall be of brass frame construction with a coated metal to metal seating mechanism. Sprinklers utilizing non-metal parts in the sealing portion of the sprinkler are strictly prohibited. Horizontal sidewall sprinkler orifice shall be standard nominal 1/2" with a K factor of 5.5. Sprinklers shall have a frangible bulb type fusible element. Sprinklers to be installed in areas with no ceilings shall be of a brass finish and shall be of adequate temperature for the hazard. Sprinklers to be installed through a ceiling or wall shall be of a finished sidewall sprinkler with an adjustable semi-recessed escutcheon of the same specified finish. Horizontal sidewall sprinklers shall be listed for installation in an ordinary hazard occupancy if installed in an ordinary hazard occupancy.
- C. Concealed: Sprinklers shall be of all brass frame construction with a coated metal to metal seating mechanism. Sprinklers utilizing non-metal parts in the sealing portion of the sprinkler are strictly prohibited. Concealed pendent sprinkler shall have cover plate

Wet Pipe Sprinkler Systems

21 13 13 - 3



that is a push-on, thread-off assembly with a 2 $\frac{3}{4}$ " diameter. Concealed pendent sprinkler orifice shall be standard nominal $\frac{1}{2}$ " with a K factor of 5.5. Concealed pendent sprinklers shall be listed for installation in an ordinary hazard occupancy if installed in an ordinary hazard occupancy.

2.5 WATER FLOW SWITCH

- A. Paddle type, inserted into horizontal piping systems. The paddle shall actuate a pneumatic time-delay mechanism between the paddle stem and the micro-switch. After the preset time delay, the micro-switch shall operate and either open or close the electrical circuit. Time delays shall be adjustable from 0 to 70 seconds.

2.6 TAMPER SWITCH

- A. Valve supervisory switches shall be on each valve as designated on the drawings. Switches shall be mounted so not to interfere with the normal operation of the valve and shall be adjusted to operate within two revolutions of the valve control or when the stem has moved no more than one-fifth of the distance from its normal position. The switch mechanism shall be contained in a weatherproof die-cast aluminum housing which shall provide $\frac{3}{4}$ " tapped conduit entrance and incorporate the necessary facilities for attachment to the valve. Switch housings shall be finished in red baked enamel. The switch mechanism shall have a minimum rated capacity of 7 amp, 125 volt, 0.25 amp., 24 volt D.C. The entire assembly shall be tamper proof and arranged to cause a switch operation if the housing cover is removed or if the unit is removed from its mounting.

2.7 PRESSURE REDUCING VALVE

- A. Valve shall maintain a constant downstream pressure regardless of varying inlet pressure. Valve shall be a hydraulically-operated, diaphragm-actuated, globe or angle pattern valve. It shall contain a resilient, synthetic rubber disc, having a rectangular cross-section, contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat.
- B. The diaphragm assembly containing a valve stem shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. This diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm shall consist of nylon fabric bonded with synthetic rubber and shall not be used as a seating surface.
- C. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the valve or pilot controls. All necessary restorations shall be possible without removing the valve from the line.
- D. The pilot control shall be direct-acting, adjustable, spring-loaded, normally open, diaphragm valve, designed to permit flow when controlled pressure is less than the spring setting. The control system shall include a fixed orifice.



E. This valve shall be U.L. listed.

2.8 PRESSURE RELIEF VALVE

A. Furnish and install where indicated on drawings or downstream of all pressure reducing valves a 3/4" cast brass pressure relief valve.

2.9 INSPECTOR'S TEST CONNECTIONS (OPEN DRAIN)

A. Bronze female pipe connection with orifice equivalent to one sprinkler head flow.

2.10 MANUFACTURERS

A. Sprinkler Heads

1. Reliable
2. Central
3. Viking
4. Grinnell
5. Or Approved Equal

B. Water Flow Switches

1. Potter-Roemer
2. Potter Electric
3. Reliable
4. Viking
5. Central
6. Or Approved Equal

C. Tamper Switch

1. Potter-Roemer
2. Potter Electric
3. Reliable
4. Or Approved Equal



- D. Sprinkler Floor Control Valve Cabinet
 - 1. Potter-Roemer
 - 2. Elkhart Brass
 - 3. Croker
 - 4. Or Approved Equal
- E. Pressure Reducing Valve
 - 1. Star Sprinkler
 - 2. Potter-Roemer
 - 3. Cla-Val
 - 4. Gunzenhauser
 - 5. Or Approved Equal
- F. Pressure Relief Valve
 - 1. Potter-Roemer
 - 2. Elkhart Brass
 - 3. Reliable
 - 4. Or Approved Equal

PART 3 - EXECUTION

3.1 GENERAL

- A. Information included in this specification and of various agency requirements are given as a guide only. The contract documents do not relieve Contractor's responsibility to provide all work and equipment necessary to complete the installation in accordance with all requirements.

3.2 INSTALLATION

- A. No pipes or other apparatus shall be installed so as to interfere in any way with the full swing of the doors. The arrangement, positions and connections of pipes, drains, valves, etc., shown on the drawings, shall be taken as a close approximation and while they shall be followed as closely as possible, the right is reserved by the Commissioner to change the locations to accommodate any conditions which may

Wet Pipe Sprinkler Systems



arise during the progress of the work without additional compensation to this contractor for such changes, provided that the changes are requested prior to the installation of this work.

- B. All piping shall drain back to the risers or be provided with drain valves. Special precautions must be taken to avoid electrical work and ventilation ducts, and no piping shall pass below lighting fixtures in luminous ceilings or under skylights.
- C. All piping shall be unexposed except in no-ceiling areas. Where required, heads shall be located below ducts. Diffusers and lighting fixtures take preference in room layout.
- D. In areas with restricted head room, heads and piping shall be tight to ceilings and provided with guards.
- E. No heads shall be nearer than 6 inches to a ceiling support, and where 12" x 12", 24" x 24" or 24" x 48" ceiling panels are used, the heads shall be located in the center of the panel.
- F. Install sprinkler heads in all areas on a true axis line in both directions with a maximum deviation from the axis line of 1/2" plus or minus. In acoustical tile ceilings, sprinkler heads shall be located on center of tile. At the completion of the installation, remove and reinstall any heads found to exceed the above mentioned tolerances.
- G. Where sprinklers are installed in areas without hung ceiling, install sprinklers both above and below all ductwork 48" and larger in width or where the total aggregate of multiple ducts exceeds 48" in width or length.

3.3 SPRINKLER COVERAGE

- A. For determination of sprinkler systems, spacing and sizing, the following coverage ratings as listed in NFPA 13 and as listed by the insurance company for this project shall be followed. Also comply with local authorities' requirements.
- B. Provide sprinklers where shown on the drawings.
- C. **Hydraulically Calculated System:** The system shall be hydraulically designed to provide a density based on NFPA requirements.

AREA	HAZARD CLASSIFICATION	DENSITY GPM/SQ. FT.	AREA OF APPLICATION
General Public Areas.	Light	.10	1500
Parking	Ordinary	.16	1500
Mechanical Retail Shops	Ordinary	.16	1500



AREA	HAZARD CLASSIFICATION	DENSITY GPM/SQ. FT.	AREA OF APPLICATION
Offices	Light	.10	1500

- D. **Hydraulically Calculated System:** Provide automatic sprinkler system throughout the entire project. The system shall be hydraulically designed to provide a density based on Factory Mutual requirements, according to the following schedule.

AREA	HAZARD CLASSIFICATION	DENSITY GPM/SQ. FT.	AREA OF APPLICATION
General Public Areas & Offices	Light	.10	3000
(Wet System) Power Houses (Switchgear Room, MER)	* Ordinary	.20	4500
(Dry System) Power Houses (Switchgear Room, MER)	* Ordinary	.20	5000
* Using 160°F fusible link.			

3.4 DRAINS AND TEST PIPES

- A. Provide drains at base of riser, valved sections inside building, and at other locations indicated or requiring same for complete drainage of systems. Siamese drains shall be automatic ball drips. Other drains shall be valves and/or plugs as indicated and/or required. Pipe drains to locations as required.
- B. Test pipes shall be valved and piped to discharge through proper orifice at approved locations.

END OF SECTION



SECTION 21 13 39

COMPRESSED AIR FOAM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. Addendum.
 - 5. The Contract (City of New York Standard Construction Contract).

1.2 RELATED WORK IN OTHER SECTIONS

- A. Related Fire Protection Division 21
- B. Electrical Division 26, Section 260280
 - 1. Supply and install an electrical circuit 120VAC, 60Hz for the ARC-1 control panels inside the ICAF cabinets. The circuit shall be well identified and locked.
- C. The Contract Drawings.
- D. The Specifications.
- E. The General Conditions.
- F. The Addendum.

1.3 SYSTEM DESCRIPTION

- A. Supply and install an Integrated Compressed Air Foam (ICAF) system, as indicated, including:
 - 1. ICAF cabinets
 - 2. Foam concentrate tank
 - 3. Air cylinder banks



4. Piping network and TAR nozzles
5. Pressure vessel type water tank
- B. The ICAF system shall be FM Approved and manufactured by an approved manufacturer:
 1. FIREFLEX (Basis of Design)
 2. ACAF Systems
 3. SIRON Fire Protection Equipment
 4. Or approved equal

1.4 SYSTEM SHOP DRAWING

- A. The system must be per the Engineer's design and installed in accordance with its listing and within the limitations described in the manufacturer's design manual.
- B. The system must be designed to discharge CAF in the entire area for a minimum period of;
 1. 10 minutes in Cellar's Fuel tank room
 2. 5 minutes in Rooftop's Generator room
- C. Water supply from water tank shall be available in sufficient quantity and pressure to supply the maximum number of discharge devices likely to operate simultaneously.
- D. The nozzles shall be located in accordance with listing limitations on spacing, floor coverage, and alignment.
- E. The piping network shall be designed and installed within the limitations described in the manufacturers design manual.

1.5 DRAWINGS AND CALCULATIONS

- A. The contractor shall install the manufacturer recommended piping network. Some variations for the main pipe may be allowed, but the contractor is responsible to coordinate the piping network location with other trades and prepare installation shop drawings. Any changes shall be submitted to the approved manufacturer prior to system shipment.
- B. The system flow calculations for the ICAF system shall be performed by the approved manufacturer.

1.6 TECHNICAL DATA



- A. Submit for the Commissioner's approval a set of equipment data sheets which will include all technical data of each essential component of the system such as integrated unit and options, nozzles, control system, etc.

1.7 MAINTENANCE AND OPERATION MANUAL

- A. Supply a standardized and listed maintenance & operation manual for the ICAF system.
- B. This manual must include all necessary instructions to operate and maintain the system, and be explicit regarding the interaction between the hydraulic aspect (flow valve and trim) and the detection portion, (control panel and detectors). Emergency procedures must also form an integral part of the manual.

PART 2 - COMPONENTS

2.1 ICAF CABINET

- A. Supply and install a ICAF system cabinet containing all hydraulic, pneumatic and electrical components required for the control of the system.
- B. The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as an FM Approved ICAF System.

2.2 DETECTION AND SIGNALING SYSTEM

- A. Supply and install a complete automatic fire detection system, including, system tubing, wiring, detectors, manual release, signaling devices and connections to auxiliary functions.
- B. The automatic fire detection system shall be compatible with the manufacturer's integrated ARC-1 Releasing Control Panel and shall be design and installed in accordance with NFPA 72, The National Fire Alarm Code and CAN/ULC-S524, Standard for installation of fire alarm systems.
- C. The releasing network and the alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the ARC-1 release control panel. A local audible device shall be installed near each ICAF cabinet.
- D. The alarm, supervisory and trouble contacts from each ARC-1 release control panels shall be linked to the main building fire alarm panel.

2.3 SYSTEM OPERATION

- A. Upon release conditions in a zone, the ARC-1 release control panel will energize the solenoid valve and initiate the CAF discharge. This will cause the system to fill the piping network with CAF and spray through all the nozzles in that zone, sound an
Compressed Air Foam System



alarm, and activate alarm and water flow contacts for auxiliary functions.

- B. Operation of the emergency manual release in a zone will initiate the CAF discharge through all the nozzles in that zone and activate alarm and water flow contacts for auxiliary functions.

2.4 AIR SUPPLY

- A. The amount of compressed air cylinders must be at least sufficient for the largest number of systems that possibly could be expected to operate for a duration of 5 or 10 minutes, depending on system's location.
- B. Compressed air cylinder banks shall be supervised for high and low pressure.
- C. Regulators controlling the air pressure shall be listed for the intended purpose.

2.5 NOZZLES

- A. FM Approved TAR 225C or TAR-225L nozzles shall be supplied and installed to protect the areas indicated on the drawing. Nozzles shall be located as per the manufacturer recommendations and installed so that they are not subject to mechanical, chemical, climatic, or other conditions that would render them inoperative.

2.6 FOAM SUPPLY

- A. The amount of foam concentrate in the system shall be at least sufficient for the largest number of systems that possibly could be expected to operate for a duration of 5 or 10 minutes, depending on system's location.
- B. Foam concentrate storage tank shall be listed and designed, fabricated, inspected, certified, and stamped in accordance with Section VIII of ASME Boiler and Pressure Vessel Code.
- C. Foam concentrate supplied shall be of AFFF type listed for use with the ICAF System.

2.7 WATER SUPPLY

- A. The amount of water in the system shall be at least sufficient for the largest number of systems that possibly could be expected to operate for a duration of 5 or 10 minutes, depending on system's location.
- B. Water storage tank shall be listed and designed, fabricated, inspected, certified, and stamped in accordance with Section VIII of ASME Boiler and Pressure Vessel Code for a working pressure of 150 psig.
- C. The water tank shall be provided with a safety device to release excess pressure.



- D. The water tank shall have a permanent nameplate or other permanent marking specifying the liquid held and the nominal water volume and pressurization level (where applicable) of the container.
- E. The water tank shall be provided with external sight glass and be protected against mechanical damage.
- F. The water tank shall be supervised for low water level.
- G. The water supply shall be taken from a source that is equivalent in quality to a potable source with respect to particulate and dissolved solids.

2.8 PIPING AND FITTINGS

- A. System piping and fittings shall be installed in accordance with NFPA 13, Standard for the installation of Sprinkler systems.
- B. Pipe size, schedule and fitting types shall be supplied as noted on the drawings.
- C. Black steel pipe shall be permitted to be used in relatively non-corrosive atmospheres. Where exposed to corrosive influences, the piping shall be corrosion resistant or protected against corrosion.

2.9 HANGERS AND SUPPORTS

- A. Hangers & supports shall be installed and located in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems.

2.10 SYSTEM DRAIN

- A. The single drain collector of the ICAF system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The installation must meet all established standards and be according to all applicable laws, regulations and codes.
- B. The proper operation and coordination for the system's installation, including the ICAF system, detection system, signaling system and initial start-ups are all under the responsibility of the contractor.

3.2 INSTRUCTION



- A. The contractor must plan and organize a instructional session of at least two hours for the building staff, in the presence of the Commissioner.
- B. The instructional session must include the normal operation, emergency procedures and system maintenance.

3.3 ACCEPTANCE TESTS AND VERIFICATIONS

- A. The compressed air foam discharge piping shall be subjected to a 2-hour hydrostatic pressure gauge test at 1379 kPa (200 psi) or 345
- B. KPa (50 psi) in excess of maximum pressure anticipated, whichever is greater, in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems.
- C. A drain test using the auxiliary drain valve fully open (drain located on water supply side, flow control valve inlet) must be performed to make sure that no back pressure in drain piping exists, which could affect the proper operation of the system.
- D. Testing of the ICAF System shall be done under the supervision of the manufacturer's authorize personnel who have developed competence through instruction and experience.
- E. A discharge test must be performed to verify the proper operation of the system. Cleanup and equipment protection is the responsibility of the contractor. Coordination must be done with the Commissioner.
- F. The verification of the fire alarm system must be done in accordance with the applicable local codes. Tests shall include a complete check of electrical control circuits and supervisory systems to ensure proper operation and supervision in the event of a failure.
- G. After completion of acceptance tests, the compressed air foam system piping shall be flushed with air and restored to operational conditions.

3.4 REPORT AND CERTIFICATE

- A. An inspection report and a certificate must be supplied to the Commissioner at the completion of the project. All tests results shall be registered in a booklet to be included with the inspection.

END OF SECTION



SECTION 22 00 03

SCOPE OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide plumbing systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. It is intended that all items of material, fixtures and equipment mentioned in this specification and shown on the plans shall be read as if the word "Provide" were prefixed thereto.
- B. Sanitary Drainage System
1. House Traps.
 2. Sanitary Drainage Piping.
 3. Sanitary Vent Piping.
 4. Vent Through Roof.
 5. Fresh Air Inlets.
 6. Floor Drains.
 7. Connections to Plumbing Fixtures.
 8. Cleanouts.
- C. Storm Water System
1. House Traps.
 2. Storm Water Piping.
 3. Overflow Drains.



4. Overflow Drain Piping.
5. Cleanouts.
- D. Domestic Water Systems
 1. Connections to Plumbing Fixtures.
 2. Domestic Water Piping.
 3. House Tanks.
 4. Insulation.
 5. Connections to Equipment.
 6. Tempering, Pressure Reducing, Balancing and Shut-off Valves.
- E. Miscellaneous Items
 1. Sleeves in Walls and Floor Slabs.
 2. Access doors.
 3. Firestopping.
 4. Hangers and Supports.
 5. Painting.
 6. Pipe Labeling.
 7. Testing.
 8. Permits.
 9. Fees.
 10. Royalties.
 11. Plumbing Fixtures.



PART 2 - PRODUCTS

2.1 NOT USED.

PART 3 - EXECUTION

3.1 NOT USED.

END OF SECTION



**Department of
Design and
Construction**

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SECTION 22 05 17

SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide sleeves and U.L. approved firestopping system in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Firestop Compounds.
B. Damming Material.
C. Sleeves.

1.4 SUBMITTALS

- A. Submit shop drawings, product data, and manufacturer's installation instructions for all materials and prefabricated devices, providing descriptions sufficient for identification at the job site. Literature shall indicate product characteristics, typical use, performance and limitation criteria and test data.
- B. Submit shop drawings showing proposed material, reinforcement, anchorage, fastenings, and method of installation. Construction details shall accurately reflect actual job conditions.
- C. Submit Material Safety Data Sheets with product delivered to job site.
- D. U.L. Tested Systems: Submit drawings showing typical installation details for the methods of installation. Indicate which firestop materials will be used and thickness for different hourly ratings, and approved UL system number.
- E. Engineering Judgements: Submit manufacturer's drawings for all non-standard applications where no U.L. tested system exists. All drawings must indicate the "Tested" U.L. system upon which the judgement is based so as to assess the relevance of the judgement to some known performance.



- F. Submit manufacturer's installation procedures for each type of product.
- G. Approved Applicator: Submit document from manufacturer wherein manufacturer recognizes the installer as qualified or submit a list of past projects to demonstrate capability to perform intended work.
- H. Upon completion, installer shall provide written certification that materials were installed in accordance with the manufacturer's installation instruction and details.

1.5 QUALITY ASSURANCE

- A. Firestop system installation shall conform to requirements of qualified designs or manufacturer approved modifications, as supported by engineering reports. Field inspections shall be carried out by the firestop manufacturer to verify that the installation is in accordance with the manufacturer requirements.
- B. Install firestop materials and systems as required by these Contract Documents and meet and be accepted for use by New York City Building codes.
- C. Submit manufacturer's product data, letter of certification, or certified laboratory test report that the material or combination of materials (firestop system) meets the requirements specified in accordance with the New York City Building standards.
- D. The firestop compound shall not contain any solvents or inorganic fibers. The penetration seal material must be unaffected by moisture and must maintain the integrity of the floor or wall assembly for its rated time period when tested in accordance with ASTM E814 (UL1479). The system shall be U.L. Classified for up to and including 3 hours.
- E. Firestopping materials shall be asbestos and lead free and shall not incorporate or not require the use of hazardous solvents.
- F. Firestopping sealants must be flexible, allowing for normal pipe movement.
- G. All fire stopping materials shall be manufactured by one manufacturer.
- H. Installation of firestopping systems shall be performed by the Contractor instructed or approved by the firestop manufacturer.
- I. Material used shall be in accordance with the manufacturer's written installation instructions.



PART 2 - PRODUCTS

2.1 GENERAL

- A. The following specifications represent desired design, material, and construction standards for the various items of work. Manufacturer names and model numbers are used to describe specific types, styles and quality.

2.2 SLEEVES

- A. Provide sleeves for each pipe passing through walls, partitions, and floors.
- B. Sleeve Materials

Type	Sleeve Materials
1	#18 gauge, galvanized steel.
2	Standard weight galvanized steel pipe.
3	Cast iron body with flashing clamp and underdeck clamp from approved manufacturer.

C. Sleeve Sizes

- Sleeves shall be of adequate diameter to allow pipe, insulation, and fire stopping to fit.
- Sleeves shall provide a minimum 1" clearance around pipes smaller than 4" and 2" clearance around pipes 4" and larger.

D. Sleeve Lengths

Location	Sleeve Length
Floor	All floor drains to extend minimum of 2" above finished floor level.
Stair Landing	Equal to depth of construction and terminated flush with finished surfaces.
Walls and Partitions	Equal to depth of construction and terminated flush with finished surfaces.



E. Foundation Wall Penetrations

1. The pipe to wall sleeve penetration closure shall be "Pipe Linx" as manufactured by approved manufacturer. Seals shall be modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and wall sleeve opening. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and nut. After the seal assembly is positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide an absolutely watertight seal between the pipe and wall opening. The seal shall be constructed so as to provide electrical insulation between the pipe and wall, thus reducing chances of cathodic reaction between these two members.
2. Contractor shall determine the required inside diameter of each individual wall opening or sleeve before ordering, fabricating or installing. The inside diameter of each wall opening shall be sized as recommended by the manufacturer to fit the pipe and mechanical rubber seal to assure a watertight joint. If pipe O.D. is non-standard due to coating, insulation, etc., consult manufacturer for assistance before proceeding with wall opening detail.

2.3 FIRESTOPPING

- A. Provide firestop compounds for caulk, pour, trowel or pump application. Material must be capable of sealing openings around single or multiple pipes against fire, smoke and toxic gases, and maintaining rating with a thickness no greater than the structure.
- B. Provide a damming material, where required, per manufacturer's recommendations and as shown on the Drawings.
- C. Provide a firestop system consisting of a material, or combination of materials, to retain the integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke or gases through penetrations in fire-rated barriers. It shall be used in specific locations as follows:
 1. Penetrations for the passage of piping through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor slabs and floor/ceiling assemblies), and vertical service shafts.
 2. Locations shown specifically on the drawings or where specified in other sections of these specifications.

2.4 MATERIALS

- A. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating item(s) without affecting the adhesion or integrity of the system.



- B. Firestopping materials shall not require hazardous waste disposal of used containers/packages.
- C. Provide firestopping materials free of solvents which will not experience shrinkage while curing.
- D. Firestopping materials shall be unaffected by moisture.

2.5 MANUFACTURERS

- A. Specified Technologies, Inc.
- B. Dow Corning
- C. Flamesafe
- D. International Protective Coatings
- E. Or Approved Equal

PART 3 - EXECUTION

- 3.1 Deliver materials to site in original unopened containers or packages bearing the manufacturer's name, brand designation, product description and U.L. Classification Mark.
- 3.2 Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job site.
- 3.3 Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.
- 3.4 Comply with recommended procedures, precautions or remedies described in Material Safety Data Sheets as applicable.

3.5 EXAMINATION

- A. Examine areas and conditions under which work is to be performed and notify the Contractor in writing of conditions detrimental to proper and timely completion of the work.
- B. Verify that openings are properly sized and in suitable condition to receive the work of this section.
- C. Verify manufacturer's printed instructions for installation and when applicable, curing in accordance with temperature and humidity. Conform to ventilation and safety requirements.



- D. Verify the condition of the substrates before starting work.
- E. Verify Weather Conditions. Do not proceed with installation of firestop materials when temperatures fall outside the manufacturer's suggested limits.
- F. Verify that firestopping materials are installed so as not to contaminate adjacent surfaces.
- G. Schedule firestopping after installation of penetrants but prior to concealing the openings.
- H. Where firestopping is installed at locations which will remain exposed in the completed work, provide protection as necessary to prevent damage to adjacent surfaces and finishes, and protect as necessary against damage from other construction activities.
- I. Verify that all pipe, conduit, ducting which penetrate fire-rated construction have been permanently installed prior to installation of firestop.

3.6 PREPARATION

- A. Clean substrate of dirt, dust, grease, oil, loose materials, rust or other matter that may affect the proper fitting or adhesion of the firestopping materials.
- B. Clean metal and glass surfaces with a non-alcohol solvent.

3.7 INSTALLATION

- A. Installation of firestops shall be performed by an applicator/installer qualified and instructed by the manufacturer. Installation shall be performed in strict accordance with manufacturer's details installation procedures.
- B. Apply firestops in accordance with fire test reports, fire resistance requirements, acceptable sample installations, and manufacturer's recommendations.
- C. Unless specified and approved, all insulation used in conjunction with through-penetrations shall remain intact and undamaged and may not be removed.
- D. Seal holes and penetrations to ensure an effective smoke seal.
- E. In areas of high traffic, protect firestopping materials from damage. If the opening is large, install firestopping materials capable of supporting a minimum of 250 lbs.
- F. Insulation types specified in other sections shall not be installed in lieu of firestopping material specified herein.
- G. All combustible penetrants (e.g. non-metallic pipes or insulated metallic pipes) shall be firestopped using products and systems tested in a configuration representative of the field condition.



H. Dam Construction

1. When required to properly contain firestopping materials within openings, damming or packing materials may be utilized. Combustible damming material must be removed after appropriate curing. Noncombustible damming materials may be left as a permanent component of the firestop system.
- 3.8 Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.
- 3.9 Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation.
- 3.10 Firestop systems do not re-establish the structural integrity of load bearing partitions. Contractor shall consult the Commissioner prior to penetrating any load bearing assembly.
- 3.11 Firestop systems are not intended to support live loads or traffic. Contractor shall consult the Commissioner if he has reason to believe these limitations may be violated.
- 3.12 The installation of firestop materials shall be inspected on site by a representative of the firestopping manufacturer and verified in writing that the installation is in accordance with the manufacturer's requirements. This shall be done for each firestop penetration installed on this project.
- 3.13 FIRESTOPPING

A. Un-Insulated Cold Pipes

1. Install a pipe sleeve through the wall or slab to be penetrated with an inside diameter large enough to include the specified pipe & firestopping.
2. Install firestop material at each end of sleeve to form a U.L. approved system.
3. Mark penetration in an approved manner to verify manufacturer's inspection.
4. Cover firestopping with escutcheon cover.

B. Insulated Cold Pipes

1. Install a pipe sleeve through the wall or slab to be penetrated with an inside diameter large enough to include the specified thickness of insulation.
2. Pipe insulation should be continuous through sleeve. Insulation should be covered with a vapor barrier. For depth of wall plus 1" on either side of wall or slab, vapor barrier shall be wrapped with a 26 gauge sheetmetal inner sleeve. Firestop shall be applied between wall sleeve and pipe protection sleeve.
3. Install firestop material at each end of sleeve to form a U.L. approved system.



4. Mark penetration in an approved manner to verify manufacturer's inspection.
 5. Cover firestopping with escutcheon cover.
- C. Hot Pipes (Up to 220°F)
1. Install a pipe sleeve through the wall or slab to be penetrated with an inside diameter large enough to include the specified thickness of insulation.
 2. Pipe insulation should be continuous through sleeve. Insulation should be covered with a vapor barrier. For depth of wall plus 1" on either side of wall or slab, vapor barrier shall be wrapped with a 26 gauge sheetmetal inner sleeve. Firestop shall be applied between wall sleeve and pipe protection sleeve.
 3. Insulate pipe on each of wall and caulk all around insulation at joint of wall and insulation.
 4. Mark penetration in an approved manner to verify manufacturer's inspection.
 5. Cover firestopping with escutcheon cover.

3.14 FIELD QUALITY CONTROL

- A. Prepare and install firestopping systems in accordance with manufacturer's printed instruction and recommendations.
- B. Follow safety procedures recommended in the Material Safety Data Sheets.
- C. Finish surfaces of firestopping which are to remain exposed in the completed work to a uniform and level condition.
- D. All areas of work must be accessible until inspection by the City of New York Fire Department.
- E. Correct unacceptable firestops and provide additional inspection to verify compliance with this specification.

3.15 CLEANING

- A. Remove spilled and excess materials adjacent to firestopping without damaging adjacent surface.
- B. Leave finished work in neat, clean condition with on evidence of spill overs or damage to adjacent surfaces.

END OF SECTION



SECTION 22 05 18

ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide complete plumbing systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Escutcheons

1.4 SUBMITTALS

- A. Provide the following Manufacturer's Specifications and Engineering Data:

1. Materials
2. Parts
3. Devices
4. Finish
5. Performance Data
6. Area of Use

1.5 QUALITY ASSURANCE

- A. NYC Building Code, New York City Plumbing Code.
- B. Plumbing and Drainage Institute (PDI).
- C. ANSI.
- D. National Sanitary Foundation (NSF).
- E. ASTM.



- F. Underwriters Laboratories (UL).

PART 2 - PRODUCTS

2.1 GENERAL

- A. The following specifications represent desired design, material, and construction standards for the various items of work. Manufacturer names and model numbers are used to describe specific types, styles and quality.

2.2 ESCUTCHEONS

- A. Provide escutcheons on all exposed piping through walls, floors, partitions and ceilings.
- B. Provide escutcheons on all piping passing through fire rated walls.
- C. Escutcheons shall be held in place by set screws.
- D. Escutcheon Application

Location	
Finished Spaces	Chrome plated brass
Unfinished spaces: including mechanical equipment rooms.	Cast iron

- E. Two-piece or hinged escutcheons will not be permitted.
- F. Escutcheons shall be installed on both sides of pipe penetrations.

PART 3 - EXECUTION

3.1 NOT USED.

END OF SECTION



SECTION 22 05 23

VALVES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide valves in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Gate Valves.
B. Globe Valves.
C. Check Valves.
D. Pressure Reducing Valves.
E. Ball Valves.
F. Plug Valves.
G. Drain Valves.
H. Butterfly Valves.
I. Excess Pressure Shutoff Valve

1.4 SUBMITTALS

- A. Manufacturers' Specifications and Engineering Data
1. Each type valve.
 2. Materials of all parts.
 3. Pressure ratings.
 4. Schedule of valves, locations, application and pressure rating.



- 5. Certificates: Manufacturers' certification that valves and accessories meet or exceed specification requirements.

1.5 QUALITY ASSURANCE

- A. Each valve shall have the manufacturer's name, size, direction of flow arrow and pressure rating cast or stamped on body.
- B. Listed below are references to the specification, standards to which valves must conform to be acceptable. All references shall be the latest edition in effect. NYC codes must be complied with, such as New York City Board of Standards and Appeals.

ITEM	STANDARDS NUMBER
Valve Identification	MSS-SP-25
Cast-Iron Valves	MSS-SP-70, 71
Bronze Valves	MSS-SP-80
Globe Valves	MSS-SP-85
Ball Valves	MSS-SP-110
Butterfly Valves	MSS-SP-67
Swing Check Valves	ANSI/ASTM B-62 ANSI/ASTM A-126 Grade B

PART 2 - PRODUCTS

2.1 GENERAL

- A. All domestic water control valves within the building shall be gate, ball, globe or butterfly valves. All valves shall have the name of the manufacturer and working pressure cast or stamped thereon.
- B. All valves shall be with threaded or flanged ends as required by the piping system in which they are installed. In order to prevent dezincification no forged or yellow brass bodies or stems shall be accepted on ball, gate, globe and check valve.
- C. Valves shall be selected for the maximum working pressure to which the valve may be subject.
- D. All domestic water balancing valves shall be circuit setter type.
- E. Adapters shall be provided on all threaded valves installed in the copper water piping system.



- F. Where a manufacturer produces all types of valves, all valves shall be of the same manufacturer.
- G. All valves of the same type shall be supplied by one manufacturer.

2.2 VALVE SCHEDULE

- A. Unless otherwise indicated, the valves tabulated on the Valve Schedule on drawings have been selected from the catalog of one of the listed manufacturers of this section - as basis of design, and are representative of the design, materials and working features desired.

1. Domestic Water System

a. Gate Valves:

Size	End	Figure No.	PSIG W.O.G.	Material	Spindle
2½" & Smaller	Thread	T-111	200	Bronze	Rising Stem
2½" & Smaller	Thread	T-154-A	400	Bronze	Non-Rising Stem
3" & Larger	Flange	F-619	200	IBBM	Non-Rising Stem
3" & Larger	Flange	F-617-0	200	IBBM	OS&Y
3" & Larger	Flange	F667-0	500	IBBM	OS&Y

b. Ball Valves:

Size	End	Figure No.	PSIG W.O.G.	Material	Spindle
2" & Smaller	Thread	0860	600	Bronze	Full Post-
2 ½" & 3"	Thread	T-580-70-66	600	Bronze	Reinforced Material Seat

c. Balancing Globe Valves:

Size	End	Figure No.	PSIG W.O.G.	Material	Spindle
1/2" - ¾"	Solder	S-1709*	125	Brass	Non-Rising Stem



Size	End	Figure No.	PSIG W.O.G.	Material	Spindle
1"-2"	Solder	S1710*	240	Brass	Non-Rising Stem

*Based on one of the listed manufacturers in this section.

d. Butterfly Valves:

Size	End	Figure No.	PSIG W.O.G.	Disc Material	Actuator
2" - 6"	Lug Style	LD-2000-3	200	Bronze	Lever Operated
8"-12"	Lug Style	LD-2000-5	200	Bronze	Gear Operated
14" - 20"	Lug Style	LD-1000-5	150	Bronze	Gear Operated
2" - 6"	Lug Style	LD-3022-3	250	Stainless Steel	Lever
8"-12"	Lug Style	LD-3022-5	250	Stainless Steel	Gear Operated
2½" - 6"	Grooved	GD-47565-3	300	EPDM	Gear Operated

e. Check Valves:

Size	End	Figure No.	PSIG W.O.G.	Material
2½" & Smaller	Thread	T-413	200	Bronze
3" & Larger	Flange	F-918-B	200	IBBM
3" & Larger	Flange	F-968-B	500	IBBM

2. Gas System

Size	End	Figure No.	PSIG W.O.G.	Material
2 ½" & Smaller	Thread	142	175	Semi-Steel
3" & Larger	Flange	143	175	Semi-Steel



Notes:

1. Provide operating wrenches for all size valves. Attach wrench to each valve on sizes up through 1".
 2. ½" and ¾" A.G.A. approved ball valves with square nut head may be used.
- B. Shut-Off Valves
- C. Pressure Reducing Valves
1. 2½" and Smaller:
 - a. Valve shall maintain a constant downstream pressure regardless of varying inlet pressures and/or changing flow rates.
 - b. Valve shall be capable of reducing a maximum inlet water pressure of 430 psi to a lower desired pressure.
 - c. The valve shall close drip-tight when the downstream pressure rises above the spring setting.
 - d. Valve shall be of the balanced single seat design and shall contain an integral strainer constructed of chrome-nickel stainless steel.
 - e. All necessary restorations shall be possible without removing the valve from the line.
 - f. The pressure reducing unit shall be replaceable without the requirement of a new pressure adjustment.
 - g. The diaphragm assembly shall be fully guided at both the top and the bottom.
 - h. All trim shall be chrome-nickel stainless steel throughout.
 - i. Valve shall be constructed with union ends at the inlet and the outlet.
 - j. Provide a pressure gauge on the downstream side of the valve, installed in a threaded tapping on either side of the valve.
 - k. The body and the cover shall be constructed of heavy-duty bronze.
 - l. For upstream and downstream pressures, and model number, refer to the Schedule as indicated on the Drawings.



2. 3" and Larger:
 - a. This valve shall maintain a constant downstream pressure regardless of fluctuations in demand, or varying inlet pressures.
 - b. Valve shall be a hydraulically operated pilot controlled valve.
 - c. No external packing glands shall be permitted, and there shall be no pistons operating the main valve or any pilot controls.
 - d. The pilot control shall be a direct-acting, adjustable, spring-loaded, normally open diaphragm valve, designed to permit flow when controlled pressure is less than the spring setting.
3. Entire installation shall be assembled as shown on drawings.

D. Butterfly Valves

1. Use for throttling and shut-off control in lieu of ball, globe and gate valves.
2. Valves shall be lug style.
3. Body shall be ductile iron with extended neck. The liner is to be molded-in or captive boot design.

E. Hose Bibb Valves

1. Drain valves on street pressure piping:
 - a. Heavy, rough cast brass faucets with composition washer and 3/4" hose end.
2. Drain valves on higher pressure piping:
 - a. Bronze, angle valves with composition washer and 3/4" hose end, 300 psig wsp.

2.3 MODULATING FLOAT VALVE (SUCTION TANKS AND FIRE STORAGE TANK)

- A. The Modulating Float Valve shall modulate to maintain a constant water level in the suction tank by compensating for variation in supply and or demand. It shall be capable of controlling the flow into the tank in direct relation to the flow that is being withdrawn from the tank. The valve shall close on rising level.
- B. The main valve shall be a hydraulically operated, pilot controlled, diaphragm type, globe pattern valve. The main valve shall have a resilient disc, having a rectangular cross section, contained on three and one half sides by a disc retainer and forming a tight seal against a single renewable seat; quad rings and "O" rings are not



acceptable. The diaphragm assembly containing a valve stem shall be fully guided at both ends by a threaded removable T303 stainless steel bearing in the valve cover and by an integral bearing in the threaded removable T303 stainless steel valve seat. This diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm shall consist of nylon fabric bonded with synthetic rubber and shall not be used as a seating surface. All necessary restorations shall be possible without removing the main valve from the line.

- C. The valve shall be constructed of all bronze (ASTM B-62) with stainless steel trim, Type 303. The valve shall have 150ASA class flanged connections conforming to ANSI B16.42. All necessary restoration shall be possible without removing the valve from the line.
- D. The float control pilot shall be a rotary disc type pilot to insure long term, reliable, low maintenance service. The pilot valve shall include a lapped Monel multi-port disc with a matching stainless steel port plate and a cast bronze housing. The float rod linkage assembly shall convert tank level changes into gradual rotation of the internal disc. The float control shall be equipped with stainless steel rod and float.
- E. The control system shall include a variable orifice proportioning valve, which will insure a smooth valve opening and closing stroke. The pilot system shall also include a self-cleaning strainer to keep foreign particles from entering the pilot system.
- F. The valve shall be Modulating Float Valve, as manufactured by approved manufacturer.

2.4 PRESSURE REDUCING VALVE (LEAD PRV & BRANCH PRV)

- A. The pressure-reducing valve shall maintain a constant downstream pressure (± 3 PSI) regardless of changing inlet pressure. All flow conditions from zero flow to full flow shall be handled in a stable manner. The valve shall be factory certified to withstand a maximum working inlet pressure of 350 PSI. The reduced pressure spring range shall be either 28-85 or 80-140 psi, as indicated on the drawings.
- B. The valve shall close drop tight when the downstream pressure rises to the set point of the springs setting. No pressure "creep" or leakage will be tolerated. Valve shall be of the high capacity, balanced, single seat design. The valve body and cover shall be constructed of all virgin bronze (ASTM B-62) material; lower grades of bronze and recycled brass are not acceptable. Valve trim shall be of type 416 stainless steel.
- C. A self-contained pressure-reducing valve shall include a permaphragm assembly, all internal seals, spring, spring guide, adjustment nut, stem, and a floating stainless steel seat. The permaphragm assembly shall be fully guided above and below molded, reinforced synthetic rubber permaphragm. The design of the permaphragm shall be such that any stem travel will not cause any stretching or fatigue. The perimeter of the permaphragm shall be molded to form a bead ring, which will enable highly reliable attachment between the cover and the permaphragm retainer without the requirement



of high compression of the bead ring (outer perimeter) of the permaphragm. Flat, die-cut diaphragms will not be permitted.

- D. Valve shall be constructed with union tailpieces at both the inlet and the outlet ends. Dual body tappings shall make it possible to install a pressure gauge on either side of the valve to monitor the downstream pressure.
- E. The valve shall have been in standard production and have a proven history of reliable and satisfactory performance in similar applications for a period no less than three (3) years.
- F. The valve shall be model type as manufactured by an approved manufacturer.

2.5 SOLENOID SAFETY SHUT-OFF VALVE (SUCTION TANKS & FIRE TANK)

- A. The safety shut-off valve is normally open and allows the modulating float valve to control the water level in the suction tank. If the water level rises to an undesirable level, a high level probe shall signal the emergency shut-off valve to close drip-tight to prevent the tank from overflowing.
- B. The main valve body, cover shall be cast ASTM B-62 bronze. The valve trim shall be ASTM B62 bronze. The connections shall be 150ASA flanged ends than conform to ANSI B16.24 and shall have a maximum working pressure of 225 psi.
- C. The main valve shall be a hydraulically operated, pilot controlled, diaphragm type, globe pattern valve. The main valve shall have a resilient disc, having a rectangular cross section, contained on three and one half sides by a disc retainer and forming a tight seal against a single renewable seat; quad rings and "O" rings are not acceptable. The diaphragm assembly containing a valve stem shall be fully guided at both ends by a threaded removable T303 stainless steel bearing in the valve cover and by an integral bearing in the threaded removable T303 stainless steel valve seat. This diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm shall consist of nylon fabric bonded with synthetic rubber and shall not be used as a seating surface. All necessary restorations shall be possible without removing the main valve from the line.
- D. The pilot system shall contain self-cleaning strainer to prevent debris from entering the pilot control system and a three-way solenoid valve. When the solenoid pilot valve is energized, the main valve will close drip-tight. When de-energized, the valve will remain open wide.

2.6 FLOAT CONTROL VALVE (ROOF TANKS & FIRE TANK)

- A. The roof tank float control valve normally allows water flow into the house tank. If the water level in the tank rises above the normal high level, the float control valve shall close, to prevent overflow. The float valve is intended for use as a safety backup to



the automatic house pump control system. When the level in the tank returns to an acceptable level, the float valve automatically re-opens, allowing flow into the tank.

- B. The main valve body, cover shall be cast ASTM B-62 bronze. The valve trim shall be ASTM B62 bronze. The connections shall be 150ASA flanged ends that conform to ANSI B16.24 and shall have a maximum working pressure of 225 psi.
- C. The main valve shall be a hydraulically operated, pilot controlled, diaphragm type, globe pattern valve. The main valve shall have a resilient disc, having a rectangular cross section, contained on three and one half sides by a disc retainer and forming a tight seal against a single renewable seat; quad rings and "O" rings are not acceptable. The diaphragm assembly containing a valve stem shall be fully guided at both ends by a threaded removable T303 stainless steel bearing in the valve cover and by an integral bearing in the threaded removable T303 stainless steel valve seat. This diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm shall consist of nylon fabric bonded with synthetic rubber and shall not be used as a seating surface. All necessary restorations shall be possible without removing the main valve from the line.
- D. The pilot control shall be a rotary disc plate type valve which, when the tank level rises, diverts line pressure into the main valve cover chamber, forcing it slowly closed. When the tank level recedes, the cover chamber pressure shall be vented, thereby permitting line pressure to open the main valve. The vertical rod and ball shall be all stainless steel. The pilot control shall be bronze with monel & stainless steel trim. The pilot system shall contain a self-cleaning strainer to insure that debris will not enter the pilot control system.

2.7 MANUFACTURERS

- A. Gate Valves, Globe Valves & Check Valves
 - 1. Milwaukee
 - 2. Stockham
 - 3. Nibco
 - 4. Kennedy
 - 5. Or Approved Equal



- B. Pressure Reducing Valves
 - 1. J.R. Gunzenhauser
 - 2. Cla-Val
 - 3. Bailey
 - 4. Or Approved Equal

- C. Ball Valves
 - 1. Milwaukee
 - 2. Stockham
 - 3. Apollo
 - 4. Nibco
 - 5. Kennedy
 - 6. Or Approved Equal

- D. Butterfly Valves
 - 1. Nibco
 - 2. Stockham
 - 3. Milwaukee
 - 4. Or Approved Equal

- E. Plug Valves
 - 1. Rockwell-Nordstrom
 - 2. Walworth
 - 3. Stockham
 - 4. Or Approved Equal



PART 3 - EXECUTION

3.1 INSTALLATION

- A. All valves shall be installed only in the upright vertical or horizontal positions unless specifically otherwise required by the drawings.
- B. All valves shall be installed in accessible locations to facilitate easy removal for restoration or replacement.
- C. All valves with pilot control systems shall have drains piped to floor drains.
- D. When using circuit setter valves the contractor shall provide to the Commissioner a differential pressure test kit for measuring flow across the valves.

END OF SECTION



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SECTION 22 05 29

HANGERS, SUPPORTS, ANCHORS, GUIDES, AND SEISMIC RESTRAINT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Work of this Section shall conform to the requirements of the Contract Documents.

1.3 WORK INCLUDED

- A. Hangers equipment.
B. Supports

1.4 SUBMITTALS

- A. Manufacturer's literature, catalog data and illustrations.
B. Shop Drawings indicating:
1. Dimensions
2. Construction details of hangers, inserts, anchors and guides
3. Materials
4. Maximum Load
5. Locations
6. Recommended installation procedures



1.5 QUALITY ASSURANCE

A. Codes and Authorities

1. Federal Specification WW-H171b
2. ASA Code for Pressure Piping
3. ASTM A-575-73
4. MSS SP-58-67
5. MSS SP-69-66
6. Underwriters Laboratories
7. NYC Plumbing Code

B. References

1. Publications, codes and standards listed below form a part of this specification to the extent referenced.
 - a. Applications, Design and Inspection Manual – Engineered Seismic Bracing of Suspended Utilities, 2006 International Building Code Edition. International Seismic Application Technology (ISAT) Vol. 2 – HVAC Duct, Mechanical Piping, Plumbing, Process Piping and Equipment
 - b. International Building Code (IBC)
Chapter 16 – Structural Design
Chapter 17 – Structural Tests and Special Inspections
 - c. ASCE 7-05, Chapter 13, Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers (ASCE).
 - d. ACI 318, Building Code Requirements for Structural Concrete, American Concrete Institute (ACI).



PART 2 - PRODUCTS

2.1 HANGERS

- A. All bracket, clamp and rod sizes indicated in this specification are minimum sizes only. All structural hanging materials shall have a built-in safety factor of 5.
- B. Provide pipe roller support where longitudinal movement due to expansion and contraction may occur.
- C. All hangers shall be U.L. listed.
- D. Pipe Hanger Schedule

	Carpenter & Patterson 'Witch'	Grinnell	I. R. Rauch's & Sons
C-Clamp with Retaining Clip and Locknut (pipe sizes 2" & smaller)	47 with 22	86 with 89	47 with 22
Beam Clamp	293	228	82
Multi-J Hook	---	---	228
J Hook	---	---	221
Clevis Hanger	100	260	100
Clevis Hanger w/Saddle	100SH	---	100SH
180° Shield	265P	168	265P
Single Rod Roll Hanger	140	181	140
Double Rod Roll Hanger	142	171	142
Trapeze	---	46	1600-1700
U-bolt Adjustable Pipe	283	137C	283
Stanchion Saddle	247	259	247
Welded Steel Bracket	84 or 139	199 or 195	84 or 139
Riser clamp	126	261	126
Welded Beam Attachment	113A	66	---



	Carpenter & Patterson 'Witch'	Grinnell	I. R. Rauch's & Sons
Welded Beam Attachment w/bolt & nut	113B	66	113A
Concrete Insert	108	282	180 or 181
Phillips Inserts	513	Phillips Insert	1000

E. Hanger Rod Schedule

Pipe Size	Rod Diameter
2" and smaller	3/8"
2-1/2" - 3-1/2"	1/2"
4" - 5"	5/8"
6"	3/4"
8" - 12"	7/8"

F. Manufacturers

1. I. R. Rauch's & Sons
2. Grinnell Company, Inc.
3. Carpenter & Patterson
4. Or Approved Equal

2.2 FOUNDATIONS

- A. All equipment, piping, etc., shall be mounted on approved foundations, all as specified herein, or as shown on the drawings.
- B. All floor-mounted equipment shall be erected on 4" high concrete pads, provided under a separate section of the specifications, over the complete floor area of the equipment, unless specified to the contrary herein. Hereinafter, wherever vibration eliminating devices and/or concrete inertia blocks are specified, these items shall in turn be mounted upon aforementioned pads unless specified to the contrary herein.



- C. 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. Hereinafter, wherever vibration eliminating devices and/or concrete inertia blocks are specified, these items shall in turn be mounted upon aforementioned pads unless specified to the contrary herein.
- D. All concrete foundations and supports (and required reinforcing thereof) will be furnished and installed by this Contractor. Furnish templates for all concrete foundations and supports, and all required hanger bolts and other appurtenances necessary for the proper installation of equipment. Submit shop drawings showing the complete details of all foundation bases including necessary concrete and steel work.

2.3 SEISMIC RESTRAINTS

A. Component Importance Factor

- 1. In order to identify systems requiring seismic restraint and to define those from which restraints may be excluded, utility components are assigned an ASCE 7 Importance Factor (I_p) on the basis of the following:

$I_p = 1.5$ Life-Safety component which is required to function after a seismic event including fire protection sprinkler systems

Components that contain hazardous or flammable materials.

$I_p = 1.0$ All other Components

B. Structural Attachments

- 1. Seismic restraint hardware and engineering by International Seismic Application Technology (ISAT) or approved equal.
- 2. Vertical support and seismic restraint anchorages to utilize ISAT Blue Banger Hanger Cast-In Place Dec Inserts unless noted otherwise. Post installed anchors are an acceptable alternate provided the anchors are those pre-engineered within the ISAT Applications, Design and Inspection Manual.
- 3. Vertical support and seismic restraint connections to structural steel are to utilize Beam Clamp or approved equal (as basis of design) connections unless noted otherwise. Welded or bolted connections are an acceptable alternate provided the details employed are those pre-engineered within the *ISAT Applications, Design and Inspection Manual*.



PART 3 - EXECUTION

3.1 **INSTALLATION**

A.

Hanger Spacing Schedule			
Piping Material	Pipe Size	Maximum Hanger Spacing	Remarks
Cast iron (hub and spigot)	All sizes	5 feet	Provide hanger behind each hub.
Cast iron (hubless)	All sizes	5 feet	Provide hanger at each side of every joint.
Copper	1¼" and less	6 feet	
Copper	1½" and larger	10 feet	
Steel	All	10 feet	Provide hanger at each mechanical joint.

Note: Restraint assemblies consisting of pipe clamps, rods and nuts shall be fitted to each hubless vertical to horizontal fitting. Sway bracing must be provided for above ground piping 6" or larger.

- B. For flat slab construction only, support hangers from concrete inserts. Furnish, locate and set such inserts and make sure that such inserts are in place when the concrete is poured. Construct inserts of malleable iron or pressed steel with space for rods of all sizes. Install all inserts for pipes 3" and larger in size with a reinforcing rod ½" in diameter run through a slot in the insert specifically provided for this purpose.
- C. For flat slab construction only, if any pipe is to be hung in a space where no inserts have been provided, drill holes in the slab (subject to the Commissioner's prior approval) and provide rods and hanger attached to an approved fishplate or install double expansion shields connected by a 2" x 2" angle from which the hanger rod is to be suspended. For pipe size 2" and under, use single shields but the hanger spacing defined hereinbefore to be reduced to 5 feet. The carrying capacity and size of each shield to be calculated on the basis of the spacing indicated above but the minimum size to be ¾". Install additional shields of the same size so that the number of hangers are of adequate size to support the loads which they carry. Shields may be used in flat concrete slabs only.



- D. Regardless of the type of construction (i.e., concrete, concrete-deck-steel or other variations) take particular care to support all main lines and all large and heavy pipes in an approved manner, including the furnishing and installation of supplementary steel, if required. Supplementary steel sections are to be mill-rolled. Submit shop drawings, indicating support methods, point loadings to the building structure and hanger locations for review sufficiently in advance of concrete pouring schedules to permit evaluation, critique and any necessary changes to handling and support methods.
- E. Set all inserts for all pipes in ample time to allow concrete work to be performed on scheduled time.
- F. Hangers may be directly attached to steel beams of building construction, where they occur, if approved by the Commissioner. Smaller pipes may be suspended from crosspieces of pipe or steel angles, which in turn are to be securely fastened to building beams. The intention is to provide supports which, in each case, will be amply strong and rigid for the load, but which will not weaken or unduly stress the building construction.
- G. Provide approved roller support, floor stands, wall brackets, etc., for all lines running near the floor or near walls, which can be properly supported or suspended by the floors or walls. Pipelines near walls may also be hung by hangers carried from approved wall brackets at a level higher than the pipe.
- H. Do not hang piping from other piping. Support of hangers by means of vertical expansion bolts is not permitted.
- I. Support Locations for Vertical Piping
 - 1. Cast Iron Soil Piping: At every floor and at its base, but in no case greater than 20-foot intervals.
 - 2. Copper Tubing and Steel Pipe: At every floor but no more than 20-foot intervals.
- J. Hangers shall be installed outside of piping insulation with a semi-cylindrical galvanized shield set between the hanger and insulation.



- K. Trapeze hangers may be used instead of separate clevis hangers with suspension rods having double nuts and securely attached to the construction. All beam attachments shall be installed on clean, smooth, and non-fireproofed sections of the beam.
- L. All hangers, anchors, rods and supports shall be galvanized or painted.

END OF SECTION



SECTION 22 05 30

DISINFECTING OF WATER SUPPLY SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Disinfect the water supply piping system in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Disinfection of potable water piping system.

1.4 QUALITY ASSURANCE

- A. Flush all lines before chlorination.
- B. Chlorinate all domestic water lines including tanks.
- C. Comply with National Standard Plumbing Code requirements for disinfection of potable water systems.
- D. Sterilize after all pressure tests have been completed.

PART 2 - PRODUCTS

- 2.1 Liquid chlorine Fed. Spec. BB-C-12OB or hypochlorite Fed. Spec. O-C-114(4), Type II, Grade B or Fed. Spec. O-S-602D, Grade A or B.

PART 3 - EXECUTION

- 3.1 The pipe system shall be flushed with clean, potable water until no dirty water appears at the outlets.
- 3.2 The system or part thereof shall be filled with a water-chlorine solution containing at least 50 parts per million of chlorine and the system or part thereof shall be valved off and allowed to

Disinfecting of Water Supply System



- stand for 24 hr. or the system or part thereof shall be filled with a water-chlorine solution containing at least 200 parts per million of chlorine and allow to stand for 3 hours.
- 3.3 Test for residual chlorine at the extreme end of system from the point where chlorine was introduced. If less than 10 ppm, repeat chlorination procedure.
 - 3.4 Flush system with clean water until chlorine is reduced to less than 1 ppm. Open and close each valve and faucet at least four times during flushing procedure.
 - A. Obtain the services of an independent laboratory to have samples taken and tested. The system must be free of bacteriological contamination. If the system is contaminated, rechlorinate until satisfactory. Submit test results to the Commissioner.

END OF SECTION



SECTION 22 05 53

IDENTIFICATION OF PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide information of plumbing systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Pipe Labeling
- B. Valve and Equipment Tagging

1.4 SUBMITTALS

- A. Provide samples as follows: Where manufacturer's catalog information does not satisfactorily indicate materials, engineering design, quality of construction or aesthetics of proposed equipment, samples shall be submitted as requested with no additional cost to the City of New York.

1.5 QUALITY ASSURANCE

- A. NYC Building Code, NYC Plumbing Code.
- B. Plumbing and Drainage Institute (PDI).
- C. ANSI.
- D. National Sanitary Foundation (NSF).
- E. ASTM.
- F. Underwriters Laboratories (UL).



PART 2 - PRODUCTS

2.1 GENERAL

- A. The following specifications represent desired design, material, and construction standards for the various items of work. Manufacturer names and model numbers are used to describe specific types, styles and quality.

2.2 PIPE LABELING

- A. All piping shall be identified by stenciled lettering, or self adhesive pipe markers which legend conforms to OSHA/ANSI standards including but not limited to the identification of flow direction, pressure, supply/return, pump discharge, cold water, hot water, hot water return, etc.
- B. There shall be at least one lettering identification for each pipe in each space and at all valve locations.
- C. For painted identification use color sharply contrasting with background. If necessary, paint a strip background of black or white to obtain contrast.
- D. Vertical piping shall be labeled at each floor. Horizontal piping shall be labeled every 10', both sides of partitions, before and after turns, and close to valves and flanges.
- E. Each set consisting of one (1) band on which the name of the service is printed in black letters not less than 1½ inches high, and one (1) band on which is printed a black directional arrow. Apply bands where they can be easily read and with their long dimension parallel to the axis of the pipe. Provide bands with backgrounds of different colors from the various service groups.
- F. Manufacturers: W.H. Brady Company, Seton, Brimar Industries or approved equal.

2.3 VALVE & EQUIPMENT TAGGING

- A. Tag valves with identifying number and system. Number valves by floor level.
- B. For valves, etc., use metal tags 2" minimum in diameter with 1" painted letters fabricated of brass, stainless steel or aluminum. Attach tags with chain of same material.
- C. Prepare lists of all tagged valves showing location, floor level, tag number and use. Prepare separate lists for each system. Mount lists under a sheet of clear acrylic in Equipment Room. Include copies in each maintenance manual.
- D. Provide charts showing equipment lubrication points, lubrication required and frequency, and columns for date and initials.



- E. Stencil equipment with identifying letters and numbers as used on drawings. Where space is available use full name of equipment.
- F. Identify all controls such as motor starters not in motor control centers, float switches and alarms.

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION



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SECTION 22 05 90

TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide testing for all plumbing systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Test all new systems.

1.4 SUBMITTALS

- A. Provide all test certifications.
B. Approvals.

1.5 QUALITY ASSURANCE

- A. AWWA
B. New York City Building Code
C. Utility Requirements

PART 2 - PRODUCTS

2.1 NOT USED.



PART 3 - EXECUTION

3.1 DOMESTIC WATER SYSTEM

- A. Upon completion of a section of a water system or of the entire water system, the completed section or system shall be verified as to materials, and shall be tested and proven tight under a water pressure of at least 1½ times the working pressure, but not less than 200 psig, for one (1) hour, with no loss in pressure. Testing of sections shall be done in order to permit general construction and other work to proceed. Such tests shall be made in the presence of the Building Department Inspectors, and the Commissioner.
- B. Provide all apparatus and temporary work for tests. Take all precaution necessary to prevent damage to the building or its contents as a result of such tests. The water used for tests shall be obtained from a potable source of supply.
- C. Any defects or deficiencies discovered as a result of tests shall be immediately restored and tests shall be repeated until the test requirements are fully complied with.
- D. Caulking of pipe joints to remedy leaks will not be permitted.

3.2 SOIL, WASTE, VENT AND STORM WATER SYSTEMS

- A. Except for outside leaders and perforated or open jointed drain tile (subsoil drains), the piping of sanitary and storm drainage and vent systems shall be verified as to materials and shall be tested upon completion of the rough piping installation and prove to be water tight. The removal of cleanout plugs may be required to ascertain that the prescribed pressure has been reached in all parts of the system. Testing of sections shall be done in order to permit general construction and other work to proceed. Such tests shall be made in the presence of the Building Department Inspectors, and the Commissioner.
- B. Water Test. A water test shall be applied to the drainage system either in its entirety or in sections after rough piping has been installed. If applied to the entire system, all openings in the piping, except the highest opening, shall be tightly closed and the system filled with water to the point of overflow. If the system is tested in sections, each opening, except the highest opening of the section under test, shall be tightly plugged and each section filled with water. No section shall be tested with less than a ten foot head of water. In testing successive sections, at least the upper ten feet of the following section shall be tested, so that no joint or pipe in the building (except the uppermost ten feet of the system) shall have been submitted to a test of less than ten foot head of water. The water shall be kept in the system or in the portion under test for at least four (4) hours before inspection starts; the system shall then be tight at all points.
- C. Air Test. An air test may be used only when permission for this type of test is obtained from the Commissioner. The air test shall be made by attaching an air compressor testing apparatus to any suitable opening and, after closing all other inlets and outlets



of the system; forcing air into the system until there is a uniform gauge pressure of five psi or sufficient pressure to balance a column of mercury ten inches in height. This pressure shall be held, without introducing additional air, for a period of at least thirty minutes.

D. Buried Piping

1. In addition to the hydrostatic testing indicated above all buried piping shall be videotaped twice. Once after backfilling is complete and a second time after the slabs have been poured. A report and videotape shall be given to the Commissioner after each test.

END OF SECTION



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SECTION 22 07 19

INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide insulation in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Equipment Insulation.
- B. Piping Insulation.

1.4 SUBMITTALS

- A. Shop Drawings: Submit insulation shop drawings for each service.
- B. Product Data: Manufacturer's latest published data for materials, equipment and installation.

1.5 QUALITY ASSURANCE

- A. ASTM C335.
- B. ASTM C356.
- C. ASTM C411.
- D. ASTM C547.
- E. ASTM 84.
- F. ASTM 225.
- G. U.L.



PART 2 - PRODUCTS

2.1 GENERAL

- A. Conform to application schedule specified herein for types and thicknesses of insulation.
- B. Provide insulation (including insulation jacket or facing and adhesives used to adhere the facing or jacket to the insulation) with noncombustible material meeting all requirements, including New York City Building Code and fire and smoke hazard ratings as tested by procedure ASTM E-84, National Fire Protection Association 225, and UL 723, not exceeding flame spread 25 and smoke developed 50.

2.2 PIPE INSULATION

A. Materials

- 1. Fiberglass Density: All Fiberglass pipe insulation in equipment rooms and/or where exposed, to be of the sectional type having 6 lbs./cu. ft. density. All other fiberglass insulation to be of the 1-piece type having 4 lb. density.
- 2. Thermal conductivity of fiberglass to be .23 BTU/hr/inch/sq. ft./°F at a mean temperature of 75°F.
- 3. Thermal conductivity of calcium silicate to be .32 BTU/hr/inch/sq. ft./°F at a mean temperature of 100°F.

B. Insulation Jackets

- 1. Hot Pipes Concealed: Factory applied white fire retardant jacket, (ASJ), taped and banded. Pipes banded with not less than 3 bands per section.
- 2. Hot Pipes Exposed: Factory applied white fire retardant jacket, (ASJ), with butt strips taped and banded. Pipes banded with not less than 3 bands per section.
- 3. Cold Pipes Concealed and Exposed: Factory applied white fire retardant jacket with self-sealing lap (ASJ) and butt strip. Ends of pipe insulation sealed off at valves, fittings and flanges with I.C. 301 or FB 30-35).
- 4. Finish calcium silicate with glass cloth adhered with I.C. 501 or BF 30-36.
- 5. Vapor jacket permeability to be 0.02 perms.
- 6. Jacket Puncture Resistance to be 50 units (Beach).
- 7. Piping Exposed to Outdoors: Cover piping and fittings which is exposed to weather or called for to be weatherproof, in addition to insulation and finishes



specified for piping exposed to outdoors, with a polished aluminum jacket from approved manufacturer.

C. Application Schedules

1. Schedule

<u>Service</u>	<u>Material</u>	Insulation Thickness in Inches for Pipe Sizes				
		1" and less	1¼" to 2"	2½" to 4"	5" to 6"	8" and larger
Horizontal Storm Drains and Drain Bodies	Glass Fiber	---	1"	1"	1"	1"
Hot Water and Hot Water Circulation	Glass Fiber	1"	1"	1"	--	--
Domestic Cold Water	Glass Fiber	1"	1"	1"	1"	1"
Drains and Drain Bodies Receiving Condensate	Glass Fiber	--	1"	1"	1"	--"
Drain Traps at Handicapped Sinks	Glass Fiber	--	1/2"	--	--	--

2. Piping Exposed to Outdoors and Pipes Subject to Freezing: Cover any piping subject to freezing with an additional layer of 2" glass fiber insulation of the same finish as specified for the particular service when not subject to freezing, but not less than 3" total thickness.
3. For heat-traced piping, insulation must be sized to accommodate electric cable. Cover with an aluminum jacket, as specified for piping exposed to the weather.

D. Fittings, Valves and Flanges

1. Where manufactured, use factory premolded fittings (of the same material and thickness as the pipe insulation) for all fittings, flanges and valves.



2. Where premolded insulation fittings are not manufactured, insulate all fittings, flanges and valves with mitered segments of the same density as the adjoining pipe covering. Finish hot service applications with open weave glass mesh adhered with I.C. 501 (or BF 30-35). Vaporseal for cold applications with I.C. 501 (or BF 30-35) adhesive with open weave glass mesh laid in while wet with final coat with I.C. 501 (or BF 30-35) adhesive. Overlap glass mesh and outer coat adjacent covering by at least 2". Do not insulate flanges until systems are operational.
3. Provide insulation for removable flanges of pipe strainers on cold services with built-up sections of glass fiber pipe covering, arranged to facilitate servicing of the strainer. Complete applications with vaporseals. All vapor barriers to be sealed and continuous through hangers, walls, sleeves, etc. All adhesives and coatings to be as noted herein.
4. Insulate fittings, flanges, valves, etc. for services where calcium silicate insulation is specified as a pipe insulation with mineral wool cement of equal thickness to the pipe insulation and finished with glass cloth.
5. Insulate water supply lines inside chases and up to the plumbing fixture supply stop.

2.3 MANUFACTURERS

A. Insulation

1. Owings Corning Fiberglas
2. Johns Manville
3. Certain-Teed
4. Pittsburgh Corning
5. Or Approved Equal

B. Adhesives and Sealers

1. Benjamin Foster (B-F)
2. Insul-Coustic (I-C)
3. Minnesota Mining and Mfg. Co. (3M)
4. Or Approved Equal



PART 3 - EXECUTION

3.1 **INSTALLATION OF INSULATION**

- A. Perform all work in strict accordance with the manufacturer's recommendation and the best practice of the trade and the intent of this specification.
- B. Apply all insulation over clean dry surface, butting all sections or surfaces firmly together and finishing as hereinafter specified.
- C. Seal all vapor barriers continuous and throughout against moisture penetration.

3.2 **PROTECTION OF INSULATION**

- A. Protect pipe insulation at hangers, guides, and rollers by 16 gauge galvanized metal shields (at least 3 times the insulation diameter in length and 1/3 the insulation circumference in width) on the outside of the insulation and vapor barrier. Hold shields in place by straps. Do not pierce the insulation with hangers. Where glass fiber insulation is used on piping 3" and larger, provide half-section of calcium silicate covering of equal thickness at metal shields.
- B. Do not use staples.

END OF SECTION



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SECTION 22 11 16

DOMESTIC WATER PIPING AND FITTING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide piping and fitting materials in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Piping.
B. Fittings.
C. Related Accessories.
D. Testing.
E. Disinfection

1.4 SUBMITTALS

- A. Submit a list of all proposed piping materials including system/material (use schedule).
B. Submit complete back-up material where proposed materials differ from those specified.
C. Quality control submittals.
1. Welder's Certification.
D. All final test results.

1.5 QUALITY ASSURANCE

- A. NYC Plumbing Code.
B. Each pipe length shall have the manufacturer's name cast, stamped or rolled on.



- C. Each fitting shall have the manufacturer's name cast, stamped or rolled on.
- D. The following are references to the specifications standards of recognized authorities to which pipe and fitting materials must conform to be acceptable. All references shall be the latest edition in force.

Material	Authority Spec. Numbers
Sleeve Pipe, Black and Galvanized	ANSI B36.20
Steel Pipe, Black and Galvanized	ANSI B36.20
Ductile Iron	ANSI A21.51
Ductile Iron Fittings	ANSI A21.10, A21.11
Cast Iron Pressure Pipe	FS-WW-P360A
Malleable Iron Threaded Fittings - (Class 150 lbs. & 300 lbs.)	ANSI B16.3
Cast Iron Threaded Fittings (Class 125 lbs. & 250 lbs.)	ANSI B16.4
Cast Iron Pipe Flanges and Flanged Fittings (Class 25 lbs., 125 lbs., 250 lbs., & 800 lbs.)	ANSI B16.1
Seamless Copper Water Tube (Type "K" and "L") (Hard Temper)	ANSI H23.1
Brazing Filler Metal	ASTM B260-62T
Wrought Copper and Copper Alloy Solder Joint Pressure Fittings	ANSI H16.22
Brass Compression Fittings	ANSI A40.2
Bronze Pipe Flanges and Flanged Fittings (Class 150 lbs. & 300 lbs.)	ANSI B16.24
Cast Bronze Threaded Fittings - (Class 125 lbs. & 250 lbs.)	ANSI B16.15
Cast Copper Alloy Solder Joint Pressure Fittings	ANSI B16.18
Seamless Red Brass Pipe, Standard Sizes	ANSI H27.1



PART 2 - PRODUCTS

2.1 DUCTILE IRON WATER PIPE

- A. Pipe and Fittings: Centrifugally spun, Class 52 bell and spigot pipe, cement lined.
- B. Joints: Rubber gasket, mechanical joint with grounding straps across joints.
- C. Restrained Joints: Gasket used with a grooved spigot end pipe.
- D. Application: Underground water services from building to point of connection with the municipal water mains.

2.2 GALVANIZED STEEL PIPE

- A. Pipe: Galvanized steel pipe, Schedule 40 with maker's name rolled into each length.
- B. Fittings
 - 1. Threaded: Galvanized malleable iron with flat band steam pattern. Cast iron drainage pattern for waste piping.
 - 2. Mechanical Joint: For grooved piping only, with gasket.
- C. Joints: PTFE threaded seal tape for threaded, couplings with gasket for mechanical joint.
- D. Application
 - 1. Schedule 40 steel for domestic water piping 8" and larger.

2.3 COPPER TUBING

- A. Pipe: Copper tubing type 'L', seamless drawn extruded tubing hard temper. Pipe ends shall be plain, threaded or rolled groove as required for piping system.
- B. Fittings
 - 1. Brazed, Soldered or Threaded: Wrought or cast brass.
 - 2. Mechanical Joint: Victaulic rolled groove fittings with gasket.
- C. Joints:
 - 1. Brazed Joints: Use brazing flux and brazing alloy.
 - 2. Soldered Joints: Use 95-5 tin antimony solder (lead free).



3. Threaded Joints: Conform to American National Taper Thread. All burrs shall be removed. PTFE threaded seal tape for threaded shall be used only on male threads.
 4. Mechanical Joints: Grooved piping system for 2" through 6" sizes, with a pressure responsive synthetic rubber gasket, up to 300 psi working pressure.
- D. Application: All hot, cold and hot water circulating piping less than 5" within building.

2.4 BRASS PIPE

- A. Pipe: Seamless red brass, 85% copper, Schedule 40.
- B. Fittings: Cast brass, 85% copper, Schedule 40.
- C. Joints: PTFE threaded seal tape for threaded
- D. Application:
 1. All exposed fixture pipe, chrome plated.
 2. Indirect waste pipe, chrome plated.

2.5 CHROMIUM PLATING

- A. All exposed piping shall be chrome plated in accordance with U.S. Government Standards. Clean and polish materials before plating. Apply plating thoroughly and evenly to prevent stripping and peeling. Copper plate steel and cast iron pipe and nickel plate copper and brass pipe before applying chromium plating. Polished or satin finish as selected.

PART 3 - EXECUTION

3.1 JOINTS

- A. Threaded Joints: Do not damage fitting surface, remove burrs and ream smooth. Apply PTFE threaded seal tape for threaded to male threads only. Clean joint thoroughly of excess jointing material.
- B. Soldered Joints: Make all joints with wire solder. Remove burrs and ream smooth. Clean outside end of pipe and the inside cup of the fitting with sand cloth. Apply flux evenly and allow joint to cool. Clean joint of excess flux leaving a fillet around the cup of the fitting.



- C. Brazed Joints: Prepare surfaces the same as for soldering. Apply flux evenly to tube end and fitting socket when wrought copper fittings (BCu Series) are used. Heat joint uniformly to temperature required (at least 1,000°F) and apply brazing alloy. Clean joint of excess brazing flux with wet brush or swab. Use lead-free brazing material only.
- D. Flanged Joints: Use matched flange faces and 1/16" thick compressed gaskets.
- E. Compression Joints: Lubricate neoprene gasket and slip into hub end of pipe. Draw spigot end of pipe into the gasketed hub. Provide restrained joints at all changes in pipe sizes, at all changes in direction of run and at all dead ends.
- F. Mechanical (Grooved) Joints: Joints shall be made with neoprene or synthetic rubber gaskets.
- G. Welded Joints
 - 1. All welded joints shall be butt welded in accordance with API 1104.1977 or ASME Section IX Boiler and Pressure Vessel Code 1980.
 - 2. Welders shall be qualified for all pipe sizes, wall thicknesses and all positions, in accordance with above standards, and requalified on an annual basis. Copies of the certified welder qualification reports shall be maintained by the Contractor and shall be made available upon request.
- H. Make joints between different piping materials with adaptor fittings of a type suitable for the purpose intended.
- I. Make joints between pipes of dissimilar metals with dielectric union or flanges.
- J. Exposed threads on exposed finished piping at plumbing fixtures and equipment will not be accepted.
- K. All mechanical joint fittings and couplings shall be made by the same manufacturer.

3.2 TESTING

- A. Upon completion of a section of a water system or of the entire water system, the completed section or system shall be verified as to materials, and shall be tested and proven tight under a water pressure of at least 1½ times the working pressure, but not less than 200 psig, for one (1) hour, with no loss in pressure. Testing of sections shall be done in order to permit general construction and other work to proceed. Such tests shall be made in the presence of the Building Department Inspectors and the Commissioner.
- B. Provide all apparatus and temporary work for tests. Take all precaution necessary to prevent damage to the building or its contents as a result of such tests. The water used for tests shall be obtained from a potable source of supply.



- C. Any defects or deficiencies discovered as a result of tests shall be immediately restored and tests shall be repeated until the test requirements are fully complied with.
 - D. Caulking of pipe joints to remedy leaks will not be permitted.
- 3.3 The pipe system shall be flushed with clean, potable water until no dirty water appears at the outlets.
- 3.4 The system or part thereof shall be filled with a water-chlorine solution containing at least 50 parts per million of chlorine and the system or part thereof shall be valved off and allowed to stand for 24 hr. or the system or part thereof shall be filled with a water-chlorine solution containing at least 200 parts per million of chlorine and allow to stand for 3 hours.
- 3.5 Test for residual chlorine at the extreme end of system from the point where chlorine was introduced. If less than 10 ppm, repeat chlorination procedure.
- 3.6 Flush system with clean water until chlorine is reduced to less than 1 ppm. Open and close each valve and faucet at least four times during flushing procedure.
- 3.7 Obtain the services of an independent laboratory to have samples taken and tested. The system must be free of bacteriological contamination. If the system is contaminated, rechlorinate until satisfactory. Submit test results to the Commissioner.

END OF SECTION



SECTION 22 13 16

SANITARY WASTE AND VENT PIPING AND FITTING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide piping and fitting materials in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Piping.
B. Fittings.
C. Related Accessories.

1.4 SUBMITTALS

- A. Submit a list of all proposed piping materials including system/material.
B. Submit complete back-up material where proposed materials differ from those specified.

1.5 QUALITY ASSURANCE

- A. NYC Plumbing Code.
B. Each pipe length shall have the manufacturer's name cast, stamped or rolled on.
C. Each fitting shall have the manufacturer's name cast, stamped or rolled on.



- D. The following are references to the specifications standards of recognized authorities to which pipe and fitting materials must conform to be acceptable. All references shall be the latest edition in force.

Material	Authority Spec. Numbers
Sleeve Pipe, Black and Galvanized	ANSI B36.20
Steel Pipe, Black and Galvanized	ANSI B36.20
Extra Heavy and Service Weight Cast Iron Soil Pipe and Fittings	CS188-66
Caulking Lead, Type I	FS-QQ-L156(1)
Neoprene or Rubber Gasket, Compression	CISPI HSN-75
Hubless Cast Iron Soil Pipe and Fittings	CISPI 301
Ductile Iron	ANSI A21.51
Ductile Iron Fittings	ANSI A21.10, A21.11
Cast Iron Threaded Drainage Fittings	ANSI B16.12

PART 2 - PRODUCTS

2.1 CAST IRON SOIL PIPE (XH)

- A. Pipe: Uncoated extra heavy cast gray iron, hub and spigot type with weight per foot and maker's name clearly stamped or cast on each length.
- B. Fittings: Hub and spigot, extra heavy cast iron.
- C. Joints: Lead and oakum caulked.
- D. Application: Underground storm and sanitary piping inside and outside of building to point of connection with municipal sewers.

2.2 CAST IRON SOIL PIPE (SV)

- A. Pipe: Service weight centrifugally spun cast iron soil pipe hub and spigot type with weight per foot and maker's name clearly stamped or cast on each length.
- B. Fittings: Hub and spigot service weight cast iron.
- C. Joints: Oakum and lead, Neoprene or rubber gasket, compression.



D. Application:

1. Horizontal portions or offsets of sanitary stacks including one floor above and below the offset.

2.3 CAST IRON SOIL PIPE (HUBLESS)

A. Pipe: Hubless cast iron soil pipe coated inside and out.

B. Fittings: Hubless service weight, cast iron.

C. Joints: Neoprene gasket and heavy duty type 304 stainless steel shield and four stainless steel bands for sizes 1½" through 4", six bands minimum for sizes 5" and larger. Clamps as manufactured by Clamp-All Corporation, Husky, Anaheim Foundry Co. (ANACO) or Approved Equal.

D. Application:

1. Above ground branch sanitary and vent piping.
2. Above ground sanitary stacks except all horizontal sanitary stacks and the 90° stack fittings shall be hub and spigot.

2.4 GALVANIZED STEEL PIPE

A. Pipe: Galvanized steel pipe, Schedule 40 with maker's name rolled into each length.

B. Fittings

1. Threaded: Galvanized malleable iron with flat band steam pattern. Cast iron drainage pattern for waste piping.
2. Mechanical Joint: Couplings for grooved piping only, with gasket.

C. Joints: PTFE threaded seal tape for threaded, couplings with gasket for mechanical joint.

D. Application

1. Schedule 40 steel for sewage ejector discharges.
2. Schedule 40 steel for indirect waste piping.
3. Schedule 40 steel for sanitary drainage greater than 15".



2.5 BRASS PIPE

- A. Pipe: Seamless red brass, 85% copper, Schedule 40.
- B. Fittings: Cast brass, 85% copper, Schedule 40.
- C. Joints: PTFE threaded seal tape for threaded
- D. Application:
 - 1. All exposed fixture pipe, chrome plated.
 - 2. Indirect waste pipe, chrome plated.

2.6 CHROMIUM PLATING

- A. All exposed piping shall be chrome plated in accordance with U.S. Government Standards. Clean and polish materials before plating. Apply plating thoroughly and evenly to prevent stripping and peeling. Copper plate steel and cast iron pipe and nickel plate copper and brass pipe before applying chromium plating. Polished or satin finish as selected.

PART 3 - EXECUTION

3.1 JOINTS

- A. Caulked Joints: Firmly pack joints with an oakum gasket and seal with molten virgin pig lead. Use twelve ounces of molten lead for each inch in diameter of pipe used at each joint. Run lead in one pouring and caulk tight. Seal and smoothly face the joints.
- B. Threaded Joints: Do not damage fitting surface, remove burrs and ream smooth. Apply PTFE threaded seal tape for threaded to male threads only. Clean joint thoroughly of excess jointing material.
- C. Flanged Joints: Use matched flange faces and 1/16" thick compressed gaskets.
- D. Compression Joints: Lubricate neoprene gasket and slip into hub end of pipe. Draw spigot end of pipe into the gasketed hub. Provide restrained joints at all changes in pipe sizes, at all changes in direction of run and at all dead ends.
- E. Mechanical (Grooved) Joints: Joints shall be made with neoprene or synthetic rubber gaskets.
- F. Make joints between different piping materials with adaptor fittings of a type suitable for the purpose intended.
- G. Make joints between pipes of dissimilar metals with dielectric union or flanges.



- H. Exposed threads on exposed finished piping at plumbing fixtures and equipment will not be accepted.
- I. Graphite shall be used on all cleanout plugs or caps.
- J. All mechanical joint fittings and couplings shall be made by the same manufacturer.

3.2 BRACING

- A. Hubless cast iron pipe shall have bracing installed as required by CISPI and the manufacturer.

3.3 SOIL, WASTE AND VENT STORM WATER SYSTEMS

- A. Except for outside leaders and perforated or open jointed drain tile (subsoil drains), the piping of sanitary and storm drainage and vent systems shall be verified as to materials and shall be tested upon completion of the rough piping installation and prove to be water tight. The removal of cleanout plugs may be required to ascertain that the prescribed pressure has been reached in all parts of the system. Testing of sections shall be done in order to permit general construction and other work to proceed. Such tests shall be made in the presence of the Building Department Inspectors, and the Commissioner.
- B. Water Test. A water test shall be applied to the drainage system either in its entirety or in sections after rough piping has been installed. If applied to the entire system, all openings in the piping, except the highest opening, shall be tightly closed and the system filled with water to the point of overflow. If the system is tested in sections, each opening, except the highest opening of the section under test, shall be tightly plugged and each section filled with water. No section shall be tested with less than a ten foot head of water. In testing successive sections, at least the upper ten feet of the following section shall be tested, so that no joint or pipe in the building (except the uppermost ten feet of the system) shall have been submitted to a test of less than ten foot head of water. The water shall be kept in the system or in the portion under test for at least four (4) hours before inspection starts; the system shall then be tight at all points.
- C. Air Test. An air test may be used only when permission for this type of test is obtained from the Commissioner. The air test shall be made by attaching an air compressor testing apparatus to any suitable opening and, after closing all other inlets and outlets of the system, forcing air into the system until there is a uniform gauge pressure of five psi or sufficient pressure to balance a column of mercury ten inches in height. This pressure shall be held, without introducing additional air, for a period of at least thirty minutes.



D. Buried Piping

1. In addition to the hydrostatic testing indicated above all buried piping shall be videotaped twice. Once after backfilling is complete and a second time after the slabs have been poured. A report and videotape shall be given to the Commissioner after each test.

3.4 INSTALLATION

- A. All materials shall be new and installed in a first class manner.
- B. All drainage piping, unless otherwise indicated, shall be pitched at a minimum rate of 1/8 inch per foot in direction of flow. Branch connections to stacks or main drains shall not be made in a manner which will permit backflow.
- C. All vent piping shall be arranged to drain any condensate back to waste piping.
- D. Nipples: Any piece of pipe 8 inch in length and less shall be considered a nipple. All nipples shall be of weight corresponding to fitting connected. Only shoulder nipples shall be used unless otherwise directed.
- E. Where indicated on the drawings, plugged outlets shall be left in drainage and vent piping for future fixtures.

END OF SECTION



SECTION 22 13 19

SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide complete sanitary and storm drainage systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Traps.
B. Cleanouts.
C. Drains.
D. Sovent System.
E. Trap Primers.

1.4 SUBMITTALS

- A. Manufacturers Data Sheet.

1.5 QUALITY ASSURANCE

- A. Applicable Standards
1. NYC Plumbing Code.
 2. PDI.



PART 2 - PRODUCTS

2.1 TRAPS

- A. All traps for showers and drains shall be brass or cast iron (threaded or caulked joint pattern) of approved types and water seal. Traps provided with cleanouts shall have heavy brass threaded plugs with solid brass heads.
- B. Fixture traps shall be as specified under Plumbing Fixtures.
- C. All traps shall be set as close to the fixtures as possible and in no event shall this distance exceed 2 feet horizontal and 4 feet vertical. All traps shall be set level with regard to their water line.

2.2 CLEANOUTS

- A. Provide cleanouts at the base of all soil, waste and leader stacks.
- B. Cast Iron Pipe Cleanouts: Tapped extra heavy cast iron ferrule, caulked into cast iron fittings, and extra heavy lead seal plug with solid hexagonal nut or countersunk plug to suit.
- C. No-Hub Cast Iron Pipe Cleanouts: No-Hub cast iron cleanout plug or extra heavy brass threaded plug in tapped cast iron fittings, with solid hexagonal nut or countersunk plug to suit.
- D. Steel Pipe Cleanouts: Extra heavy brass threaded plug in drainage fitting.
- E. Cleanout Plugs: Comply with the Plumbing Code; American Standard pipe threads with PTFE threaded seal tape applied to the male threads.
- F. Extend cleanouts to walls and floor with long sweep ells or "y" and 1/8 bends with plugs and face or deck plates to conform to the architectural finish in the room. Where no definite finish is indicated on the drawings, use stainless steel wall plates and floor plates of nickel bronze.
- G. Cleanouts shall be not more than 50 feet apart in horizontal drainage lines. Accessible cleanouts shall be installed at each change of direction greater than 45° on all horizontal drainage lines. All cleanouts shall be installed so that the cleanout opens in the direction of flow or at right angles thereto. Cleanouts shall be of same size as pipes up to 4 inches and not less than 4 inches for larger piping.



- H. Cleanouts and Plates: J.R. Smith models as indicated in the following tabulation (or approved equal):

Type	Location	Piping
4405-98		Exposed C.I. pipe
4472		Exposed steel pipe
4402-97	Wall	Concealed C.I. pipe
4472	Wall	Concealed steel pipe
4025	Concrete Floor	Steel or C.I.
4160FC	Waterproof Slab Floor	Steel or C.I.
4145	Asphalt Tile Floor	Steel or C.I.
4045	Ceramic Tile Floor	Steel or C.I.
4105	Heavy Duty Traffic Floor	Steel or C.I.
4020	Concrete Floor	No-Hub
4020FC	Waterproof Slab Floor	No-Hub
4140	Asphalt Tile Floor	No-Hub
4040	Ceramic Tile Floor	No-Hub
4100	Heavy Duty Traffic Floor	No-Hub

2.3 DRAINS

- A. The drain schedule on the drawings indicates the particular drain desired at the various locations indicated on the Drawings.
- B. Locations of drains shown on the drawings shall be verified by this trade.
- C. All drains shall include adjustable clamping collars device where membrane or other waterproof floors or decks occur.
- D. All drains shall include extension collars as required to suit roof, floor or deck construction.
- E. Furnish caulk support strap is required for all drains from approved manufacturers or equal.



2.4 TRAP PRIMER

- A. Pressure operated all brass trap seal primer with ½" inlet and outlet. Four-hole view built-in air gap and removable filter screen.
- B. Provide trap seal distribution unit when more than one drain is being primed.

2.5 FRESH AIR INLET Section One [polished bronze, chrome plated, polished nickel bronze] with vandal proof screws J.R. Smith 9005 or approved equal.

2.6 MANUFACTURERS

- A. Cleanouts and Drains
 - 1. Wade
 - 2. Zurn
 - 3. J.R. Smith
 - 4. Ancon
 - 5. Or Approved Equal
- B. Trap Primers
 - 1. MIFAB
 - 2. Sioux Chief
 - 3. Precision Plumbing Products
 - 4. Or Approved Equal
- C. Fresh Air Inlet
 - 1. J.R. Smith
 - 2. Wade
 - 3. Zurn
 - 4. Or Approved Equal



PART 3 - EXECUTION

3.1 INSTALLATION

- A. All materials shall be new and installed in a first class manner.

3.2 OPERATING INSTRUCTIONS PERIOD

- A. Provide one day of instructions.

END OF SECTION



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SECTION 22 14 13

STORM DRAIN PIPING AND FITTING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide piping and fitting materials in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Piping.
- B. Fittings.
- C. Related Accessories.

1.4 SUBMITTALS

- A. Submit a list of all proposed piping materials including system/material (use schedule).
- B. Submit complete back-up material where proposed materials differ from those specified.

1.5 QUALITY ASSURANCE

- A. Each pipe length shall have the manufacturer's name cast, stamped or rolled on.
- B. Each fitting shall have the manufacturer's name cast, stamped or rolled on.
- C. The following are references to the specifications standards to which pipe and fitting materials must conform to be acceptable. All references shall be the latest edition in force at the time of bidding.

Material	Authority Spec. Numbers
Sleeve Pipe, Black and Galvanized	ANSI B36.20
Steel Pipe, Black and Galvanized	ANSI B36.20



Material	Authority Spec. Numbers
Extra Heavy and Service Weight Cast Iron Soil Pipe and Fittings	CS188-66
Caulking Lead, Type I	FS-QQ-L156(1)
Neoprene or Rubber Gasket, Compression	CISPI HSN-75
Hubless Cast Iron Soil Pipe and Fittings	CISPI 301
Cast Iron Threaded Drainage Fittings	ANSI B16.12

PART 2 - PRODUCTS

2.1 CAST IRON SOIL PIPE (XH)

- A. Pipe: Uncoated extra heavy cast gray iron, hub and spigot type with weight per foot and maker's name clearly stamped or cast on each length.
- B. Fittings: Hub and spigot, extra heavy cast iron.
- C. Joints: Lead and oakum caulked.
- D. Application: Underground storm piping inside and outside of building to point of connection with municipal sewers.

2.2 CAST IRON SOIL PIPE (SV)

- A. Pipe: Service weight centrifugally spun cast iron soil pipe hub and spigot type with weight per foot and maker's name clearly stamped or cast on each length.
- B. Fittings: Hub and spigot service weight cast iron.
- C. Joints: Oakum and lead, Neoprene or rubber gasket, compression.
- D. Application:
 - 1. All storm water except as noted under Hubless Cast Iron.

2.3 CAST IRON SOIL PIPE (HUBLESS)

- A. Pipe: Hubless cast iron soil pipe coated inside and out.
- B. Fittings: Hubless service weight, cast iron.



- C. Joints: Neoprene gasket and heavy duty type 304 stainless steel shield and four stainless steel bands for sizes 1½" through 4", six bands minimum for sizes 5" and larger. Clamps as manufactured by Clamp-All Corporation, Husky, Anaheim Foundry Co. (ANACO), or approved equal.
- D. Application:
 - 1. Branch storm piping from drain to connections to stack.

2.4 GALVANIZED STEEL PIPE

- A. Pipe: Galvanized steel pipe, Schedule 40 with maker's name rolled into each length.
- B. Fittings
 - 1. Threaded: Galvanized malleable iron with flat band steam pattern. Cast iron drainage pattern for waste piping.
 - 2. Mechanical Joint: Couplings Style 07 or approved equal for grooved piping only, with gasket.
- C. Joints: PTFE threaded seal tape for threaded, Victaulic couplings with gasket for mechanical joint.
- D. Application
 - 1. Schedule 40 steel for sump pump discharges.
 - 2. Schedule 40 steel for storm drainage greater than 15".

PART 3 - EXECUTION

3.1 JOINTS

- A. Caulked Joints: Firmly pack joints with an oakum gasket and seal with molten virgin pig lead. Use twelve ounces of molten lead for each inch in diameter of pipe used at each joint. Run lead in one pouring and caulk tight. Seal and smoothly face the joints.
- B. Threaded Joints: Do not damage fitting surface, remove burrs and ream smooth. Apply PTFE threaded seal tape to male threads only. Clean joint thoroughly of excess jointing material.
- C. Flanged Joints: Use matched flange faces and 1/16" thick compressed gaskets.
- D. Compression Joints: Lubricate neoprene gasket and slip into hub end of pipe. Draw spigot end of pipe into the gasketed hub. Provide restrained joints at all changes in pipe sizes, at all changes in direction of run and at all dead ends.



- E. Mechanical (Grooved) Joints: Joints shall be made with neoprene or synthetic rubber gaskets.
- F. Make joints between different piping materials with adaptor fittings of a type suitable for the purpose intended.
- G. Make joints between pipes of dissimilar metals with dielectric union or flanges.
- H. Graphite shall be used on all cleanout plugs or caps.
- I. All mechanical joint fittings and couplings shall be made by the same manufacturer.

3.2 BRACING

- A. Hubless cast iron pipe shall have bracing installed as required by CISPI and the manufacturer.

3.3 INSTALLATION

- A. All materials shall be new and installed in a first class manner.
- B. All drainage piping, unless otherwise indicated, shall be pitched at a minimum rate of 1/8 inch per foot in direction of flow. Branch connections to stacks or main drains shall not be made in a manner which will permit backflow.
- C. Nipples: Any piece of pipe 8 inches in length and less shall be considered a nipple. All nipples shall be of weight corresponding to fitting connected. Only shoulder nipples shall be used unless otherwise directed.

3.4 OPERATING INSTRUCTIONS PERIOD

- A. Provide one day of instructions.

3.5 SOIL, WASTE, VENT AND STORM WATER SYSTEMS

- A. Except for outside leaders and perforated or open jointed drain tile (subsoil drains), the piping of sanitary and storm drainage and vent systems shall be verified as to materials and shall be tested upon completion of the rough piping installation and prove to be water tight. The removal of cleanout plugs may be required to ascertain that the prescribed pressure has been reached in all parts of the system. Testing of sections shall be done in order to permit general construction and other work to proceed. Such tests shall be made in the presence of the Building Department Inspectors and the Commissioner.



- B. **Water Test.** A water test shall be applied to the drainage system either in its entirety or in sections after rough piping has been installed. If applied to the entire system, all openings in the piping, except the highest opening, shall be tightly closed and the system filled with water to the point of overflow. If the system is tested in sections, each opening, except the highest opening of the section under test, shall be tightly plugged and each section filled with water. No section shall be tested with less than a ten foot head of water. In testing successive sections, at least the upper ten feet of the following section shall be tested, so that no joint or pipe in the building (except the uppermost ten feet of the system) shall have been submitted to a test of less than ten foot head of water. The water shall be kept in the system or in the portion under test for at least four (4) hours before inspection starts; the system shall then be tight at all points.

- C. **Air Test.** An air test may be used only when permission for this type of test is obtained from the Commissioner. The air test shall be made by attaching an air compressor testing apparatus to any suitable opening and, after closing all other inlets and outlets of the system, forcing air into the system until there is a uniform gauge pressure of five psi or sufficient pressure to balance a column of mercury ten inches in height. This pressure shall be held, without introducing additional air, for a period of at least thirty minutes.

- D. **Buried Piping**
 - 1. In addition to the hydrostatic testing indicated above all buried piping shall be videotaped twice. Once after backfilling is complete and a second time after the slabs have been poured. A report and videotape shall be given to the Commissioner after each test.

END OF SECTION



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SECTION 22 14 23

STORM DRAINAGE SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide complete sanitary and storm drainage systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Traps.
B. Cleanouts.
C. Drains.

1.4 SUBMITTALS

- A. Manufacturer's Data Sheet.

1.5 QUALITY ASSURANCE

- A. Applicable Standards
1. NYC Plumbing Code.
 2. PDI.

PART 2 - PRODUCTS

2.1 TRAPS

- A. All traps for showers and drains shall be brass or cast iron (threaded or caulked joint pattern) of approved types and water seal. Traps provided with cleanouts shall have heavy brass threaded plugs with solid brass heads.
- B. Fixture traps shall be as specified under Plumbing Fixtures.



- C. All traps shall be set as close to the fixtures as possible and in no event shall this distance exceed 2 feet horizontal and 4 feet vertical. All traps shall be set level with regard to their water line.

2.2 CLEANOUTS

- A. Provide cleanouts at the base of all soil, waste and leader stacks.
- B. Cast Iron Pipe Cleanouts: Tapped extra heavy cast iron ferrule, caulked into cast iron fittings, and extra heavy lead seal plug with solid hexagonal nut or countersunk plug to suit.
- C. No-Hub Cast Iron Pipe Cleanouts: No-Hub cast iron cleanout plug or extra heavy brass threaded plug in tapped cast iron fittings, with solid hexagonal nut or countersunk plug to suit.
- D. Steel Pipe Cleanouts: Extra heavy brass threaded plug in drainage fitting.
- E. Cleanout Plugs: Comply with the Plumbing Code; American Standard pipe threads with "Permacel" or PTFE threaded seal tape applied to the male threads.
- F. Extend cleanouts to walls and floor with long sweep ellis or "y" and 1/8 bends with plugs and face or deck plates to conform to the architectural finish in the room. Where no definite finish is indicated on the drawings, use stainless steel wall plates and floor plates of nickel bronze.
- G. Cleanouts shall be not more than 50 feet apart in horizontal drainage lines. Accessible cleanouts shall be installed at each change of direction greater than 45° on all horizontal drainage lines. All cleanouts shall be installed so that the cleanout opens in the direction of flow or at right angles thereto. Cleanouts shall be of same size as pipes up to 4 inches and not less than 4 inches for larger piping.
- H. Cleanouts and Plates: Models/type as indicated in the following tabulation is from listed manufacturers in this section, or approved equal:

Type	Location	Piping
4405-98		Exposed C.I. pipe
4472		Exposed steel pipe
4402-97	Wall	Concealed C.I. pipe
4472	Wall	Concealed steel pipe
4025	Concrete Floor	Steel or C.I.
4160FC	Waterproof Slab Floor	Steel or C.I.
4145	Asphalt Tile Floor	Steel or C.I.



Type	Location	Piping
4045	Ceramic Tile Floor	Steel or C.I.
4105	Heavy Duty Traffic Floor	Steel or C.I.
4020	Concrete Floor	No-Hub
4020FC	Waterproof Slab Floor	No-Hub
4140	Asphalt Tile Floor	No-Hub
4040	Ceramic Tile Floor	No-Hub
4100	Heavy Duty Traffic Floor	No-Hub

2.3 DRAINS

- A. The drain schedule on the drawings indicates the particular drain desired at the various locations indicated on the Drawings.
- B. Locations of drains shown on the drawings shall be verified by this trade.
- C. All drains shall include adjustable clamping collars device where membrane or other waterproof floors or decks occur.
- D. All drains shall include extension collars as required to suit roof, floor or deck construction.
- E. Pipe supporting a drainage pipe can be supported by means of pipe hanger and rod assembly as included in section 22 05 29 – Hangers, Supports, Anchors , Guides and Seismic Restraint
- F. FRESH AIR INLET: Chrome plated with vandal proof screws.

2.4 MANUFACTURERS

- A. Cleanouts and Drains
 - 1. Wade
 - 2. Zurn
 - 3. J.R. Smith
 - 4. Ancon
 - 5. Or Approved Equal



- B. Fresh Air Inlet
 - 1. J.R. Smith
 - 2. Wade
 - 3. Zurn
 - 4. Or Approved Equal

PART 3 - EXECUTION

3.1 OPERATING INSTRUCTIONS PERIOD

- A. Provide one day of instructions.

END OF SECTION



SECTION 23 02 00

FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide a U.L. approved firestopping system in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Firestop Compounds.
B. Damming Material.
C. Factory Assembled Devices.

1.4 SUBMITTALS

- A. Submit shop drawings, product data, and manufacturer's installation instructions for all materials and prefabricated devices, providing descriptions sufficient for identification at the job site.
- B. Submit shop drawings showing proposed material, reinforcement, anchorage, fastenings, and method of installation. Construction details shall accurately reflect actual job conditions.
- C. Submit Material Safety Data Sheets with product delivered to job site.
- D. Submit certification by U.L. for the complete system of firestopping for each type penetration.
- E. Submit complete details of each type of penetration to be used indicating the proper U.L. approved firestop system and U.L. system number.



1.5 INSTALLER QUALIFICATIONS

- A. Engage an experienced Installer who is qualified, or otherwise qualified by the firestopping manufacturer as having been properly trained to install manufacturer's products per specified requirements. A supplier's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer.
- B. Firm with not less than 3 years' experience with fire stop installation.

1.6 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. ASTM E-814, "Fire Test of Penetration Fire Stops."
 - 2. ANSI/UL 1479, "Fire Tests of Through Penetration Firestops."
 - 3. ASTM E-119, "Fire Tests of Building Constructions and Materials."
 - 4. ANSI/UL263, "Fire Tests of Building Construction and Materials."
 - 5. ASTM E-84, "Surface Burning Characteristics of Building Materials."
 - 6. ANSI/UL723, "Surface Burning Characteristics of Building Materials."
 - 7. ASTM G-21, "Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi."
- B. Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174, "Standard Practice for On-Site Inspection of Installed Fire Stops".
- C. The firestop compound shall not contain any solvents or inorganic fibers. The penetration seal material must be unaffected by moisture and must maintain the integrity of the floor or wall assembly for its rated time period when tested in accordance with ASTM E814 (UL1479). The system shall be U.L. Classified for up to and including 3 hours.

Line #	Penetrating Item	Type of Rated Wall/Floor	Rating (Hrs.)	U.L. System #	Tested System
1	Steel Pipe (12" or smaller)	Concrete or Concrete Block	3	399	CAJ1155
2	Steel Pipe or EMT Conduit	Concrete or Concrete Block	2	215, 216, 223	CAJ1155



Line #	Penetrating Item	Type of Rated Wall/Floor	Rating (Hrs.)	U.L. System #	Tested System
3	Steel Pipe or EMT Conduit	Concrete or Concrete Block	1	221	CAJ1155
4	Steel Pipe or EMT Conduit	Gypsum Wall	2	425	WL1056
5	Steel Pipe or EMT Conduit	Wood Floor Assembly	2	306	FC1059 FC1009
6	Copper Pipe (not insulated)	Concrete or Concrete Block	2	400	FA1017
7	Insulated Steel Pipe/Conduit	Concrete or Concrete Block	2	301	CAJ5098
8	Insulated Copper Pipes(s)	Concrete or Concrete Block	2	310, 402, 403	FA5017
9	PVC Pipe (6" or smaller)	Concrete or Concrete Block	2	300, 226	CAJ2109 CAJ2217
10	PVC Pipe (4" or smaller)	Concrete or Concrete Block	3	300	CAJ2095
11	PVC Pipe (4" or smaller)	Gypsum Wall	2	312, 227, 228	WL2251
12	PVC Pipe (4" or smaller)	Wood Floor Assembly	2	303	FC2029
13	CPVC and PB Pipe	Concrete or Concrete Block	2	226	
14	ABS Pipe (2" or smaller)	Gypsum Wall	2	227	WL2234 WL2235
15	PP Pipe (4" or smaller)	Concrete or Concrete Block	2	300	CAJ2217
16	Glass Pipe (4" or smaller)	Concrete or Concrete Block	2	302	WL2330
17	Cables (Power, Control, Phone)	Concrete or Concrete Block	2, 3	222, 224, 307	CAJ3285 CAJ3096
18	Cables (Power, Control)	Gypsum Wall	2	425	WL3334 WL3396
19	Phone Cable (25 pair or smaller)	Wood Floor Assembly	2	304	FC3012



Line #	Penetrating Item	Type of Rated Wall/Floor	Rating (Hrs.)	U.L. System #	Tested System
20	Joints (up to 3" wide)	Concrete or Concrete Block	2	214	HWD1008 HWD1045 HWD1058
21	Blank Opening	Concrete or Concrete Block	2	311	CAJ0138 CAJ0105 CAJ0097 CAJ0090

PART 2 - PRODUCTS

2.1 FIRESTOPPING

- A. Firestopping Materials are either "cast-in-place" (integral with concrete placement) or "post installed." Provide cast-in-place firestop devices prior to concrete placement.
- B. Provide firestop compounds for caulk, pour, trowel or pump application. Material must be capable of sealing openings around single or multiple against fire, smoke and toxic gases, and maintaining rating with a thickness no greater than the structure.
- C. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.
- D. Provide a damming material, where required, per manufacturer's recommendations and as shown on the Drawings.
- E. Provide a firestop system consisting of a material, or combination of materials, to retain the integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke or gases through penetrations in fire-rated barriers. It shall be used in specific locations as follows:
 - 1. Penetrations in Fire Resistance Rated Walls: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. F-Rating: Not less than the fire-resistance rating of the wall construction being penetrated.
 - 2. Penetrations in Horizontal Assemblies: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. F-Rating: Minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.



- b. T-Rating: when penetrant is located outside of a wall cavity, minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.
- c. W-Rating: Class 1 rating in accordance with water leakage test per UL 1479 (when applicable).
- 3. Penetrations in Smoke Barriers: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at both ambient and elevated temperatures.
- 4. Locations shown specifically on the drawings or where specified in other sections of these specifications.
- F. Mold Resistance: Provide penetration firestopping with mold and mildew resistance rating of one (1) or less as tested per ASTM G21.

2.2 MATERIALS

- A. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating item(s) without affecting the adhesion or integrity of the system.
- B. Firestopping materials shall not require hazardous waste disposal of used containers/packages.
- C. Provide firestopping materials free of solvents which will not experience shrinkage while curing.
- D. Use only firestop products that have been UL 1479 or ASTM E 814 tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.

2.3 MANUFACTURERS

- A. Hilti
- B. Dow Corning
- C. Flamesafe
- D. International Protective Coatings
- E. Or Approved Equal



2.4 APPROVED PRODUCTS

- A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of a polypropylene sleeve lined with an intumescent strip, an extended rectangular flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket (Provide water module attachments when W-ratings are required)
- B. Fire Rated Cable Management Devices: Factory-assembled round metallic sleeve device for use with cable penetrations, containing an integrated smoke seal fabric membrane that can be opened and closed for re-penetration.
- C. Smoke and Acoustic Sleeves (Non-rated assembly): Factory-assembled round metallic sleeve device for use with cable penetrations for non-rated walls, containing an integrated material enabling ease of re-penetration with the intent to significantly reduce sound transmission and preventing smoke passage.
- D. Firestop Cable Collar: Factory-assembled collars formed from galvanized steel, completely filled with an intumescent material that can accommodate 0% up to 100% visual fill. Surface mounted device.
- E. Firestop Cable Disk: For use with up to a 1" cable bundle, consisting of non-hardening dielectric, water-resistant putty; containing no solvents, inorganic fibers, or silicone compounds
- F. Drop-In Firestop Devices: Factory-assembled devices for use with combustible or noncombustible penetrants in cored holes within concrete floors. Device shall consist of galvanized steel sleeve lined with an intumescent strip, an extended rectangular flange attached to one end of the sleeve for fastening to concrete floor, and neoprene gasket.
- G. Firestop Board: Non curing, re-penetrable materials used for large size/complex penetrations
- H. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- I. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- J. Intumescent Putties: Non-hardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- K. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.



- L. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a non-shrinking, homogeneous mortar.
- M. Blocks/Plugs: Intumescent flexible block/plug suitable for reuse in re-penetration of openings. Blocks shall allow up to 12" of unreinforced annular space.
- N. Tub Box Kit: Cast-in place pre-formed plastic tub box kit with three support legs for use with drain piping assembly associated with bathtub installations.
- O. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, non-shrinking foam.
- P. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and non-sag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of non-sag grade for both opening conditions.

PART 3 - EXECUTION

- 3.1 Deliver materials to site in original unopened containers or packages bearing the manufacturer's name, brand designation, product description and U.L. Classification Mark.
- 3.2 Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job site.
- 3.3 Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.
- 3.4 Comply with recommended procedures, precautions or remedies described in Material Safety Data Sheets as applicable.
- 3.5 EXAMINATION
 - A. Examine areas and conditions under which work is to be performed and notify the Contractor in writing of conditions detrimental to proper and timely completion of the work.
 - B. Verify that openings are properly sized and in suitable condition to receive the work of this section.



3.6 PREPARATION

- A. Clean substrate of dirt, dust, grease, oil, loose materials, rust or other matter that may affect the proper fitting or adhesion of the firestopping materials.
- B. Clean metal and glass surfaces with a non-alcohol solvent.
- C. Coordinate construction of openings, penetrations and construction joints to ensure that the fire stop systems are installed according to specified requirements.

3.7 INSTALLATION

- A. Install firestop materials as indicated in accordance with design requirements and manufacturer's instructions.
 - B. Seal all holes or voids made by penetrations to ensure an air, smoke and water-tight seal.
- 3.8 Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.
- 3.9 Schedule installation of cast in place firestop devices after completion of floor formwork, metal form deck, or composite deck but before placement of concrete.
- 3.10 Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation.
- 3.11 Firestop systems do not re-establish the structural integrity of load bearing partitions. Contractor shall consult the Commissioner prior to penetrating any load bearing assembly.
- 3.12 Firestop systems are not intended to support live loads or traffic. Contractor shall consult the Commissioner if he has reason to believe these limitations may be violated.

3.13 FIRESTOPPING

- A. Insulated Cold Pipes
 - 1. Install a pipe sleeve with an inside diameter large enough to include the specified thickness of insulation.
 - 2. Eliminate insulation for depth of wall and fill space between with firestop expanding foam leaving sufficient space at each end of sleeve for proper depth of firestop, unless the UL tested system being used does NOT require the removal of any pipe insulation to restore the rating of the penetration.
 - 3. Install firestop material at each end of sleeve to form a U.L. approved system.



4. Insulate pipe on each side of wall and caulk all around insulation at joint of wall and insulation.
- B. Hot Pipes (Up to 220°F)
1. Install a pipe sleeve with an inside diameter large enough to include the specified thickness of insulation.
 2. Eliminate insulation for depth of wall and, using section of specified insulation as backing, install proper depth of firestop material on each end of sleeve to form a U.L. approved system, unless the UL tested system being used does NOT require the removal of any pipe insulation to restore the rating of the penetration.
 3. Insulate pipe on each side of wall and caulk all around insulation at joint of wall and insulation.
- C. Diesel Exhaust Pipes, Hot Pipes Over 220°F, and Kitchen Range Hood Exhaust Ducts
1. Install proper sleeve through wall with an inside diameter large enough to include specified insulation thickness.
 2. Eliminate insulation for depth of wall and, using section of specified insulation as backing, install proper depth of firestop material on each end of sleeve to form a U.L. approved system, unless the UL tested system being used does NOT require the removal of any pipe insulation to restore the rating of the penetration.
 3. Weld a 20 gauge sheetmetal expansion compensator, as shown on the Drawings, to the Compensator to be formed "U" shape 2" wide and of sufficient length so as to be 6" above insulation. Pre-compress compensator, fill compensator with 6 lb. density fiberglass insulation.
 4. Install specified insulation on each side of wall up to expansion compensator.

END OF SECTION



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SECTION 23 05 13

ELECTRIC MOTORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide electric motors in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Electric Motors.

1.4 SUBMITTALS

- A. Shop Drawings: Submit electric motor characteristics with each equipment submission.
- B. Product Data: Manufacturer's latest published data for materials, equipment, accessories and installation.

1.5 QUALITY ASSURANCE

- A. Motor efficiency is Guaranteed Minimal Efficiency according to NEMA Standard MG-1-12.53a when tested in accordance with IEEE Standard 112.

PART 2 - PRODUCTS

2.1 ELECTRIC MOTORS

- A. Provide high efficiency electric motors for driving the mechanical equipment. Motors to be of proper power, construction and speed to suit the specified makes of equipment; if other makes of equipment are accepted, the proper adjustment of motor speed and power must be included without additional cost to the Contract.
- B. 1/2 horsepower and larger motors to be rated at 460 volts for operation on 480 volt, 3 phase, 60 hertz, alternating current systems, except as otherwise noted. 1/3



horsepower and smaller motors to be rated at 115 volts for operation on 120 volt, single phase, 60 hertz, alternating current systems, except as otherwise noted.

- C. Motors to be of constant speed, squirrel-cage type. Single phase motors to be capacitor start, induction run, or split phase type as approved for the service. Motors over 100 horsepower to be suitable for operation with reduced-voltage auto-transformer type starters.
- D. All 1/2 horsepower and larger motors to have Class B insulation suitable for ambient temperature of 40°C. when operated at 115% load.
- E. All motors to be of quiet operation, guaranteed to fulfill the specified requirements without producing any sound audible outside of Machine Rooms. All belt connected motors to have adjustable bases and set screws to maintain proper belt tension; provide proper belt guards.
- F. All motors and accessories to comply in all respects with NEMA standards.
- G. Coordinate the NEMA type of each motor with the torque and inertia load of the equipment served, and the inrush characteristics of the motor with the starter selection, so that all items furnished constitute a properly related package. No motor to operate in the service factor range.
- H. Cooling tower motors to be TEFC; others to be drip-proof construction. Motors 1 horsepower or larger to have encapsulated stator windings of the epoxy or silicone type.
- I. Fan motors to be capable of accelerating their respective fans from 0 revolutions per minute to design or synchronous revolutions per minute within a maximum of 10 seconds. Submit for approval curves which plot time versus revolutions per minute for the particular motor and fan combination.
- J. All motors used in variable speed applications to be suitable for use with variable frequency drives.
- K. Motorized equipment rated at more than 1000 watts to have a power factor not less than 95 percent under rated nameplate conditions. Provide corrective devices where required to achieve this.
- L. Provide thermistor protection for windings on all motors 25 horsepower and above. Where motors are controlled by individual motor starters, provide relays for installation.
- M. All vertical motors 150 horsepower and above to be provided with bearing temperature detectors on thrust bearing. Provide contactors and circuitry to give remote alarm at temperatures above 175°F.



2.2 MANUFACTURERS

- A. General Electric
- B. Marathon
- C. Lincoln
- D. Siemens-Allis
- E. Or Approved Equal

PART 3 - EXECUTION

3.1 WIRING

- A. Wiring between motor and controllers will be performed.

END OF SECTION



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SECTION 23 05 16

EXPANSION COMPENSATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide expansion compensators in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Bellows Expansion Joints.
- B. Rubber Expansion Joints.
- C. Flexible Metal Hoses.
- D. Pipe Guides.

1.4 SUBMITTALS

- A. Submit manufacturers' latest published data for materials and installation, including maximum pressure and temperature ratings.
- B. Submit sufficient calculations to indicate clear conformance to the expansion joint design equations as specified in the Standards of the Expansion Joint Manufacturers association (EJMA), Fifth Addition, 1980, and all addenda.

1.5 QUALITY ASSURANCE

- A. Construct guide and expansion compensators in accordance with ANSI, ASTM and ASME standards.
- B. Provide expansion compensators compatible with pressure and temperature of system installed.
- C. The expansion joint manufacturer must maintain a quality assurance system approved to ASME Code Section VIII. The manufacturer's quality assurance manual must be available upon request.



- D. Written procedures must be maintained for each of the following categories:
1. Identification and control of materials.
 2. Drawing and document control.
 3. Manufacturing and process control.
 4. Welding qualifications and procedures.
 5. Testing, inspection and documentation.
 6. Preparation for delivery.

PART 2 - PRODUCTS

2.1 BELLOWS EXPANSION JOINTS

A. Design

1. The bellows are to be designed in accordance with the bellows performance equations as listed in Sections C-1 to C-8 of the Standards of the Expansion Joint Manufacturers Association.
2. Provide all expansion joints weighing more than 500 lbs. with lifting lugs. If more than one lug is furnished, design each lug to carry the entire weight of the assembly.
3. The expansion joint shall be free of all control devices such as self-equalizing rings.

B. Materials

1. Form the bellows from multi-ply solution annealed sheet conforming to the latest ASTM or ASME material specifications for the material specified.
2. Spool pieces and flanges shall be of a material compatible with the piping or vessel adjacent to the expansion joint.
3. Provide liners of heavy gauge stainless steel.

C. Fabrication and Heat Treatment

1. Form bellows from seamless tubing or longitudinally butt welded cylinders.
2. Planish the longitudinal butt welds after welding to within 10% of the original sheet thickness.



3. Convolutions shall be "U" shaped and formed with an even pitch and matching height. Circumferential welds joining one convolution to another are not permitted.
4. Provide bellows in the as-formed condition.
5. The schedule or wall thickness of stub ends specified on the specification sheets are those of the piping adjacent to the expansion joint. In the event that the weld ends of the expansion joint are thicker than those specified, internally machine the bevelled ends to match the specified thickness.
6. All welding shall be done in accordance with ASME Section IX.
7. All bellows expansion joints to be flanged.

D. Construction

1. Construct single bellows units to absorb 2" total movement from factory furnished setting.
2. Form untied double bellows units by connecting two bellows with a length of center pipe. Construct to absorb 4" total movement, 3" extension, 1" compression.
3. Tied double bellows units constructed as are the untied double bellows with the addition of tie bars between flanges to limit forces transmitted to adjoining piping.
4. Provide control ring in corrugations in all joints used in steam systems and hot water systems over 200°F.
5. Provide internal liners of 304 stainless steel in all units in steam systems and water systems over 10 feet per second velocity.
6. When drop-in liners are used, provide gasket between flange and liner.
7. Provide shroud around bellows to protect against torsion, squirm, misalignment and external damage as well as providing visual evidence that the traverse of the unit has not been exceeded.

2.2 RUBBER EXPANSION JOINTS

- A. Provide rubber expansion joints of the spherical molded type with 150 lb. steel flanges and permanently attached control cables or rods.
- B. Construct the body of multiple layers of neoprene and bias-ply tire cord reinforcing.



- C. Cables to be galvanized aircraft cables permanently affixed to flanges to prevent joint from extending past its limit.
- D. Control rods to be steel with adjusting nuts. Length of rod to restrain joint from extending beyond joint limit.

2.3 FLEXIBLE METAL HOSE

- A. Construct metal hose of corrugated, close pitch hose of bronze with bronze braid annular close pitch hose of 304 stainless steel with 304 stainless steel braid.
- B. End fittings to be 150 lb. flanges.
- C. Maximum working pressures not to exceed 200 psig.
- D. Maximum length 18".

2.4 PIPE GUIDES

A. Spider Guides

- 1. Construct spider guides of carbon steel housing and copper spider with fluorocarbon base material edges.
- 2. Both spider and outer housing to be formed as (2) bolted halves.
- 3. Select size of guides to include insulation when guiding insulated pipe.
- 4. For riser guides, provide "arms" of sufficient length to contact floor slab or other support a minimum of 3" on each side.

B. Slide Guides

- 1. Construct body and base of slide guides of carbon steel.
- 2. Slides to be steel with fluorocarbon base material on fluorocarbon base material sliding surfaces.
- 3. Provide slides with gusset plates on 6" and larger sizes.

C. Radiation Pipe Guides

- 1. Provide 3/16" steel "L" brackets slotted on both legs to accommodate maximum adjustment in horizontal and vertical planes.
- 2. Provide thermal resistant nylon guide surrounding tubing and attached to brackets with 1/4" diameter bolts.



2.5 MANUFACTURERS

- A. Flexonics
- B. Keflex
- C. Flexway
- D. Or Approved Equal

PART 3 - EXECUTION

3.1 GENERAL

- A. Install joints at correct length as specified by manufacturer for each location so that unit will work within specified limits.
- B. Provide adequate anchoring and guiding.
- C. Pre-compress joints per manufacturer's recommendation when installing in cold water piping.
- D. Pre-extend joints per manufacturer's recommendation when installing in hot water or steam piping.
- E. Align joint flange and pipe flange holes. Do not try to compensate for flange or pipe misalignment by putting any torsional, compressive, extension, or offset loads on the expansion joint.
- F. Remove shipping restraints after installation, but before hydrotesting.
- G. All installation procedures to conform to EJMA Safety Recommendations.

3.2 BELLOWS EXPANSION JOINTS

- A. Single bellows to be used where joint is subject to axial movement only.
- B. Protect the bellows element from damage. Do not install damaged joints.
- C. Internally pressurized expansion joints are to be installed in the proper orientation with respect to direction of flow.
- D. Unit lengths must not be altered during installation except for the application of cold pull.
- E. Water free of halogens to be used for hydrotesting.



- F. Paints containing low melting point metals or their compounds, particularly aluminum, lead or zinc, must not be allowed to come into contact with the bellows convolutions.

3.3 RUBBER EXPANSION JOINTS

- A. Use only in systems where temperatures do not exceed manufacturer's recommendation at any operating condition.
- B. Use only in fully accessible locations where not concealed.
- C. Protect joint at all times during construction of project. Replace all damaged joints.

3.4 FLEXIBLE METAL HOSES

- A. Use only at pump inlets and outlets.
- B. Install in a straight line with no offsets.
- C. Support piping so that no weight is on the hose.
- D. Do not use bronze construction in piping over 4".

3.5 PIPE GUIDES

- A. Insulated piping to be provided with a section of calcium silicate, same thickness as required insulation, with aluminum jacket to extend 1" beyond each end of spider guide.
- B. Guides to be welded or bolted to structure.
- C. Slide guides to be welded to pipe along full length of contact surface. On insulated pipe, weld slide guide to metal shield with shield welded to pipe.

END OF SECTION



SECTION 23 05 23

VALVES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide valves in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Gate Valves.
B. Globe Valves.
C. Y-Pattern Globe Valves.
D. Non-Lubricated Plug Valves.
E. Check Valves.
F. Ball Valves.
G. Butterfly Valves.
H. Automatic Flow Control Valves.

1.4 SUBMITTALS

- A. Valve List: Figure numbers and catalog cuts of proposed valves.
B. Product Data: Manufacturer's latest published data for materials, intended service and installation.

1.5 QUALITY ASSURANCE

- A. Valves and valve construction to be suitable for the pressure, temperature, and fluid quality of the service in which they are to be used.



- B. All valves to be in accordance with ANSI, AWWA, ASTM, MSS-SP-70 & 80 (Manufacturers Standardization Society), and ASME standards and specifications.
- C. Minimum test pressure for all valves to be 1.5 times maximum system working pressure unless noted otherwise.
- D. Provide butterfly valves suitable for dead end service and constructed of high quality industrial design.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide valves of the same manufacturer throughout where possible.
- B. Provide valves with manufacturer's name and pressure rating clearly marked on the outside of body.
- C. Provide valves suitable for connection to adjoining piping as specified for pipe joints.
- D. All valves to be full pipe size unless noted otherwise.
- E. Provide all valves used for future connection with lockable handles.

2.2 GATE VALVES

- A. Use for stop and isolation as shown on Drawings for other systems.
- B. 2" and smaller valves with rising stem, screwed bonnet, inside screw and wedge gate. Bronze body and trim with screwed ends for steel piping and sweated ends for copper piping.
- C. 2½" and larger valves with rising stem, bolted bonnet, outside screw and yoke, wedge gate, iron body with bronze trim and flanged ends for steel piping and bronze body for copper piping.
- D. Gate valves to be backseating and suitable for repacking under pressure. Packing to be non-asbestos.
- E. Manufacturers
 - 1. Grinnell
 - 2. Crane
 - 3. Hammond



4. Milwaukee
5. Stockham
6. Nibco
7. Or Approved Equal

2.3 GLOBE VALVES

- A. Use for throttling in systems.
- B. 2" and smaller valves bronze body and trim with rising stem, screwed bonnet with screwed ends for steel piping and sweated ends for copper piping.
- C. Globe valves to be suitable for repacking under pressure. Packing to be non-asbestos.
- D. Manufacturers
 1. Grinnell
 2. Crane
 3. Hammond
 4. Milwaukee
 5. Stockham
 6. Nibco
 7. Or Approved Equal

2.4 Y-PATTERN GLOBE VALVES

- A. Use for throttling service ½" to 12".
- B. Provide valves of Y-Pattern design suitable for temperatures to 250°F. Provide valves with provision for connecting a portable differential pressure meter. Each meter connection to have pressure/temperature readout points.
- C. Construct valves up to 2" of pressure die cast nonporous copper alloy and 2½" and over of cast iron body and non ferrous copper alloy, with fluorocarbon base material disc.
- D. Valves to be omnidirectional without affecting flow measurement and shall provide precise flow measurement, precision flow balancing, positive shut-off with no drip seat.



- E. Construct valves so that 4 full turns of handwheel provides maximum setting with hidden memory feature and tamper proof balancing setting.
- F. Manufacturers
 - 1. Tour & Anderson
 - 2. Armstrong
 - 3. Crane
 - 4. Or Approved Equal

2.5 NON-LUBRICATED PLUG VALVES

- A. Use for throttling service 2½" and larger.
- B. Provide valves of the non-lubricated bolted bonnet type with resilient faced plugs suitable for systems to 250°F.
- C. Provide port area of valves through 20" at least 80% of full pipe area.
- D. Valve bodies of ASTM A126 Class B semi-steel with corrosion resistant seats of 90% nickel overlay.
- E. Furnish valves with replaceable, sleeve-type springs, washers, etc., zinc plated.
- F. Valves through 6" provided with an adjustable open position "memory stop" and level. Valves 8" and larger equipped with a totally enclosed worm and gear operator with handwheel and a "memory stop."

2.6 CHECK VALVES

- A. Swing Type: Use for low pressure general services: 2" and smaller with screwed bonnet, screwed end for steel piping and sweated end for copper piping; 2½" and larger with bolted bonnet, flanged end. Valves to have renewable bronze seat and disc.
- B. Silent Type: Use on pumps with cycling control and larger than 2" discharge. Valves to have cast iron body with bronze or stainless steel trim and to be of the center guide type, with flanged end.
- C. Wafer Type: Provide wafer type check valves for use in pipe 24 inches diameter and larger. Check valves to be wafer type with steel body and discs, and flanged ends.
- D. Manufacturers
 - 1. Grinnell



2. Crane
3. Milwaukee
4. Hammond
5. Nibco
6. Or Approved Equal

2.7 BALL VALVES

- A. Use for stop, isolation and as drain valves, in systems up to 200°F and pipe sizes to 3".
- B. Provide ball valves of the bronze top-entry body type, having a straight-through full port flow passage. Design to permit disassembly without removing body from line.
- C. Construct seats and all gland packing of fluorocarbon base material. Lever handle to be vinyl covered. Body to be 2-piece screwed end for steel piping and sweated end for copper piping.
- D. Provide lever for quarter turn operation; lever to indicate open or closed position.
- E. When used as drain valves, provide with hose thread and brass cap with chain. Cap to be rated for full system pressure.
- F. Manufacturers
 1. Apollo
 2. Nibco
 3. Stockham
 4. Or Approved Equal

2.8 HIGH PERFORMANCE BALL VALVES

- A. Use for stop, isolation and as drain valves, in systems up to 400°F and pipe sizes to 3".
- B. Provide high performance ball valves of the stainless steel top-entry body type, having a straight-through full port flow passage. Design to permit disassembly without removing body from line. Body to be 2-piece screwed end.
- C. Shafts to be constructed of 316 stainless steel with stellite surfaced bearing areas. Shaft bearing to be ceramic filled TFE.



- D. Construct seats of stellite faced 316 stainless steel and all gland packing of ceramic filled multiple V-ring TFE.
- E. Provide lever for quarter turn operation; lever to be vinyl covered and indicate open or closed position.
- F. When used as drain valves, provide with hose thread and brass cap with chain. Cap to be rated for full system pressure.
- G. Manufacturers
 - 1. Apollo
 - 2. Nibco
 - 3. Stockham
 - 4. Or Approved Equal

2.9 BUTTERFLY VALVES

- A. Use for stop and isolation in systems up to 200°F and pipe sizes 2½" and larger.
- B. Butterfly valves to have ductile iron lug body, 316 stainless steel stem with bronze bushings and aluminum bronze disc.
- C. The stem journals will be a multiple seal design providing for completely independent seals. The stem disc assembly will be such that the need for pins, screws or bolts is not required. Positive stem retention to be provided to permit removal of handle or actuator while under full operating pressure.
- D. The valve seats to consist of replaceable resilient elastomer.
- E. Valves to size 6" to be supplied with multi-position handles; size 8" and over to be supplied with enclosed worm gear operator.
- F. Valve body to be full-lug pattern to comply with MSS-SP-67 and be compatible with ANSI pattern flanges of appropriate pressure rating.
- G. Manufacturers
 - 1. Grinnell
 - 2. Jamesbury
 - 3. Centerline
 - 4. Keystone



5. Nibco
6. Or Approved Equal

2.10 HIGH PERFORMANCE BUTTERFLY VALVES

- A. Use for stop and isolation in systems up to 400°F and pipe sizes 2½" and larger.
- B. Butterfly valves to have steel lug body, one piece 316 stainless steel stem with bronze bushings and 316 stainless disc with chrome plated seating edge. Drive end of shaft to be squared to provide positive actuator connection.
- C. The stem journals will be a multiple seal design providing for completely independent seals. Positive stem retention to be provided using solid type 316 stainless steel keys locked in place, to permit removal of handle or actuator while under full operating pressure.
- D. Design discs with a concave face to reduce dynamic torque, decrease turbulence and maximize flow capacity.
- E. Provide disc-to-shaft pins of stainless steel and of the tangential or compressive type. Pins shall be subject to compression forces only, no shear forces.
- F. The valve seats to consist of replaceable PTFE seating surface with a titanium retaining ring.
- G. Shaft bearings to be of reinforced PTFE and thrust bearing to be a combination of reinforced PTFE with 316 stainless steel.
- H. Provide packing of multiple PTFE V-ring design with adjustable gland follower and 316 stainless gland.
- I. Valves to size 6" to be supplied with multi-position handles; size 8" and over to be supplied with enclosed worm gear operator.
- J. Valve body to be full-lug pattern to comply with MSS-SP-67 and be compatible with ANSI pattern flanges of appropriate pressure rating.
- K. Manufacturers
 1. DeZurik
 2. Flow Seal
 3. Contromatics
 4. Or Approved Equal



2.11 AUTOMATIC FLOW CONTROL VALVES

- A. Provide automatic pressure-compensating flow control valves with extended valve body and dual temperature/pressure test ports. Provide performance certification of valves by an independent laboratory to the Commissioner.
- B. Valve to be manufactured in one piece and to consist of ground joint union, flow control and test plugs.
- C. All valves to be factory set to control the flow rate within 4 percent of the selected rating over an operating pressure differential of at least 10 times the minimum required for full flow conditions.
- D. Valves to be brass and stainless steel with threaded or sweat connections.
- E. Provide all valves with unions to allow field exchange of internal components without removing the valve body from the pipeline.
- F. Mark all valves in a permanent manner to show direction of flow and flow rate.
- G. Provide valves rated for a minimum of 350 psi, or as necessary to meet the design conditions of the piping system.
- H. Provide test plugs with dual valve cores for pressure and temperature monitoring.
- I. Confirm the valve design flow rate by establishing that the pressure drop is within the valves' specified pressure range.
- J. Manufacturers
 - 1. Autoflow
 - 2. Griswold
 - 3. Bell & Gossett
 - 4. Or Approved Equal

2.12 VALVE LIST

- A. The following is a listing of representative figure numbers by service, indicative of the product quality required.



Service	Type	Size	Nibco Fig. No.	DeZurik Fig. No.
150 psi	Globe	1½ to 2 in.	T-235Y	-
	Globe	2½ to 10 in.	F-718B	-
	Plug	2½ to 24 in.	-	118
	Gate	To 2 in.	T-135	-
	Gate	2½ to 24 in.	F-617-O	-
	H.P. Ball	To 2 in.	-	551
	H.P. Butterfly	2½ to 36 in.	-	BHP-L1
	Check-Swing	To 2 in.	T-433-B	-
	Check-Swing	2½ to 12 in.	F-918B	-
	Check-Silent	All	F/W 910/960	-

Service	Type	Size	Nibco Fig. No.	DeZurik Fig. No.
300 psi	Globe	To 3 in.	T-275Y	-
	Globe	4 to 8 in.	F-768B	-
	Plug	2½ to 24 in.	-	129
	Gate	To 2 in.	T-174SS	-
	Gate	2½ to 12 in.	F-667-O	-
	H.P. Ball	To 2 in.	-	551
	Butterfly	2½ to 36 in.	-	BHP-L2
	H.P. Butterfly	2½ to 36 in.	-	BHP-L2
	Check-Swing	To 2 in.	T-473B	-
	Check-Swing	2½ to 6 in.	F-968B	-
	Check-Silent	All	F/W 910/960	-



PART 3 - EXECUTION

- 3.1 Install valves so that they are accessible for repacking.
- 3.2 Install with stem vertical and handle up wherever possible, never with stem below horizontal position.
- 3.3 Install with operating clearance for handle and stem.
- 3.4 Install isolation valves on equipment so that valve and piping do not interfere with equipment removal or maintenance. Install unions or flanges on equipment side of valves.
- 3.5 Provide 1" drain valves with threaded ends for hose connections at drain points, at main shutoff valves, low points of piping systems, bases of vertical risers, and at equipment.
- 3.6 Provide all gate valves 8 inches and larger having a rating of over 150 lbs. with a 1-inch bypass valve of same pressure rating.
- 3.7 Provide required manual or automatic vent valves at high points of piping systems to facilitate venting of air and to ensure quiet operation.
- 3.8 Provide renewable bronze seat rings and bronze spindles for cast iron body valves.
- 3.9 Provide chain operated sheaves and chains for all valves which are more than 8 feet above the floor in Mechanical Equipment Rooms.
- 3.10 Furnish and install other valves, check valves, cocks, etc., as required for the complete and proper valving of the entire installation.
- 3.11 Install butterfly valves in horizontal piping with stem in the horizontal position so that bottom of disk lifts in the direction of flow.
- 3.12 Install butterfly valves in vertical piping at pumps with stem perpendicular to pump shaft.

END OF SECTION



SECTION 23 05 29

HANGERS, ANCHORS AND SUPPORTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide hangers, anchors and supports in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Hangers.
B. Structure Attachments.

1.4 SUBMITTALS

- A. Shop Drawings: Submit details of pipe hangers, anchors and supports for each pipe size and pipe service. Submit details of support methods and point loadings, and anchor reactions.
B. Product Data: Manufacturer's latest published data for materials, equipment and installation.

1.5 QUALITY ASSURANCE

- A. Hangers and supports to be constructed and applied according to the following standards:
1. Manufacturer's Standardization Society MSS SP-58, SP-69 and SP-89.
 2. Power Piping Code, ANSI B31-1.



PART 2 - PRODUCTS

- 2.1 Provide hangers of heavy construction suitable for the size of pipe to be supported. All materials to be of steel, except rollers which are to be of wrought or malleable iron. Hangers for pipes up to and including 5 inches to be adjustable swivel ring, split ring, wrought pipe clamp, or adjustable wrought clevis type. Hangers for pipes 6 inches and above to have 2 rods and cross-rod with cast iron pipe roll complete with adjustable sockets and nuts.
- 2.2 Support vertical piping with double bolt riser clamps attached to the pipe, resting on the floor slab. In general, use one clamp for each two floors and one clamp at each floor for copper tubing. Where pipes are in open shafts, provide forged steel bar brackets fixed to wall.
- 2.3 Support vertical piping risers on base elbow supports. Supports to be no less than one pipe size smaller than riser.
- 2.4 The following tables will establish a minimum level of acceptance for pipe hangers, supports and attachments.

A. Hangers and Supports

Service	Hanger Type	Grinnell Figure No.	Maximum Pipe Size
Uninsulated Steel	Clevis	260	5"
Uninsulated Copper	Clevis	CT-65	4"
All (Steel Pipe)	Riser Clamp	261	20"
(Copper Pipe)	Riser Clamp	CT-121	4"
All Insulated	Roller Hanger	171	24"
Chilled & Condenser Water	Base Plate & Roll	277	24"
Hot Water, Steam and Steam Condensate	Base Plate & Roll	274	24"
All	Trapeze	46	24"
All	Wall Bracket	195	5"
All	Wall Bracket	199	12"



B. Structure Attachments

Type	Grinnell Figure No.	Maximum Rod Size (Inches)	Maximum Pipe Size
Beam Clamp	218	7/8	8"
Beam Clamp	228	1½	24"
Side Mount Clamp	225	7/8	8"
Channel Clamp	226	7/8	8"
Expansion Shield	281	7/8	8"

2.5 MANUFACTURERS

- A. Grinnell
- B. Pipe Shields Inc.
- C. C&S Manufacturing
- D. Or Approved Equal

PART 3 - EXECUTION

3.1 Support horizontal piping in accordance with the following schedule:

Pipe Size	Maximum Hanger Spacing	Rod Size
1" and smaller	6'-0"	3/8"
1¼" to 2"	9'-0"	3/8"
2½" to 3"	10'-0"	1/2"
4" to 5"	12'-0"	5/8"
6"	12'-0"	3/4"
8" to 12"	12'-0"	7/8"
14" to 16"	12'-0"	1"
18"	12'-0"	1-1/8"
20"	12'-0"	1-1/4"



Pipe Size	Maximum Hanger Spacing	Rod Size
24"	12'-0"	1-1/2"

- 3.2 Provide hangers at each change in direction and both sides of each valve.
- 3.3 Support hangers from concrete inserts or beam clamps. Furnish, locate and set such inserts and make sure that such inserts are in place when the concrete is poured. Construct inserts of malleable iron or pressed steel with space for rods of all sizes. Install all inserts for pipes 3" and larger in size with a reinforcing rod 5/8" in diameter run through a slot in the insert specifically provided for this purpose.
- 3.4 If any pipe is to be hung in a space where no inserts have been provided, drill holes in the slab (subject to the Commissioner's prior approval) and provide rods and hanger attached to an approved fishplate or install double expansion shields connected by a 2" x 2" angle, from which the hanger rod is to be suspended. For pipe size 2" and under, use single shields but the hanger spacing defined hereinbefore to be reduced to 5'-0". The carrying capacity and size of each shield to be calculated on the basis of the spacing indicated above but the minimum size to be 3/8". Install additional shields of the same size so that the number of hangers are of adequate size to support the loads which they carry. Shields may be used in concrete slabs only.
- 3.5 Regardless of the type of construction (i.e., concrete, concrete-deck-steel or other variations) take particular care to support all main lines and all large and heavy pipes in an approved manner, including the furnishing and installation of supplementary steel, if required. Supplementary steel sections are to be mill-rolled. Submit shop drawings, indicating support methods, point loadings to the building structure and hanger locations for review sufficiently in advance of concrete pouring schedules to permit evaluation, critique and any necessary changes to handling and support methods.
- 3.6 Set all inserts for all pipes in ample time to allow concrete work to be performed on scheduled time.
- 3.7 Hangers may be directly attached to steel beams of building construction, where they occur, if approved by Commissioner. Smaller pipes may be suspended from crosspieces of pipe or steel angles, which in turn, are to be securely fastened to building beams or hung from building concrete construction by means of rods and inserts. The intention is to provide supports which, in each case, will be amply strong and rigid for the load, but which will not weaken or unduly stress the building construction.
- 3.8 Provide approved roller support, floor stands, wall brackets, etc., for all lines running near the floor or near walls, which can be properly supported or suspended by the floors or walls. Pipelines near walls may also be hung by hangers carried from approved wall brackets at a level higher than the pipe.
- 3.9 Do not hang piping from other piping. Support of hangers by means of vertical expansion bolts is not permitted.



- 3.10 Wherever hangers using pipe rolls are used provide approved steel pipe covering protection saddles, spot welded to the piping at each hanger location. Vapor barrier jackets to cover shield.
- 3.11 Anchor piping where shown on Drawings and as required to localize expansion or to prevent undue strain on piping and branches. Anchors to be entirely separate from hangers. All anchor designs to be submitted for approval and to include piping reactions which respective anchors are capable of supporting. Provide all indicated or required expansion loops.
- 3.12 Support all lines of copper tubing individually by approved type hangers not more than 6' apart, or as shown on the drawings. Use hangers especially designed for copper tubing and of exact outside diameter of tubing. On hangers for covered tubing, use broad straps fitting outside of covering.
- 3.13 Hangers used for cold piping will support the pipe without piercing the insulation. Use insulation shields to protect the insulation on cold pipes. Weld insulation protection saddles to insulated hot pipes, or any piping subject to axial movement, at roller supports. Space between pipe and saddle to be filled with insulation. Wherever fibrous glass pipe insulation is installed, install calcium silicate of equal thickness in lieu thereof, wherever hangers and insulation shields bear on insulation. Vapor barrier jackets to cover shields.
- 3.14 For piping 4" and larger, support the elbows of the piping adjacent to the pumps with steel base elbow supports from the inertia base which pump is on to prevent loading heavy weights of piping on pump casing. Where inertia base is not provided, base elbows to be supported on floor with 1" neoprene pad.
- 3.15 Support risers using base elbow supports, no smaller than one pipe size, mounted on 1" neoprene pad and concrete housekeeping pad. Submit pipe loads to Commissioner for review.
- 3.16 ATTACHMENTS TO EXISTING STEEL DECK SLAB
 - A. Attachments to existing steel deck to be limited to loads of 500 lbs. Heavier loads to be supported by supplementary structural steel connected to structural beams. Provide all required supplementary steel.
 - B. Attachments with loads only up to 500 lbs. is to be accomplished by drilled-in expansion shield type anchors located on the center line of the concrete filled ribs.
 - C. 500 lb. load attachments must not be spaced less than 5'-0" apart, and are to be located as close to steel beams as possible.



- D. Furnish and locate sleeves, cut holes through deck, reinforce deck, and set sleeves. Coordinate sleeve locations with deck subcontractor and electrical distribution. Submit drawings showing location of holes and proposed reinforcing for approval before proceeding with installation.

END OF SECTION



SECTION 23 05 40

ACOUSTICS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide acoustical treatment in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Sound Attenuating Units.
B. Sound-Lining.

1.4 SUBMITTALS

- A. Shop Drawings
1. Sound attenuators.
 2. Sound-Lining.
 3. Certification that sound-lining meets erosion test method described in U.L. Publication No. 181 erosion test method.
 4. Non-hardening caulking.
 5. Certified Tests:
 - a. Submit certified test data from approved laboratory for pressure drop and insertion loss ratings:
 - (1) For square or rectangular attenuators: 24 in. x 24 in. cross-section attenuator.
 - (2) Certification data for pressure drop and net insertion loss: based on tests of same attenuator.
 - (3) Attenuators and tests: subject to inspection upon request.



1.5 QUALITY ASSURANCE

A. Acoustical Criteria

1. Noise levels, due to equipment and ductwork, to permit attaining sound pressure levels in all 8 octave bands in occupied spaces will conform to the following NC curves:
 - a. Lobbies, corridors, toilets, spaces within 10 feet of duct penetrations through walls and floors of fan rooms: NC-40.
 - b. All other spaces: NC-35.
2. In addition to complying with the standard full octave band sound pressure levels based on NC criteria, acoustical performance of fans, air handling units, terminal devices, pressure regulating boxes, etc., when operating under design conditions shall not create any objectional pure tones. A pure-tone is defined as a peak sound pressure level which, when measured in 1/3 octave band frequencies, is higher by more than 5 dB's than adjacent 1/3 octave band frequencies.
3. Comply with specified NC levels for radiated noise from pressure regulating boxes and/or duct breakout noise from floor-by-floor air handling equipment by having full octave band sound pressure levels of at least two contiguous frequencies tangent to the NC spectrum. In other words, a single frequency controlled NC environment is considered obtrusive and unacceptable.

B. Mechanical Performance

1. Air distribution system equipment; terminal device noise:
 - a. Maximum permissible sound-power levels in octave bands of airborne transmissions through the combination of grilles, registers, diffusers, and terminal units, or related pressure reducing devices, when operated in installed condition per Plans and Specifications is as follows:

Octave Bands	Maximum PWL re 10 ⁻¹² Watts				
	NC-30	NC-35	NC-40	NC-45	NC-50
1	58	62	66	68	70
2	52	56	60	63	66
3	45	49	54	58	62
4	41	46	51	56	61



Octave Bands	Maximum PWL re 10 ⁻¹² Watts				
	NC-30	NC-35	NC-40	NC-45	NC-50
5	38	43	48	53	58
6	37	42	47	52	57
7	36	41	46	51	56
8	37	42	47	52	57

2. Pressure reducing boxes above ceiling; radiated noise:
 - a. Maximum permissible radiated sound-power levels in octave bands when operated in installed condition over occupied spaces, is as follows:

Octave Bands	Maximum PWL re 10 ⁻¹² Watts			
	NC-35	NC-40	NC-45	NC-50
1	72	76	79	82
2	70	74	77	80
3	61	65	68	71
4	60	64	68	72
5	57	62	68	72
6	56	60	65	70
7	66	70	75	80
8	65	70	75	80

3. Provide sound-lining in accordance with U.L. 181.
4. Provide all materials in accordance with NFPA, U.L. and New York City Noise Control Requirements and NYC Mechanical Code.



PART 2 - PRODUCTS

2.1 MATERIALS

A. Sound Attenuators

1. Factory prefabricated.
2. Shell:
 - a. Galvanized Steel: Minimum No. 22 USSG.
 - b. Leakproof at pressure differential of 8 in. wg.
3. Media:
 - a. Maximum Flamespread: 25.
 - b. Maximum Fuel Contributed and Smoke Developed: 50.
 - c. Minimum 4.5 lbs. per cubic foot density glass or mineral fiber packed under 5 percent compression.
 - d. Filler to be inert, vermin and moisture proof.
4. Internal Construction:
 - a. Galvanized Perforated Steel Baffles: Minimum 24 gauge.
5. Minimum Net Insertion Ratings:
 - a. Determined by duct-to-reverberant room test method at design airflow:

Band No.	Frequency No.	Dynamic Net Insertion Loss (db) Sound Trap Types					
		3L	5L	7L	3S	5S	7S
2	125	5	7	13	12	18	20
3	250	9	13	18	24	16	35
4	500	14	21	28	28	40	45
5	1000	23	29	40	35	45	50
6	2000	24	39	47	35	46	48



6. Maximum Self-Generated Noise:

a. At 2000 ft. per minute face velocity and 4 sq. ft. face area:

Band No.	Band Center Frequency Hz	Sound Power Level (db) re 10 ⁻¹² watts Sound Trap Types
		L Series
2	125	51
3	250	51
4	500	49
5	1000	47
6	2000	50

b. At 1000 feet per minute face velocity and 4 sq. ft. face area:

Band No.	Band Center Frequency Hz	Sound Power Level (db) re 10 ⁻¹² watts Sound Trap Types
		S Series
2	125	49
3	250	49
4	500	47
5	1000	46
6	2000	49

B. Sound-Linings

1. Fiber glass.
2. Facing for Low Pressure Duct Liner:
 - a. Finish: Neoprene coated.
 - b. Stenciled NFPA 90.



3. Facing for duct liner downstream of local floor equipment room walls for a distance of 15 feet, and all ducts with velocities over 2500 FPM.
 - a. Finish: Perforated, 28 percent minimum open area, 24 gauge galvanized steel.
 4. Thickness:
 - a. In ductwork: minimum 1 in. unless otherwise noted on drawings.
 - b. In plenums and in supply duct downstream of local floor equipment rooms: minimum 2 inches, 3 pound density, semi-rigid.
 - c. For sound-lining used as thermal insulation minimum thickness shall conform to requirements as specified in Section on Insulation.
 - d. Linear Diffuser Supply Plenums: Minimum ½", 1½ lb. density.
 5. Minimum density: 1½ lb. per cu. ft. in ducts. 3 lb. per cu. ft. in plenums.
 6. Flamespread: Maximum 25.
 7. Fuel Contributed and Smoke Developed: Maximum 50.
 8. Suitable for duct velocity of 4000 fpm. Meet erosion test method described in U.L. Publication No. 181.
 9. Dynamic Loss Coefficient: Maximum 1.2.
 10. K Factor: Maximum .25 Btu/hr./°F/in.
 11. ASTM Noise Reduction Coefficient (NRC) for 1 inch thick lining: minimum 0.70.
- C. Adhesive and Sealer
1. Adhesive: Non-flammable, fire resistive, synthetic elastomer adhesive.
 2. Sealer: Non-flammable, fire resistive, synthetic elastomer adhesive.
- D. Non-Hardening Caulking
1. Guaranteed to be permanently elastic.



2.2 MANUFACTURERS

A. Sound Attenuators

1. Industrial Acoustics Co.
2. Vibro-Acoustics
3. Dynasonics (P.C.I.)
4. Semco
5. Vibron (Kinetics Noise Control)
6. Commercial Acoustics (Metal Form Mfg. Co.)
7. Or Approved Equal

B. Sound-Linings

1. Certainteed Products Corp.
2. Johns-Manville Corp.
3. Owens-Corning Fiberglas Corp.
4. Or Approved Equal

PART 3 - EXECUTION

3.1 INSTALLATION

A. In order to obtain satisfactory acoustical performance of the terminal devices, complete the following:

1. Proper duct connections at inlet to the terminals.
2. Proper air-balancing.
3. Avoid excessive dampering right at the terminals.

B. Sound Attenuators

1. Install in accordance with manufacturer's recommendations to obtain noted performance.



C. Sound-Linings

1. Adhere with 6 in. wide strips of adhesive.
 - a. 12 in. on centers.
 - b. At joints in lining.
2. In addition, secure with weld pins and 2 in. diameter washers on maximum 16 in. centers.
3. Coat all edges with sealer and caulk all butt joint seams.
4. Provide continuous sheetmetal edge protection at entering and leaving edges of lined duct sections and all joints.
5. Dimensions of lined ductwork are clear inside dimensions after lining has been installed.
6. Extent of Ductwork Sound-Linings:
 - a. Air-Conditioning Systems:
 - (1) Supply: Ductwork within mechanical equipment rooms not less than 25 feet from fan. Downstream of local floor MER walls.
 - (2) Return: Ductwork in mechanical equipment rooms but not less than 25 feet from fan.
 - b. Outside air supply systems a minimum distance of 25 feet downstream of fan.
 - c. Ventilation Systems: As indicated on Drawings.
 - d. Exhaust Systems: As indicated on Drawings.
 - e. Ductwork downstream of:
 - (1) Terminal Units: Minimum 10 feet or as per manufacturer's recommendations.
 - f. Minimum lengths shown. Provide additional acoustical treatment as required to meet maximum permissible sound-power levels scheduled for equipment.
7. Sound-Lined Plenums: As indicated on Drawings.
8. All transfer and jumper ducts.



9. All linear diffuser supply plenums.

D. Soundproofing of Construction

1. Required for packing between ductwork and the following construction:

- a. Equipment room walls.
- b. Floors, except in shafts.
- c. Sound barrier ceilings.

2. Soundproofing:

- a. Fill openings with fiber glass blanket or board for full depth of penetration.
- b. Caulk each side of opening with non-hardening, non-aging caulking compound.

3. Soundproofing may be deleted when firestopping material is provided.

E. Ductwall External Soundproofing

1. Extent:

- a. Vane axial fans including their inlet and discharge transitions.
- b. Where indicated on Drawings.

2. Soundproofing Material:

a. Fiber Glass:

- (1) Board: 6 lb./cu. ft. density.
- (2) Thickness: ½ in. greater than height of ductwork angles, but 2 in. minimum.

b. External Jacket:

(1) Lead Sheet:

- (a) Overlapped 2 in.
- (b) Secured with tape.
- (c) Weight: 1 lb. per sq. ft.



(d) Thickness: 1/64 inch.

F. Tests

1. Sound Attenuators:

- a. After Installation: Measure total system pressure before and after attenuators.
- b. If pressure loss exceeds maximum static pressure scheduled on drawings: at no charge, replace attenuators and/or modify entrance and/or discharge aerodynamic flow to obtain specified performance.

END OF SECTION



SECTION 23 05 48

VIBRATION ISOLATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide vibration isolation in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Vibration isolation elements for piping and equipment.
B. Equipment isolation bases.
C. Seismic restraints.

1.4 SUBMITTALS

A. Manufacturer's Data

1. Catalog cuts and data sheets on specific vibration isolators to be utilized showing compliance with the specifications.
2. An itemized list showing the items of equipment or piping to be isolated, the isolator type or model number selected, isolator loading and deflection, and reference to specific drawings.
3. An itemized list of non-isolated equipment, piping, and ductwork to be seismically restrained.
4. Seismic restraint calculations.
5. Written approval of the base design to be obtained from the equipment manufacturer.



B. Shop Drawings

1. Drawings showing equipment base constructions for each machine, including dimensions, structural member sizes and support point locations.
2. Drawings showing methods of suspension, support guides for piping and ductwork.
3. Drawings showing methods for isolation of pipes and ductwork piercing walls and floor slabs.
4. Concrete and steel details for bases including anchor bolt locations.
5. Number and location of seismic restraints and anchors for each piece of equipment and of ductwork and piping.
6. Specific details of restraints, including anchor bolts for mounting and maximum loading at each location for each piece of equipment and lengths of ductwork and piping.
7. Provide installation instructions, drawings and field supervision to assure proper installation and performance.

1.5 QUALITY ASSURANCE

- A. Provide control of excessive noise and vibration in the buildings due to the operation of machinery or equipment, and/or due to interconnected piping, ductwork or conduit. Installation of vibration isolation units, and associated hangers and bases, under the direct supervision of the vibration isolation manufacturer's representative.
1. All vibration isolators shall have either known undeflected heights or calibration markings so that, after adjustment, when carrying their load, the deflection under load can be verified, thus determining that the load is within the proper range of the device and that the correct degree of vibration isolation is being provided according to the design.
 2. All isolators shall operate in the linear portion of their load versus deflection curve. Furnish load versus deflection curves linear over a deflection range of not less than 50% above the design deflection.
 3. The ratio of lateral to vertical stiffness to be not less than 0.9 nor greater than 1.5.
 4. The vertical natural frequency for each support point, based upon load per isolator and isolator stiffness shall not differ from the design objectives for the equipment as a whole by more than $\pm 10\%$.



5. All neoprene mountings shall have a Shore hardness of 40 to 65, after minimum aging of 20 days or corresponding oven-aging.
- B. Adhere to SMACNA Guidelines for Seismic Restraints of Mechanical Systems.
- C. Adhere to ASHRAE Guide 1995 Chapter 50.
- D. Design seismic restraints in accordance with NYC Code Seismic Zone.
- E. Manufacturer of vibration isolation equipment has the following responsibilities:
 1. Determine vibration isolation and seismic restraint sizes and locations.
 2. Guarantee specified isolation system deflection.
 3. Provide piping and equipment isolation systems and seismic restraints as scheduled, or specified.
 4. Guarantee specified isolation system deflection.
 5. Provide installation instructions, drawings and field supervision to assure proper installation and performance.
- F. Professional Engineer's stamp licensed in the state of New York verifying design and calculations for seismic restraining systems used.
- G. Substitution of internally isolated mechanical equipment in lieu of the specified isolation of this Section must be approved for individual equipment units and is acceptable only if above acceleration loads are certified in writing by the equipment manufacturer and stamped and sealed by a licensed Engineer in the state of New York.
- H. Purchased and/or fabricated equipment must be designed to safely accept external forces of 1.0g load in any direction for all rigidly and resiliently supported equipment, piping and ductwork without failure and permanent displacement of the equipment. Life safety equipment such as fire pumps, smoke exhaust fans, emergency generators and other life safety designated equipment must be capable of accepting external forces of up to 1.5g in any direction without permanent displacement or failure of the equipment.
- I. Vibration isolation firms having a minimum three years experience designing and installing vibration isolation and seismic restraint systems shall be qualified to provide the materials and installation required by this section. Project listings shall be provided including geographical location and a reference contact.



PART 2 - PRODUCTS

2.1 MATERIALS

- A. All vibration isolation devices to be the product of a single manufacturer.
- B. Where spring isolation systems are described in the following 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 springs remain parallel. The minimum deflection from loaded operating height to spring solid height shall be 50% of the rated static deflection of the spring.
- C. Where neoprene-in-shear isolation systems are described in the following specifications, the mounting assemblies shall utilize bare neoprene elements with unit type design molded in oil resistant neoprene. The neoprene shall be compounded to meet the following:
 - 1. Shore hardness of 35 to 65 \pm 5, after minimum aging of 20 days or corresponding oven-aging.
 - 2. Minimum tensile strength of 2000 PSI.
 - 3. Minimum elongation of 300%.
 - 4. Maximum compression at 25% of original deflection.
- D. All mounting systems, including seismic restraints, exposed to weather and other corrosive environments shall be protected with factory corrosion resistance. All metal parts of mountings (except springs and hardware) to be hot dip galvanized. Springs shall be cadmium plated and neoprene coated. Nuts and bolts shall be cadmium plated.

2.2 VIBRATION ISOLATORS

- A. Refer to schedule on the drawing sheets for vibration isolator types to be used.
 - 1. Type A (FOR FLOOR MOUNTED FANS AND PUMPS OVER 3 H.P.): Bare spring isolators to incorporate the following:
 - a. Minimum ¼ inch thick neoprene acoustical base pad on underside, unless designated otherwise.
 - b. Designed and installed so that ends of springs remain parallel.



- c. Non-resonant with equipment forcing frequencies or support structure natural frequencies.

Type SLF MII
Type OSK VEC
Type AN VMCI

- 2. Type B: Spring isolators to be same as Type A, except:

- a. Provide built-in vertical limit stops with minimum ¼" clearance under normal operation.
- b. Tapped holes in top plate for bolting to equipment.
- c. Capable of supporting equipment at a fixed elevation during equipment erection. Installed and operating heights shall be identical.
- d. Shall incorporate snubbing restraint in all directions. Cast or aluminum housings are unacceptable. System to be field bolted or welded to deck with ability to resist forces of g acceleration.

Type SLR MII
Type KW VEC
Type AWR VMCI

- 3. Type C (FOR SUSPENDED FANS AND PUMPS OVER 3 H.P. AND ALL A/C UNITS.): Spring hanger rod isolators to incorporate the following:

- a. Spring element seated on a steel washer within a neoprene cup incorporating a rod isolation bushing.
- b. Steel retainer box encasing the spring and neoprene cup.
- c. Provide sufficient clearance between retainer box and spring hanger rod to permit minimum 15 degree allowable rod misalignment in any direction, total 30 degrees.
- d. Requires seismic restraint type III.

Type 30N MII
Type SNRC VEC
Type RSH-30A VMCI

Where operating weight differs from installed weight provide built-in adjustable limit stops to prevent equipment rising when weight is removed. Stops shall not be in contact during normal operation.



4. Type D (FOR FLOOR MOUNTED FANS AND PUMPS UP TO 3 H.P.): Elastomer isolators to incorporate the following:
 - a. Bolt holes for bolting to equipment base.
 - b. Bottom steel plates for bolting to sub-base as required.
 - c. Unit type design molded in oil-resistant neoprene.
 - d. Encased in ductile steel or iron casing and capable of withstanding external forces of up to 1.0 g. System to be field bolted or welded to deck with ability to resist forces of 1.0 g.

Type BR/RBA MII
Type 368 SD VEC
Type RDVMCI

5. Type E (FOR SUSPENDED FANS AND PUMPS UP TO 3 H.P.): Elastomer hanger rod isolators to incorporate the following:
 - a. Molded unit type neoprene element with projecting bushing lining rod clearance hole.
 - b. Neoprene element to be minimum 1¾" thick.
 - c. Steel retainer box encasing neoprene mounting.
 - d. Clearance between mounting hanger rod and neoprene bushing shall be minimum 1/4".
 - e. Requires seismic restraint type III.

Type HD MII
Type CD VEC
Type RHD VMCI

6. Type F (FOR ALL INTERNALLY ISOLATED FLOOR MOUNTED EQUIPMENT.): Combination spring/elastomer hanger rod isolators to incorporate the following:
 - a. Spring and neoprene isolator elements in a steel box retainer.
 - b. Other characteristics of steel box retainer and hanger rod swing as described for Type C isolators.
 - c. Requires seismic restraint type III.



7. Type G: Pad type elastomer mountings to incorporate the following:
- 0.750" minimum thickness.
 - 50 psi maximum loading.
 - Ribbed or waffled design.
 - .10" deflection per pad thickness.
 - 1/16" galvanized steel plate between multiple layers of pad thickness.
 - Suitable bearing plate to distribute load.
 - Requires seismic restraint type II or III as installation requires.

Type Super W MII
Type 200N VEC
Type Shearflex VMCI

8. Type H (FOR FLOOR SUPPORTED PIPE RISERS AND STEAM METERING AND REDUCING STATIONS.): Pad type elastomer mountings to incorporate the following:
- Laminated canvas duck material and neoprene.
 - Maximum loading 1000 psi.
 - Suitable bearing plate to distribute load.
 - Minimum thickness, 1/2 inch.
 - Requires seismic restraint type II or III as installation requires.

Type HL MII
Type Fabriflex VMCI

2.3 EQUIPMENT BASES

- A. Integral Structural Steel Base, Type B-1
- Reinforced as required to prevent base flexure at start-up and misalignment of drive and driven units. Centrifugal fan bases complete with motor slide rails. Drilled for drive and driven unit mounting template.

Type WF, M MII



B. Concrete Inertia Base, Type B-2

1. Concrete inertia bases to be formed in a structural steel perimeter base, reinforced as required to prevent flexure, misalignment of drive and driven unit or stress transfer into equipment. The base to be complete with motor slide rails, pump base elbow supports and complete with height saving brackets, reinforcing, equipment bolting provisions and isolators.
2. Minimum thickness of the inertia base to be according to the following tabulation:

Motor Size (hp)	Minimum Thickness (in)
5-15	6
20-50	8
60-75	10
100-250	12
300-500	18

C. Curb Mounted Base, Type B-3

1. Curb mounted rooftop equipment shall be mounted on spring isolation curbs that directly sit on roof construction and are flashed and incorporated into roof's membrane waterproofing system.
2. All spring locations shall have removable waterproof covers to allow for spring adjustment and/or removal.
3. All spring mounts shall be as Isolator Type B.
4. Curb and spring mounting shall be capable of withstanding 110mph wind and 1.5g seismic loads.

D. Isolated Rail Base, type B-4

1. Rails shall be constructed from structural steel angles, as required, to prevent flexure and misalignment under load.
2. Each rail shall be the full length of the supported equipment and be welded to a series of vertically restrained spring isolators as Type B described above.



3. Angles shall have bolt-together ties at the ends and center to form one rigid base platform.

E. Vaneaxial Fan Built-Up Casing Floating Base, Type B-5

1. The vaneaxial fan casing, coils, filter assembly and inlet/discharge silencers shall be erected on top of a poured-in-place, reinforced concrete floating floor supported on 2" high mounting system
2. The mountings shall be oriented in the floating floor base for the weight and weight distribution of the supported equipment (casing, coils, filter silencers) on the floating floor.
3. The plywood form shall be Type AC exterior grade, 1/2" thick. Isolation mounts shall be 2" thick and shall be selected and oriented to provide deflections not exceeding 0.3" or 10 Hz frequency.
4. The fans shall be resiliently spring supported, and as described elsewhere, from concrete piers erected from the structural slab and isolated from the floating floor.
5. The design and installation of the vaneaxial fan built-up casing floating floor and fan isolation shall be coordinated with the vibration control vendor such that there will be no short circuit of the floating build-up casing base and the building structure.
6. Requires seismic restraint type II.

2.4 FLEXIBLE CONNECTORS

A. Elastomer Type FC-1

1. Manufactured of nylon tire cord and EPDM, both molded and cured with hydraulic presses.
2. Straight connectors to have two spheres reinforced with a molded-in external ductile iron ring between spheres.
3. Elbow shall be long radius reducing type.
4. Rated 250 psi at 170°F. Dropping in a straight line to 170 psi at 250°F for sizes 1 1/2" to 12" elbows. Elbows shall be rated no less than 90% of straight connections.
5. Sizes 10" and 12" to employ control cables with neoprene end fittings isolated from anchor plates by means of 1/2" bridge bearing neoprene bushings.
6. Minimum safety factor of 4 to 1 at maximum pressure ratings.



7. Submittals to include test reports.
- B. Flexible Stainless Hose, Type FC-2
1. Braided flexible metal hose.
 2. 2 inch pipe size and smaller with male nipple fittings.
 3. 2½ inch and larger pipe size with fixed steel flanges.
 4. Suitable for operating pressure with 4:1 minimum safety factor.
 5. Length as shown on Drawings.

Type BSS MII
Type MFP VMCI

- C. Unbraided Exhaust Hose, Type FC-3
1. Low pressure stainless steel annularly corrugated.
 2. Fitted with flanged ends.
 3. Maximum temperature 1500°F.

2.5 SEISMIC RESTRAINTS

- A. General
1. Provide restraints capable of safely accepting 1.0 "G" external forces without failure, or 1.5 "G" for life safety equipment to maintain equipment, piping, duct and fan powered boxes in a captive position. Restraints must not short circuit vibration isolation systems or transmit objectionable vibration or noise.
 2. Submit calculations by a Professional Engineer licensed in the state of New York substantiating that all equipment mountings and foundations and their seismic restraints can safely accept external forces of 1.0g load for all rigidly and resiliently supported equipment, piping, and ductwork (1.5g load for all life safety equipment) without failure and permanent displacement. Restrain all resiliently mounted piping and ductwork with cable sway bracing.
- B. Seismic Restraint, Type I
1. Comply with general characteristics of spring isolators.
 2. Provide vertical restraints that are capable of supporting equipment at fixed elevation during equipment erection.

3. Incorporate seismic snubbing restraint in all directions at specified acceleration loadings.
4. System to be field bolted to structure with minimum capability to withstand external forces of 1.5g.

C. Seismic Restraint, Type II

1. Each corner or side seismic restraint shall incorporate minimum 1/4" 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 deck with 1.5g acceleration capacity.
2. Seismic spring mountings are described above are an acceptable alternative providing all seismic loading requirements are met.

D. Seismic Restraint, Type III

Metal cable type with Commissioner approved end fastening devices to equipment and structure. System to be field bolted to deck or overhead structural members or deck with aircraft cable and clamps as per SMACNA guidelines.

2.6 MANUFACTURERS

- A. Mason Industries, Inc. (MII)
- B. Vibration Mountings & Controls, Inc. (VMCI)
- C. Peabody Commissioning (PE)
- D. Korfund Dynamics Corp. (KDC)
- E. Amber-Booth (AB)
- F. Vibration Eliminator Co. (VEC)
- G. Or Approved Equal



PART 3 - EXECUTION

3.1 GENERAL

- A. Install in accordance with manufacturer's written instructions. Vibration isolators must not cause any change of position of equipment or piping resulting in piping stresses or misalignment.
- B. Isolate mechanical equipment from the building structure by means of noise and vibration isolators as scheduled on the Drawings and in these specifications.
- C. Piping and ductwork to be isolated must pass freely through walls and floors without rigid connections. Maintain 3/4 inch to 1 1/4 inch clearance around outside surfaces of piping or ductwork at penetration points. Pack this clearance space tightly with fiberglass, and caulk airtight after installation of piping or ductwork.
- D. Make no rigid connections between equipment and building structure that degrades the noise and vibration isolation system specified herein.
- E. Loop electrical circuit connections to isolated equipment to allow free motion.
- F. Bring to the Commissioner's attention prior to installation any conflicts with other trades which will result in unavoidable rigid contact with equipment or piping as described herein, due to inadequate space or other unforeseen conditions. Corrective work necessitated by conflicts after installation will be at the contractor's expense.
- G. Support vertical piping loads, including water strainers, and valves between pump base elbow supports and the suction and discharge header piping by means of the pump base spring isolators without stress or strain to the pump housing.
- H. Do not install any equipment, piping or conduit which makes rigid contact with the "building" unless permitted in this Specification. Building includes, but is not limited to, slabs, beams, columns, studs and walls.
- I. Coordinate work with other trades to avoid rigid contact with the building. Inform other trades following work, such as plastering or electrical, to avoid any contact which would reduce the vibration isolation.

3.2 EQUIPMENT ISOLATORS

- A. Mount floor mounted equipment on 4" high concrete housekeeping pads over complete floor area of equipment. Mount vibration isolating devices and related inertia blocks on concrete pad. Key housekeeping pads with hair pins, as required, to be integral with structural slab. Provide approved seismic restraint anchor plates flush with top of housekeeping pad.
- B. Support each fan and motor assembly on a single structural steel frame. Provide flexible duct connections at inlet and discharge of fans.



- C. Provide brackets to accommodate the isolator. Manufacturer to specify the vertical position and size of the bracket.
- D. Maintain a minimum operating clearance between the equipment frame on rigid steel base frame and the housekeeping pad of 1 inch. Maintain a minimum operating clearance between concrete inertia and base and housekeeping pad or floor of 2 inches.
- E. Temporarily support the structural steel or concrete inertia base with blocks or shims, as appropriate, prior to the installation of the machine or isolators.
- F. Install the isolators without raising the machine and frame assembly.
- G. Adjust the isolator after the entire installation is complete and under full operational load so that the load is transferred from the blocks to the isolator. When all isolators are properly adjusted, the blocks or shims will be barely free and shall be removed.
- H. Verify that all insulated isolator and mounting systems permit equipment motion in all directions. Adjust or provide additional resilient restraints to flexibly limit equipment start-up lateral motion to ½ inch.
- I. Prior to start-up, clean out all foreign matter between bases and equipment. Verify that there are no isolation short circuits in the base or isolators.

3.3 ADDITIONAL REQUIREMENTS

- A. Diagonal thrust restraint shall be as described for Type C hanger with the same deflection as specified for the spring mountings. The spring element shall be designed so it can be pre-set for thrust and adjusted to allow for a maximum of ¼" movement at start and stop. Diagonal restraints shall be attached at the centerline of thrust.
- B. All piping and ductwork to be isolated shall freely pass through walls and floors without rigid connections. Penetration points shall be sleeved or otherwise formed to allow passage of piping or ductwork, and maintain ¾" to 1¼" clearance around the outside surfaces. This clearance space shall be tightly packed with fiberglass, and caulked airtight after installation of piping or ductwork.
- C. All HVAC piping vertical risers larger than 2" in diameter shall be isolated from the building structure by means of noise and vibration isolation guides and supports.
- D. Isolators shall be installed with the isolator hanger box attached to, or hung as close as possible to, the structure. Hanger rods shall be aligned to clear the hanger box.
- E. Isolators shall be suspended from substantial structural members, not from slab diaphragm unless specifically permitted.



- F. Structural steel for cooling tower or other equipment must support the equipment without excessive deflection. The structural steel support shall not be resonant with the isolation system resonant frequencies or the driving frequencies of the supported equipment.

3.4 CONTROL AIR COMPRESSORS

- A. Mount control air compressors up to 3 horsepower on Type B-1 structural steel base.
- B. Mount control air compressors over 3 horsepower on Type B-2 concrete inertia base.
- C. Provide Type A open spring vibration isolators between base and concrete housekeeping pad.
- D. Provide Type FC-2 flexible hose at discharge connection of each compressor. Use two straight lengths with a 90° pipe elbow between each to provide flexibility in all directions.

3.5 PIPING, BOILER BREECHING AND ENGINE EXHAUST ISOLATORS

- A. All piping, boiler breeching and engine exhaust, except fire standpipe systems, are included under this Section.
- B. Installation:
 - 1. Isolate piping, boiler breeching and engine exhaust outside of shafts as follows: All water, steam and glycol piping, boiler breeching and engine exhaust in machine rooms. Piping where exposed on roof. Water piping, boiler breeching and engine exhaust within 50 ft., or 100 diameters if greater than 50 ft. from connected rotating equipment and pressure reducing stations. All other piping shall be rigidly supported and provided with approved seismic restraints to maintain the piping in a captive position without excessive motion.
 - 2. All piping 2" and over located in mechanical equipment rooms, and for a minimum of fifty (50) feet or 100 pipe diameters, whichever is greater, from connection to vibrating mechanical or electrical equipment, shall be isolated from the building structure by means of noise and vibration isolation hangers, Type F.
 - 3. Horizontal suspended pipe 2" and smaller and all steam piping shall be suspended by Type E isolator with a minimum 1/4" deflection. Water pipe larger than 2" shall be supported by Type F isolator with a minimum 1", or same static deflection as isolated equipment to which pipe connects, whichever is greater.
 - 4. Horizontal pipe floor supported at slab shall be supported via Type B, with a minimum static deflection of 1" or same deflection as isolated equipment to which pipe connects, whichever is the greater.



5. Vertical riser pipe supports shall utilize Type H.
6. Vertical riser guides, if required, shall avoid direct contact of piping with building.
7. Pipe anchors, where required, shall utilize resilient pipe anchors to avoid direct contact of piping with building.
8. Pipe sway braces, where required, shall utilize two (2) neoprene elements (Type G or H to accommodate tension and compression forces).
9. Pipe extension and alignment connectors: Provide connectors at riser takeoffs, cooling and heating coils, and elsewhere as required, to accommodate thermal expansion and misalignment.
10. Adjust, as required, all isolators to eliminate all contact of the isolated rod with the hanger rod box retainer or short circuiting of the spring.

3.6 GENERAL SEISMIC RESTRAINT REQUIREMENTS

- A. All equipment whether isolated or not shall be bolted to structure to allow for minimum 1.0g of acceleration (1.5g for life safety equipment). Bolt points and diameter of inserts shall be submitted and verified as part of the contractor's submission for each piece of equipment and stamped and sealed by a Professional Licensed Engineer in the state of New York.
- B. All suspended equipment, whether isolated or not, shall be seismically restrained at four points with Type III cable restraints.
- C. Install seismic restraining system Type III taut for overhead suspended unisolated equipment, piping or ductwork, and slack with ½" cable deflection for isolated systems.
- D. Seismically restrain all piping and ductwork with center bracing or Type III restraining system in accordance with SMACNA guidelines outlined below:
 1. All schedule 10, 20, or 40 piping shall be welded or laterally braced at 40 foot intervals and at turns of more than 4 feet. Longitudinally bracing shall be supplied at 80 foot intervals. No-hub piping shall be braced at 10 foot intervals or at 40 foot intervals if 1.0g rated couplings are used.
 2. Ductwork to be braced every 30 feet and at every turn and duct run ends. Longitudinal bracing to be provided at 60 foot intervals.
- E. Seismic restraints are not required for the following:
 1. Gas piping less than 1" internal diameter.
 2. Piping in boiler and MER room that is less than 1¼" internal diameter.



3. All other piping and electrical conduit less than 2½" internal diameter.
 4. All rectangular ducts less than 6 sq. ft. in cross sectional area.
 5. All round ducts less than 28" in diameter.
 6. All piping suspended by individual hangers 12" in length or less from the point of the attachment to the duct to the bottom of the support for the hanger.
 7. All ducts suspended by hangers 12" or less in length from the point of the attachment to the duct to the bottom of the support for the hanger.
- F. Chimneys and stacks passing through floors are to be bolted at each floor level or secured above and below each floor with riser clamps or approved vibration isolation systems with seismic restraints.
- G. Chimneys and stacks running horizontally to be braced every 30 ft. with Type III restraining system.
- H. Where base anchoring is insufficient to resist seismic forces, supplementary restraining such as seismic restraint system Type III shall be used above system's center of gravity to suitably resist 'g' force levels. Vertically mounted tanks may require this additional restraint.
- I. For overhead supported equipment, overstress of the building structure must not occur. Bracing may occur from:
1. flanges of structural beams;
 2. upper or lower truss chords in bar joist construction at the panel points;
 3. cast-in-place inserts or drilled and shielded inserts in concrete structures.
- J. Each seismic restraint and snubbing device shall be installed after equipment is installed and fully operational. Each isolation mounting incorporating seismic restraint shall be adjusted to provide the minimum operating clearance in all directions to permit the operation of the equipment without objectional noise or vibration to any part of the building structure. The operating clearance for equipment seismic restraints shall not be greater than ¼". Seismic restraints must not result in short-circuiting of isolated equipment.



3.7 INSPECTION

- A. On completion of installation of all vibration isolation and seismic restraint devices herein specified, the local representative of the isolation materials manufacturer shall inspect the complete system and report in writing any installation errors, improperly selected isolation or restraint devices, or other faults that could affect the performance of the system. Contractor shall submit a report to the Commissioner, including the manufacturer's representative's final report, indicating all isolation reported as properly installed or requiring correction, and include a report by the Contractor on steps taken to properly complete the isolation work.

END OF SECTION



**Department of
Design and
Construction**

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SECTION 23 05 53

SYSTEMS IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide systems identification in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Valve Tags.
B. Piping Identification.
C. Equipment Identification.
D. Duct Identification.
E. Charts and Schedules.

1.4 SUBMITTALS

- A. Shop Drawings: Submit valve tag chart; pipe, duct and equipment labels, paint and color chart.
B. Product Data: Manufacturer's latest published data for materials, equipment and installation, including samples of valve tags, equipment identification and piping identification, showing size of lettering.
C. Maintenance Manuals: Provide valve tag charts for inclusion in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Piping identification to be in accordance with ANSI A 13.1 - 1996 (latest edition) as to sizes, color, lettering and background color.



PART 2 - PRODUCTS

2.1 VALVE TAGS

- A. Use tags 2 inch minimum diameter, fabricated of brass, stainless steel, aluminum or shatterproof plastic. Attach tags with chain, S-hook or split ring as appropriate.

2.2 PIPING IDENTIFICATION

- A. Provide color coded bands for all piping systems per ANSI-A 13.1-1996.
- B. Adhesive bands to be B350, Perma Code Film markers for indoor use and Quick-Applied mechanically affixed markers for outdoors use.

2.3 EQUIPMENT IDENTIFICATION

- A. Identify mechanical equipment by means of nameplates permanently attached to the equipment. Provide black surface, white core laminated bakelite with engraved letters. Minimum size plates 3" long by 1" wide with white letters 3/8" high. Fan powered terminals do not require nameplates.

2.4 DUCT IDENTIFICATION

- A. Stencil system number and service (supply, return, exhaust) onto ducts at strategic locations. Provide arrows to show direction of flow.

2.5 CHARTS & SCHEDULES

- A. Provide two diagrammatic charts of all piping systems showing location, numbers and types of all valves, framed for mounting. Legend to show service (steam, chilled water, etc.) and valve number. Assign numbers by floor.

2.6 MANUFACTURERS

- A. W.H. Brady
- B. Seton
- C. Marking Services Inc.
- D. Metalcraft Inc.
- E. Craftmark Inc.
- F. Or Approved Equal



PART 3 - EXECUTION

3.1 PIPING SYSTEMS

- A. Identify all piping systems with color coded bands per ANSI A13.1-1996, sharply contrasting with background. Locate bands near strategic points, such as valves, items of equipment; changes in direction, wall penetrations, capped stub out for future connection and every 40 feet of straight runs. If necessary, paint a strip background of black or white to obtain contrast.
- B. Each set of bands to consist of one (1) band on which the name of the service is printed in black letters not less than 1½" high, and two (2) bands on which is printed a black directional arrow located on each side of legend. Apply bands where they can be easily read and with their long dimension parallel to the axis of the pipe. Provide bands with backgrounds of different colors from the various service groups.
- C. All valves shall be properly tagged.
- D. Provide three schedules of all valves showing number, size, type and service of each valve, suitable for use with three ring binder. Provide separate list for each system.
- E. Drain piping serving mechanical equipment items for which the drain discharge is not visible from the equipment shall be marked in accordance with ANSI 13.1-1996 near the point of discharge indicating the item of equipment served.

3.2 EQUIPMENT

- A. Attach nameplates in a permanent manner in a location that will be clearly visible after installation is complete.
- B. Mask all labels prior to field painting of equipment. Labels that are painted over will be replaced by Contractor at no cost to the City of New York.

3.3 DUCTWORK

- A. Stenciling to be done after insulation and other duct coverings are completed.
- B. Systems on which duct identification has been covered or is otherwise not visible will not be accepted.



3.4 CHARTS & SCHEDULES

- A. Prepare valve charts in a framed mounting behind a clear covering, such as glass, for protection.
- B. All identifying numbers will correspond to those numbers as shown on Contract Documents, such as riser numbers, equipment numbering, piping and duct symbols, etc.

END OF SECTION



SECTION 23 05 93

TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide testing, adjustment and balancing for all fluid and air systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Pressure testing of new piping and new duct systems.
- B. Preliminary and final adjustment of all new fluid systems.
- C. Preliminary and final adjustment of all new air systems.
- D. Verification of required air and fluid quantities from existing systems, if applicable.
- E. Temporary pipe and duct connections, pipe caps, duct caps, tees, valves, dampers, etc. to be coordinated with all contractors.
- F. Performance testing of all HVAC systems.
- G. This section covers general duct, pipe and equipment testing. Additional specific equipment tests are covered in individual sections.
- H. Operation of mechanical systems as required for testing by other trades.

1.4 SUBMITTALS

- A. Submit the following at least six (6) months prior to the execution of testing during the shop drawing phase:
1. Complete brochure of proposed independent certified balancing firm, listing previous installations successfully balanced, length of time in business, names and qualifications of employees who will be assigned to the project, and list of instruments, equipment and elapsed time schedule to be used on the project.



2. Procedures and recording forms for testing and adjusting each system and each item of equipment.
 3. Documentation of instrumentation calibration including date of calibration.
 4. Complete test and balancing plan listing all TAB procedures. For air and fluid systems the test and balancing plan submitted must be customized and reflect the actual systems within the project.
- B. Submit the following within two (2) weeks of completion of testing and adjusting.
1. Submit six (6) certified copies of each complete testing and adjustment report to the Commissioner for review and send two (2) copies of the report to the City of New York. The Contractor shall submit individual testing and adjustment reports for each individual air distribution system, each return and exhaust system, and each pumping system within two (2) weeks after completion of the testing and adjustment of each system.
- C. Inspection Reports: List all system deficiencies found.
- D. Submit a statement of compliance or non-compliance with this specification section.

1.5 QUALITY ASSURANCE

- A. Testing
1. SMACNA - 2002 Testing, Adjusting and Balancing.
 2. ANSI/ASME B31.9 - 2008; Chapter VI Part 937.
 3. ANSI/ASME B31.1 - 2010; Power Piping Code.
 4. NYC codes.
- B. Balancing
1. AABC 2002 National Standards; Air and Hydronic.
 2. NEBB 2005 Edition of the Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems.
 3. SMACNA - 2002 Testing, Adjusting and Balancing.
- C. During the progress of the work, make tests as specified herein and as required by the City of New York, including NYC Inspection Department, or Commissioner. Tests shall be conducted by the Contractor as part of the work of this Division. Include all qualified personnel, equipment apparatus, and services required to perform the tests.



- D. Calibrate all instruments used for testing and adjusting within a period of six (6) months prior to testing and/or balancing. Certify instrument calibration.

PART 2 - PRODUCTS

2.1 PRESSURE AND TEMPERATURE SENSING TAPS

- A. Provide ½-inch pressure and temperature test plugs on the entering and leaving piping at all equipment and as indicated on the plans in order to complete the required system balancing. Coordinate with the contractor during the installation phase.

PART 3 - EXECUTION

3.1 TESTING

A. General

1. Provide a complete set of approved mechanical and electrical shop drawings and equipment and product submittals to the contractor.
2. Perform all tests required as specified herein, as well as demonstrations of operation for all equipment. Each final test to be witnessed by the Commissioner. Give a minimum of seven (7) days written notice before performing tests.
3. Install all temporary and permanent equipment and instruments required for tests, as well as additional thermometer wells, gauge and instrument connections, at no additional cost to the City of New York.
4. Perform preliminary tests and restore all leaking areas before notifying the City of New York of final tests.
5. Restore leaking areas, damage, or defects discovered during or resulting from tests or replace to a like-new condition. Remove leaky pipe joints, ductwork, etc., and replace with acceptable materials. Retest systems restored.
6. Maintain a log book of all tests, preliminary and final, showing dates, personnel, observers' initials, description of test, and test status. Provide updated log to City of New York each month throughout the construction period. Initial log submitted to include listing of all anticipated tests.
7. Testing, balancing, and adjusting will not relieve the Contractor of the warranty requirements.
8. Furnish all fuel, fluid, and electricity required in performing the testing, balancing and adjustment of mechanical systems.



9. Clean all piping and ducts before testing.
10. Use calibrated test gauges with at least 4½" diameter dial. Gauge range not to be more than three (3) times test pressure.
11. Provide and demonstrate operation of all test equipment and apparatus required for the complete testing and inspection of all systems at such time and locations as may be directed by the Commissioner.
12. When freezing is a hazard, take all precautions necessary to prevent damage. Correct any and all damage that results due to freezing at no expense to the City of New York.
13. All tests shall be successfully completed and approved prior to the application of insulation and prior to the concealment of any portion of the system being tested.

B. Piping

1. Before covering or enclosing piping of various systems, all piping must be tested tight for 4 hours. Start and coordinate testing to be completed by 4:30 PM on the day started. The maximum test pressure not to exceed 500 psig. Tests may be witnessed by the Commissioner if he so desires, and pronounced satisfactory before pressure is removed.
2. Equipment must be valved off during the test. Do not pressure test through new equipment if equipment pressure ratings cannot support the test pressure. Drain equipment and piping and protect against freeze-up anytime the ambient temperature is below freezing.
3. Mix fluid for each hydrostatic test with liquid phosphate/polymer blend, to a ratio of fifty (50) gallons of product to 10,000 gallons of fluid, or a higher concentration if recommended by the chemical manufacturer. At least sixty (60) days prior to the start of hydrostatic leak testing, submit a two (2) foot long length of the typical piping installed on the project to chemical manufacturer or approved equal, to determine the composition of the internal pipe coating. Provide injection pumps, fluid meters and coupon racks to control and monitor the concentration. After leak testing and a sufficient time period to allow the interior of the piping to be chemically coated to prevent rust formation, drain the piping system until empty.
4. Test piping within conduit prior to encasement of joints.
5. Hydrostatically test fluid piping at 1.5 times' actual maximum working pressure.
6. Refrigerant Piping: Air test at 125% of maximum operating pressure but not exceeding 150 psig for four (4) hours.



C. Ductwork

1. Maximum system leakage shall not exceed 5% of system design capacity. When testing individual segments of a total system, prorate allowable leakage as follows:

$$\text{Maximum Leakage} = \frac{(\text{Surface Area of Test Section})}{(\text{Surface Area of System})} \times (.05) \times (\text{System CFM})$$

- a. Test recording form to include above calculation. When all sections of a system have been tested, submit confirmation that the sum of individual section surface areas is equal to the total system surface area.
2. Pressure tests shall be performed with a test blower. Rig with orifice plate. Test ducts/casings with positive pressure on the discharge side of the system fan and under negative pressure on the suction side of the system fan. Include testing of flexible runouts.
3. During construction, individually test each completed riser, each completed horizontal distribution section and each field erected casing/plenum, as required below.
4. Test ductwork as follows:
 - a. Low Pressure Ductwork (From -2 to +2 inches H₂O inclusive):
 - (1) Exposed or Accessible: Visual and audible check for leaks that can be heard or felt under normal operating conditions.
 - (2) Concealed (i.e., within shafts and above sheetrock ceilings): Pressure test at 2 inches H₂O (pos. or neg. as required).
 - b. Medium Pressure Ductwork (Below -2 inches and above +2 inches H₂O): Pressure test at system pressure classification.



D. Equipment and Systems

1. Take vibration and alignment field measurements on every pump, fan and chiller over 1 HP. Readings shall include shaft alignment, equipment vibration, bearing housing vibration and foundation vibration. Building structure vibration shall be tested when directed by the Commissioner. Readings shall be made using portable IRD (or as approved) equipment capable of filtering out various unwanted frequencies. Maximum vibration at any point listed above, or where specified, shall not exceed 2 mils on air handling units and individual fans, and 2 mils on pumps, unless otherwise specified. Equipment manufacturers shall certify in writing that the field readings, which do not exceed the maximum specified, are acceptable to them.
2. Test each fluid chilling unit for refrigerant and air leaks at least two times; approximately six months after startup and at the end of the warranty period. The Contractor shall certify the condition of the refrigeration system in writing after each test. Seal any leaks detected and repeat the above test period. Use soap suds and Halide torch or electronic refrigerant detector for leak detection. Replace refrigerant and oil lost during warranty period at no cost to the City of New York.
3. Take sound level readings at twelve (12) locations in the building as selected by the Commissioner. Take the readings on an Octave Band Analyzer in a manner acceptable to the Project Acoustical Consultant and/or the Commissioner. Submit the test equipment data and reporting forms to the Commissioner for review at least three (3) months prior to the field testing. In order to reduce the ambient noise level, take the readings at night. Perform all tests in the presence of the City of New York, or the Commissioner, if they so desire.
4. When each mechanical system is complete and functional, prove the capacity and performance of each item of equipment (i.e., fans, pumps, chillers, cooling towers, boilers, heat exchangers, etc.). Operate each item of equipment for a minimum of four (4) hours and record all associated operating data every 15 minutes (i.e., temperatures, flows, pressures, amps, volts, etc.). Verify all integral and external equipment controls and safeties are in proper working order. Complete system testing and demonstration to be done for both normal and emergency modes of operation. City of New York or Commissioner, may witness final tests.
5. Assist Contractor in demonstrating to Commissioner, the proper operation of each control, monitor and alarm function of the Building Management System, and/or control system, along with all software routines. These functions and routines will be demonstrated from the front end and local panels under both normal and emergency power. Proper operation of battery back-up and downloading of software from the front end to the remote microprocessor panels will be verified. Coordinate with Contractor all final TAB readings to be incorporated into the Building Management System.



6. Demonstrate to Commissioner, the proper operation of each control, monitor and alarm function of the control system, along with all software routines. Demonstrate these functions and routines from the front end and local panels under both normal and emergency power. Verify proper operation of battery back-up and downloading of software from the front end to the remote microprocessor panels.
7. Provide operation of all mechanical equipment required for systems testing by other trades (i.e., fuel oil systems, smoke exhaust systems, etc.).

3.2 ADJUSTMENT

A. General

1. Prior to start of air balancing, take traverse readings at all connections to building systems with all downstream dampers and VAV devices in fully open position and report results to Commissioner. Provide assistance if air quantities are below that shown on drawings.
2. Prior to start of fluid balancing, take ultrasonic flow readings at all connections to building systems with all downstream valves in full flow position and report results to Commissioner. Provide assistance if fluid quantities are below that shown on drawings.
3. After the entire installation has been completed, make required adjustments to balance valves, air vents, automatic controls, pumps, air dampers, VAV boxes, air distribution devices, pressure reducing valves, fans, sheaves, etc., until performance requirements are met. Make these adjustments with equipment operating. In addition, repeat these adjustments for each of the remaining three seasons of the year. During such periods of adjustment prior to the date of acceptance of the mechanical systems, operate equipment.
4. Permanently mark the balanced position of each balancing valve and damper on the pipe or duct or insulation.

B. Fluid Balancing

1. Before any hydronic balancing work is done, install clean strainers, check proper pump rotation, proper control valve installation and operation. Verify that each system is adequately bled and vented, proper system static pressure is available to assure a full system, flow meter and check valve is properly installed. Maintain throttling devices and control valves open at this time as required and appropriate.



2. After piping systems have been installed, tested, cleaned and flushed, complete with all pumps, piping, valves, coils, and other items as herein specified, make adjustments as required to deliver the fluid volumes at each coil and piece of equipment to within 5% of design flow as shown on the Drawings, or as required to properly balance the load throughout the conditioned areas. During balancing set control for full-flow through coils. Set automatic throttling valves in the full-open position. Close the bypass port on automatic 3-way valves. Confirm proper differential pressure settings at system by-pass station.
3. Each air handling unit with multiple coils shall have the flow through each coil balanced. Make adjustments in fluid volumes in a manner satisfactory to the Commissioner. Submit detailed balancing procedure and recording forms for the Commissioner's review months prior to commencing any fluid balancing work.
4. After fluid flow is adjusted, and with the temperature controls set to produce design cooling, measure and record all data necessary to compile a complete report to demonstrate the acceptability of the various mechanical systems.
5. Record the following design requirements for pumps and pump motors from the design drawings and reviewed shop drawings:
 - a. Manufacturer, model and size.
 - b. Fluid quantity - gallons per minute.
 - c. Total head - feet of fluid.
 - d. Pump speed - revolutions per minute.
 - e. Impeller size.
 - f. Net positive suction head.
 - g. Motor horsepower and brake horsepower.
 - h. Volts, hertz, amperes and service factor at design conditions.
6. Record the following data from pumps and pump motors installed at the project:
 - a. Manufacturer, model and size.
 - b. Impeller size.
 - c. Motor horsepower, service factor and revolutions per minute.
 - d. Volts, hertz and full load amperes.



- e. Motor starter and heater size.
- f. Equipment location.
7. Record the following data for pumps and pump motors installed at the project:
 - a. Pump speed - revolutions per minute.
 - b. Total head at shutoff or dead-end discharge feet of fluid. (Plot this value on pump curve as a verification of impeller size.)
 - c. Suction, discharge and total head at final adjusted flow - in feet of fluid.
 - d. Calculate brake horsepower and show on pump curve.
 - e. Motor amperage and voltage on each phase at operating conditions.
8. Adjust flow through equipment and coils by means of pressure drop. Obtain curves from the various manufacturers indicating the relationship between flow and pressure drop through the coils and equipment. Take readings on calibrated test gauges.
9. For orifice plates record the pipe size, orifice size, flow factor, required differential pressure, final differential pressure, and calculated final flow quantity.
10. For venturi type, pitot tube, or other flow measuring devices, record the pipe size, manufacturer and size of device, and the direct reading of the differential pressure, and calculated final flow.
11. Upon completion of the fluid balance, reconcile the total heat transfer through all coils by recording the entering and leaving fluid temperatures and the entering and leaving air dry bulb and wet bulb temperatures. Adjust differential bypasses for the same pressure drop on full bypass as on full flow.
12. Do not perform adjustments until the entire system has been pressure tested, flushed and cleaned.
13. In conjunction with pump manufacturer for multiple pump, pumping systems, construct and submit system curves indicating operating point with one pump operating, two pumps operating, three pumps operating, etc.
14. Record all system pressure and temperature readings.



C. Air Balancing

1. Adjust all air systems by AABC or NEBB certified contractor acceptable to the City of New York and Commissioner.
2. Operate fan systems for as long a time as will be necessary to test air flow from openings, make necessary damper and other adjustments until even distribution is obtained, throughout the various systems, with the air quantities required at each outlet or inlet as shown on the Drawings. Make noise level measurements for the operation of mechanical equipment selected by the Commissioner in order to determine if the equipment produces excessive noise in occupied areas of the building.
3. Before any air balance work is done, test the system for duct leakage, install clean filters, check for correct fan rotation and equipment vibration, check automatic dampers for proper operation, and verify that all fire dampers are open.
4. Fans to be adjusted to deliver above system requirements to compensate for duct leakage.
5. Preliminary adjustment may be made prior to completion of systems; however, final balancing must be done with all systems completely installed and operating, including all air outlets and return grilles.
6. Record the pressure drop across the filters in air systems prior to balancing. Systems to be adjusted with clean filters.
7. Traverse main supply air ducts, using a pitot tube and manometer. Calibrate the manometer to read two (2) significant figures in all velocity pressure ranges. A main duct is defined as any of the following:
 - a. A duct serving five (5) or more outlets.
 - b. A duct serving two (2) or more branch ducts.
 - c. A duct serving a heating coil.
 - d. A zone duct from a VAV unit.
 - e. A duct emanating from a fan discharge or plenum and terminating at one or more outlets.
 - f. All supply and exhaust risers.
8. The intent of this operation is to measure by traverse the total air quantity supplied by the fan and to verify the distribution of air to zones.



9. Submit data in support of all supply fan deliveries by the following four (4) methods:
 - a. By summation of the air quantity readings at outlets.
 - b. By duct traverses of main supply ducts.
 - c. By rotating vane traverse across a filter or coil bank.
 - d. By plotting revolutions per minute and static pressure readings on the fan curve. Air density corrections must be indicated.
10. For return air and exhaust fans, the second and third methods listed above (b. & c.) can be omitted.
11. Inspect fan scrolls and remove objects or debris. Inspect coils and remove debris or obstructions. Verify that all fire dampers are open and control dampers are in their proper position.
12. Record the following design requirements for fans and fan motors from the design drawings and reviewed shop drawings:
 - a. Manufacturer, model and size.
 - b. Air quantities - cubic feet per minute.
 - c. Approximate fan speed - revolutions per minute.
 - d. Fan static pressure (total or external) - inches of fluid.
 - e. Outlet velocity - feet per minute.
 - f. Fan brake horsepower.
 - g. Motor horsepower.
 - h. Volts, hertz, amperes and service factor at design conditions.
13. Record the following data from fans and fan motors installed at the project:
 - a. Manufacturer, model and size.
 - b. Motor horsepower, service factor and revolutions per minute.
 - c. Volts, hertz, full load amperes and service factor.
 - d. Motor starter and heater size.
 - e. Equipment location.



14. Completely adjust fans and duct systems by the adjustment of sheaves, dampers, and other volume and diverting control devices, to obtain the air quantities indicated in the Contract Documents. Integral dampers in terminal outlets and inlets are not to be used for adjustment of duct branches. Adjust outside air and return air modulating dampers to admit the specified quantities of air under all cycles of operation. Adjust final air quantities within 5% of the design requirements. Balance air outlets with air pattern as shown on the Drawings.
15. Record the following test data for fans and fan motors installed at the project at final balanced conditions:
 - a. Fan speed - revolutions per minute.
 - b. Fan suction, discharge and total static pressure (external or total) - inches of fluid.
 - c. Static pressure drops across filters, dampers, coils, washers and eliminators in the supply fan casings in inches of fluid.
 - d. Motor operating amperes and voltage per phase at operating conditions.
 - e. Fan cubic feet per minute as required above.
 - f. Calculated brake horsepower.
16. Prepare single line diagrams of duct systems indicating terminal outlets identified by number. List on data sheets all such outlets denoted by the same numbers, including the outlet size, "K" factor, location, cubic feet per minute and jet velocity. Submit this data for supply, return and exhaust air systems.
17. Adjust the minimum and maximum settings on all VAV and CV boxes.
18. Adjust the outside air and return dampers to admit the required amounts of air under both summer and winter cycles. Record the outside, return and mixed air temperatures for both cycles after final adjustments.
19. Adjust the minimum, maximum, return and exhaust/spill air dampers so that the respective fans deliver the correct cubic feet per minute at all damper positions. Should the observed air quantities be less than 95% or more than 105% of the specified amount, change driving pulley ratio to make acceptable changes to obtain the specified or scheduled air quantities.



20. Balance and adjust supply air systems as follows:
- a. Systems installed with trunk ducts only, with no air outlets, to be balanced by adding a volume damper at each end of the trunk duct (minimum of two (2) dampers per system if duct is looped). Make adjustments to the air handling units as required to deliver the volume of air within 10% of design flow at the static pressure and cold air supply temperature shown on the Drawings. Remove dampers and seal or re-cap openings after reports have been accepted by Commissioner.
 - b. Systems installed with main duct capped at wall of fan room will be balanced by installing an opposed blade damper at each capped connection. Make adjustments as required to deliver the volume of air within 10% of design flow at the static pressure and cold air supply temperature shown on the Drawings. Remove dampers and re-cap openings after reports have been accepted by Commissioner.
 - c. Systems installed partially complete will be balanced by installing a volume damper in duct allocated for remaining portion of system. Make adjustments as required to deliver the volume of air within 10% of design flow at the static pressure and cold air supply temperature shown on the Drawings. Remove damper and re-cap or seal openings after reports have been accepted by Commissioner.
 - d. Balance and adjust supply air systems installed in finished areas of the building (except for areas with inaccessible ceiling construction) as follows:
 - (1) After duct systems have been installed complete with all grilles, dampers, ducts, coils, automatic temperature controls, and other items hereinafter specified, make the adjustments to the air handling units and all outlets as required to deliver the volume of air within 5% of design flow as shown on the Drawings with design cold duct temperatures. After the finished area is occupied, readjust the air volumes if required, to properly balance the cooling and heating loads throughout the conditioned areas.



- e. Balance and adjust completed supply air systems installed in areas with inaccessible ceilings as follows:
- (1) After duct systems have been installed complete with all dampers, ducts, coils, and other items hereinafter specified, except for final connection to grille or air outlet, and prior to inaccessible ceiling installation, make adjustments, as required, to deliver the volume of air at each interior and perimeter air tap proportionally within 5% of design flow as shown on the Drawings.
 - (2) After each duct system has been adjusted, securely lock each manual damper, splitter, spin-in damper, etc., with sheetmetal screws prior to installation of ceiling.
 - (3) Submit balancing reports to the Commissioner for review and comment as specified hereinafter, prior to the installation of the inaccessible ceiling. Do not conceal duct system prior to the receipt of an air balance report which has been accepted by the Commissioner for the system.
 - (4) After ceiling installation, install each air outlet with air patterns as shown on the Drawings. Make final air balance adjustment by increasing or decreasing the air handling fan powered terminal unit fan rpm.
21. The contractor shall visit the project site as often as necessary prior to the start of balancing procedures to verify that the duct systems have been properly installed complete with all grilles, dampers, ducts, coils, etc., and that the return air paths through walls, grilles, lighting fixtures, and slot diffusers are completely open and unobstructed. The contractor shall also verify that adequate access to equipment and balancing devices has been provided and that the temporary plastic coverings on the lighting fixtures used for supplying conditioned air have been removed. The contractor shall submit a written report to the Commissioner within one (1) week after each visit.
22. For balancing air outlets, use a flow hood for the air balance. The instrument to be complete with a flow hood kit complete with flow hood tops specifically designed to accurately measure the air outlets specified for this project. The flow hood's accuracy and the instrument calibration for measuring the air flow from the air distribution device specified for the project must be verified in an independent testing laboratory acceptable to the Commissioner.
23. After all miscellaneous ventilation systems have been installed complete with all duct, grilles, louvers, dampers, fans, and other items as hereinafter specified, make adjustments, as required to deliver to volumes of air, or differential static pressures in the case of the pressurization fans, at each air inlet and/or outlet within 10% of design flow.



3.3 FINAL REPORT

- A. If the work is completed during the heating season, perform the final tests of cooling equipment the following summer; if completed during the summer, perform test on heating system the following winter.
- B. After each seasonal adjustment is made, prepare a detailed report and submit to the Commissioner for approval.
- C. Demonstrate to the Commissioner and City of New York, prior to acceptance by the City of New York, that all systems and/or equipment have been balanced and adjusted properly, and that the system and/or equipment is in compliance with the Contract Documents.

END OF SECTION



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SECTION 23 09 00

INSTRUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide instruments in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Hydronic Pressure Gauges.
B. Test Plugs.
C. Air Pressure Gauges.

1.4 SUBMITTALS

- A. Shop Drawings: Submit shop drawings of instrument display boards, along with other shop or field fabricated installations.
B. Product Data: Submit manufacturer's latest published data for instrument types, materials, accessories and installation.

1.5 QUALITY ASSURANCE

- A. Instruments are to be factory calibrated for the temperature and pressure of the systems in which they are installed.
B. Instruments to be industrial quality.

PART 2 - PRODUCTS

2.1 PRESSURE AND COMPOUND GAUGES

- A. Provide gauges of the bourdon tube type with minimum 4" dial and die cast aluminum case with black enamel finish. Gages shall have safety blow-out back. The movement to be all stainless steel with Grade A phosphor bronze bourdon tube



brazed at socket and tip. Provide accuracy of the gauge within 1% of the scale range. The pointer will be the micrometer adjustment type recalibrated from the front.

- B. Pressure gauges installed at pumps shall be liquid-filled type.
- C. Provide needle-type isolation valves at each pressure gauge.
- D. Manufacturers
 - 1. Weiss
 - 2. Trerice
 - 3. Taylor
 - 4. Ashcroft
 - 5. Weksler
 - 6. Or Approved Equal

2.2 TEST PLUGS AND KITS

- A. Provide test plugs 1/2" NPT made of brass body and cap.
- B. Provide six (6) gauge kits consisting of:
 - 1. (1) 1/4" NPT pressure gauge with minimum 4" dial face with a range of 0 psi to 300 psi,
 - 2. (1) 1/4" NPT compound gauge with minimum 4" dial face with a range of - 15 psi to +30 psi,
 - 3. (2) Ball valves, (1) needle valve, (3) 1/4" coupling adaptors, (3) 1/2" x 1/4" bushings,
 - 4. (3) 3/4" x 1/4" bushings, (3) 3 foot long flexible hoses with female threaded swivel couplings, auxiliary test cock, (1) stainless steel 1" dial face stem thermometer minimum 4" long with a range of 0° to 220°F, (1) adjustable angle stainless steel stem thermometer with minimum 3" dial face with 4" stem with a range of 0° to 250°F.
 - 5. A shock resistant molded plastic case with foam inserts and carrying strap.



- C. Manufacturers
 - 1. Test Plugs
 - a. MG Piping Products
 - b. Ernst
 - c. Weksler
 - d. Texas Fairfax
 - e. Or Approved Equal
 - 2. Test Kits
 - a. Gage IT, Inc.
 - b. Tel Tru
 - c. PTC
 - d. Weksler
 - e. Weiss
 - f. Or Approved Equal

2.3 AIR PRESSURE GAUGES

- A. Magnehelic Gauge: 4" dial with frictionless magnetic movements. Gauge to operate without use of fluid. Range to be compatible with service. Accuracy $\pm 2\%$ of scale. Die cast aluminum case with clear plastic face and "O" ring seal. Diaphragm to be silicone rubber with cobalt magnet and sapphire bearings.
- B. Pressure Gauge: Low internal volume spiral/helical coil bourdon tube with solid front and rear blowout plug. "C" tubes will not be accepted. Gauges to be tapped $\frac{1}{4}$ " NPT back and bottom. Accuracy to be 2% over full range.
- C. Manufacturers
 - 1. Dwyer
 - 2. Terice
 - 3. Orange Research
 - 4. Or Approved Equal



PART 3 - EXECUTION

- 3.1 Test plugs to be provided at inlet and outlet of each water coil (including unit heaters, cabinet heaters, fan coil units, etc.).
- 3.2 Provide pressure gauges at the following locations:
 - A. Fuel oil supply and return.
 - B. Where shown on contract drawings.
- 3.3 Provide differential pressure gauges piped and mounted at an observable location in the following locations:
 - A. Fuel oil headers at pumps and generator.
- 3.4 Install recording instruments as described herein.
 - A. Install instruments flush mounted on a 10 gauge steel display panel complete with supports and braces. Submit the entire panelboard and arrangement for approval prior to fabrication.
 - B. Locate measuring instruments at the point of measurement with a signal transmitted to receiving instruments, for indicating and recording, mounted on the display panel.
 - C. Furnish ink and one year's supply of charts for each recorder.

END OF SECTION



SECTION 23 11 13

SHEET METAL, DUCTWORK AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide all ductwork required to make the various air conditioning, ventilating and heating systems complete and ready for operation in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Section Includes:
1. Single-wall rectangular ducts and fittings.
 2. Double-wall rectangular ducts and fittings.
 3. Single-wall round flat-oval ducts and fittings.
 4. Double-wall round flat-oval ducts and fittings.
 5. Sheet metal materials.
 6. Flexible connectors.
 7. Access doors in sheet metal.
 8. Turning vanes.
 9. Belt guards.
 10. Plenums and equipment casing.
 11. Auxiliary Drain pans.
 12. Wire mesh screens.
 13. Sealants and gaskets.



1.4 PERFORMANCE REQUIREMENTS

- A. Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in the "DUCT SCHEDULE" section of this submittal.
- B. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.5 SUBMITTALS

- A. Submit a line-by-line statement of compliance / non-compliance / deviation for each clause of this specification section.
- B. Certificates / Product Data
 - 1. Welding certificates.
 - 2. Prior to ductwork fabrication, submit to the Commissioner for review certifications and data on all sheet metal materials proposed for use (Mill certificates, galvanizing, etc.).
 - 3. Sealants and gaskets.
- C. Shop Standard / Details Submittal
 - 1. Submit sheet metal shop details for approval before any duct layouts are submitted for review. Shop drawings will not be acted on before shop details have been reviewed.
 - 2. Sheet metal shop details shall include:
 - a. A chart listing each ducting system to be installed on the project similar to the "DUCT SCHEDULE" section of this specification.
 - b. Joint and seam construction and sealing.
 - c. Reinforcement details and spacing.
 - d. Damper construction.
 - e. Plenum wall construction.
 - f. Access door construction.
 - g. Fitting construction.
 - h. Materials, fabrication, assembly, and spacing of hangers and supports.



D. Shop Drawings

1. Submit computer generated drawings of all ductwork drawn to a scale of 3/8" to the foot for approval. Ducting layouts shall be submitted for each individual phase of the project and for the entire completed project. Shop drawings shall include:
 - a. Ductwork plans, elevations, sections, components, and attachments to other work.
 - b. Duct layouts indicating duct system, duct sizes, configuration, duct liner, static-pressure classes, elevations, dimensions of main duct runs from building grid lines, fittings and accessories including dampers, turning vanes and access doors / panels, reinforcement and spacing, and penetrations through fire-rated and other partitions.
 - c. Equipment layouts shall be based on actual equipment being used on Project.
 - d. Hangers and supports, including methods for duct and building attachment, seismic restraints and vibration isolation. Submit plan drawings showing duct point loads to structure and supplementary steel layouts for all systems.
2. Submit drawing of location and size of sleeves for openings in floors and walls.

E. Samples

1. Submit samples of ducting and special materials, as required by the Commissioner.
2. Submit samples of sheet metal (each gauge), ducting and special materials, as required by the Commissioner.

1.6 QUALITY ASSURANCE

- A. Construct ductwork according to the pressure-velocity classifications established by SMACNA's "HVAC Duct Construction Standards - Metal and Flexible", and as called for on the duct drawings.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum," for aluminum supports.



3. AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.
- C. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-up."
- D. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."
- E. Comply with OSHA standards and requirements.

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class – but no less than 2" – unless otherwise indicated.
- B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," chapter for "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 DOUBLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. Rectangular Ducts: Fabricate ducts with indicated dimensions for the inner duct.
- B. Outer Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.



- C. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- D. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- E. Inner Duct: Minimum 0.028-inch solid sheet steel.
- F. Interstitial Insulation: Interstitial Insulation: in accordance with the ductwork insulation requirements.
- G. Formed-on Transverse Joints (Flanges): Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- H. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," chapter for "Round, Oval" based on indicated static-pressure class unless otherwise indicated.
- B. Flat-Oval Ducts: Indicated dimensions are the duct width (major dimension) and diameter of the round sides connecting the flat portions of the duct (minor dimension).
- C. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
 - 1. Transverse Joints in Ducts Larger than 60 inches in Diameter: Flanged.



- D. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- E. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
 - 1. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.
- F. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "90 Degree Tees and Laterals," and figure for "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.4 DOUBLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS

- A. Flat-Oval Ducts: Indicated dimensions are the duct width (major dimension) and diameter of the round sides connecting the flat portions of the duct (minor dimension) of the inner duct
- B. Outer Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," chapter for "Round, Oval" based on static-pressure class unless otherwise indicated.
 - 1. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
 - a. Transverse Joints in Ducts Larger than 60 inches in Diameter: Flanged.
 - 2. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
 - a. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
 - b. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.



3. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "90 Degree Tees and Laterals," and figure for "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- C. Inner Duct: Minimum 0.028-inch solid sheet steel.
- D. Interstitial Insulation: in accordance with the ductwork insulation requirements.
 1. Install spacers that position the inner duct at uniform distance from outer duct without compressing insulation.
 2. Cover insulation with polyester film complying with UL 181, Class 1.

2.5 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 1. Galvanized Coating Designation: G90.
 2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- C. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.
- D. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304 or 316, as indicated in the "DUCT SCHEDULE" section of this specification; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in the "DUCT SCHEDULE" section of this specification.
- E. Aluminum Sheets: Comply with ASTM B 209 Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.
- F. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
 1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.



- G. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.
- H. Underground Ductwork
 - 1. Underground ductwork shall be approved for underground installation.
 - 2. Plastic ducts shall be constructed of PVC having a minimum pipe stiffness of 8 psi at 5 percent deflection when tested in accordance with ASTM D 2412.
 - 3. Plastic duct fittings shall be constructed of either PVC or high-density polyethylene.
 - 4. Plastic duct and fittings shall be utilized in underground installations only.

2.6 FLEXIBLE CONNECTORS

- A. Construct flexible connectors as follows:
 - 1. Indoor low pressure systems: glass fabric double coated with neoprene.
 - 2. Medium pressure systems, high pressure systems, commercial kitchen exhaust, laboratory exhaust and all outdoor systems: glass fabric double coated with weatherproof, synthetic rubber resistant to UV rays and ozone
 - 3. Flexible connections must be suitable for the operating pressure and temperature of the system in which they are installed.

2.7 ACCESS DOORS IN SHEET METAL

- A. Access doors in ductwork:
 - 1. Where required in ductwork or casings, provide suitable latch type access doors and frames to permit inspection, operation and maintenance of apparatus concealed behind the sheet metal work.
 - 2. Provide access doors in insulated ducts of insulated double panel construction and same material as the duct.
 - 3. Provide access doors in uninsulated ducts of single panel construction equal and same material as the duct.
 - 4. Provide all access doors with sponge rubber gaskets around their entire perimeter.
 - 5. Where required in ducts carrying humid air, or grease laden air, locate access doors in the side of ducts.
 - 6. Fabricate access panels in ductwork according to SMACNA's "HVAC Duct

Sheet Metal Ductwork and Accessories

23 11 13 - 8



Construction Standards - Metal and Flexible"; figure for "Duct Access Doors and Panels," and figure for "Access Doors - Round Duct."

- B. Access doors in plenums / casing:
 - 1. Install hinged walk-in type casing access doors where required and indicated on the Drawings.
 - 2. Fabricate access panels in plenums and casing according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; figure for "Casing Access Doors - 2in," figure for "Casing Access Doors 3-10in," and table for "Plenum and Casing Access Doors."

2.8 TURNING VANES

- A. Provide curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
- B. For acoustic turning vanes, fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.
- C. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; figure for "Vaness and Vane Runners," and figure for "Vane Support in Elbows."
- D. For square elbows, use single thickness vanes for ducts up to 18 inches wide and double thickness airfoil vanes in ducts over 18 inches wide.
- E. Construct turning vanes of the same material as the ductwork in which they are installed.

2.9 BELT GUARDS

- A. Provide guards on all belt drives.
- B. Provide split type with tachometer opening at shafts fabricated from galvanized metal and braced to prevent rattling.
- C. Use solid or expanded metal on motors up to 5 horsepower.
- D. Use expanded metal on motors 7½ horsepower and up.
- E. Use angle frames on motors 25 horsepower and larger.
- F. Provide sufficient space so that sheaves can be changed to larger sizes



2.10 PLENUMS AND EQUIPMENT CASING

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," chapter for "Equipment and Casings," for acceptable materials, material thicknesses, and casing construction methods unless otherwise indicated.
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for sheet metal thickness based on indicated static-pressure class unless otherwise indicated.
- C. Fabricate casings with standing seams and angle-iron reinforcements unless otherwise indicated.
- D. Reinforce casings with galvanized-steel angles.
- E. Small plenums:
 - 1. Provide discharge and intake air plenums for connecting the fresh air intake and discharge openings to the various systems, as shown on the Drawings, of insulated double wall aluminum construction.
 - 2. All other air plenums to be single-casing construction.
- F. Large plenums:
 - 1. Provide large walk-in air plenums of insulated double-wall construction.
 - 2. Construct the casing panels of two sheets of galvanized sheet steel: the outer sheet (outdoor) solid 20 gauge, the inner sheet (mechanical room) solid 16 gauge. Use 4 inch thick fibrous glass, 6 pound per cu. ft. density insulating board between these sheets.
- G. Equipment casing:
 - 1. Provide air chambers for field assembled air supply apparatus, and as shown on the Drawings, entirely of insulated double-wall casing construction.
 - 2. Construct the casing panels of two sheets not less than 20 gauge galvanized sheet steel: the outer sheet solid, the inner sheet perforated. Use 4 inch thick fibrous glass, 6 pound per cu. ft. density insulating board between these sheets



2.11 AUXILIARY DRAIN PANS

- A. Construct drain pans of 16 gauge galvanized steel with all joints brazed. Construct pans watertight with hemmed edges.
- B. Provide auxiliary drain pans under any equipment for which a pan is shown on the Drawings, and under all horizontal air handling units, condensate producing heat exchangers, duct mounted hot water or chilled water coils located above hung ceilings or electrical equipment, piping over electrical equipment, etc.
- C. Extend the auxiliary drain pan at least 6" beyond the equipment it is serving.
- D. Drain pan shall be at least 2" high.
- E. Drain pan shall be sloped at least 0.125" per foot from the horizontal toward the drain outlet.
- F. Provide drain pipe outlet at the lowest point (s) of the drain pan with a connection size of at least 3/4", or as shown on the Drawings.
- G. Route the galvanized steel or Type "L" copper tube to the nearest equipment room floor or hub drain independent of any air handling unit drains.

2.12 WIRE MESH SCREENS

- A. Furnish and install all wire mesh screens indicated on the construction drawings.
- B. Fabricate frame of extruded aluminum with mitered reinforced corners.
- C. Provide non-rewireable frame with permanently secured screen mesh.
- D. Provide mesh of 1/2 inch square, .063 inch intercrimped aluminum wire.

2.13 SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
- B. Sealant to be water based, fast curing to a firm rubbery seal, and have gap filling properties with smooth easy caulking characteristics.
- C. Follow the manufacturer's application instructions.
- D. Solvent based sealants are permitted only for underground ductwork as well as ductwork that will be sealed during freezing conditions when a water based sealant will not be effective.



- E. Sealant Manufacturers:
 - 1. Childers CP-146
 - 2. Foster 32-19
 - 3. MEI 44-39
 - 4. Hardcast Iron-Grip 601
 - 5. Or Approved Equal
- F. Gaskets shall be Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings and where necessary to accommodate conditions arising at the building.
- B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated. Execute the Work in strict accordance with the best practices of the trade and with these Specifications.
- C. Duct sizes indicated in the Drawings for internally lined ducts are the net duct dimensions. Increase ducts in both dimensions by twice the thickness of the liner making the actual sheet metal dimension larger by thickness of the liner.
- D. Install round and flat-oval ducts in maximum practical lengths.
- E. Install ducts with fewest possible joints. Make joints and seams smooth on the inside and a neat finish on the outside. Make duct joints airtight with laps made in the direction of air flow and no flanges projecting into the air stream. Provide ducts adequately braced to prevent vibration. Provide intermediate reinforcing and/or tie rod construction where necessary.
- F. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- G. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.



- H. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- I. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- J. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- K. On horizontal ducts exhausting humid air from dishwashers, glasswashers, showers, commercial dryers, and as called for on the drawings provide pan construction with longitudinal seams at the side or on top. Provide drain pipes to indirect waste at all low points of the ductwork.
- L. Construct all ductwork exposed, or concealed in non-ventilated ceilings.
- M. All welds on welded stainless steel duct to be pickled to remove weld oxide. Passivate stainless surface after welding to remove embedded foreign material.
- N. Install duct connected grilles, registers and ceiling diffusers shown on the Drawings. Exact dimensions of openings must await approval of registers and diffusers. Submit exact locations for approval. Do not cut joints for the installation of outlets.
- O. Where possible, fabricate all ductwork in such a manner that seams and/or joints will not be cut for the installation of grilles, registers, or ceiling outlets. If cutting of seams or joints is unavoidable, properly reinforce the cut portion to original strength
- P. Wherever it may be necessary to make provision for vertical hangers of the ceiling construction passing through ducts, provide streamlined shaped sleeves around such ceiling construction hangers. Make all such streamlined sleeves airtight at top and bottom of ducts.
- Q. Do not suspend ductwork or any device, or allow work installed by any trade to be suspended from ductwork (for example: lighting conduit, lighting fixtures, piping, ceiling construction, etc.).
- R. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.
- S. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers and / or fire smoke dampers.
- T. Provide approved firestopping material around all ducts penetrating floors, walls, roofs, etc., in accordance NFPA, and Contract requirements.



- U. Provide any ductwork passing through waterproof walls or roof construction with counter flashing.
- V. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Cap openings in ducts during progress of construction tightly. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."
- W. Thoroughly clean the interior of all ductwork after installation, and prior to use. Operate all fans and remove all debris and foreign matter from the duct.
- X. Replace, without any additional cost to the contract, any ductwork or components found to be noisy after installation, with said noise resulting from faulty materials or workmanship.

3.2 INSTALLATION OF EXPOSED DUCTWORK (INDOORS)

- A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.
- B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.
- C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.
- D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.
- E. Restore or replace damaged sections and finished work that does not comply with these requirements.
- F. Coordinate painting of ductwork with the Contract requirements.

3.3 INSTALLATION OF EXPOSED DUCTWORK (OUTDOORS)

- A. Insulated Ductwork
 - 1. Provide a "watershed" installation for all insulated outdoor ductwork to prevent water pooling on top of the duct.
 - 2. Cover all insulated outdoor ductwork with an outdoor cladding product. Seal seams with butyl tape.
 - 3. Install cladding according to the manufacturer's instructions.
 - 4. Coordinate cladding color with the Commissioner.



B. Uninsulated Ductwork

1. Uninsulated outdoor ductwork shall be of the same material as indicated in the "DUCT SCHEDULE" section of this submittal for each associated system type.

3.4 CONNECTIONS

- A. Make connections to equipment with flexible connectors.
- B. Flexible connections to be approximately 6 inches long, after installation is complete securely held in place with heavy metal bands to prevent any leakage. Align ductwork and fans to be plumb prior to connection. Allow at least 1 inch of slack.
- C. Provide flexible connection in ductwork connected to the inlets and/or outlets of all air handling units, fans, etc., except fan air handling units with internal isolators and flexible fan connections. Overlap ends of fabric 2" and glue, Sewing or stapling will not be permitted. Allow at least one inch slack in all flexible connection installations to insure that no vibration is transmitted.
- D. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.5 ACCESS DOORS IN SHEET METAL

- A. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
 1. On both sides of duct coils.
 2. Upstream and downstream from duct filters.
 3. At outdoor-air intakes and mixed-air plenums.
 4. At drain pans and seals.
 5. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.
 6. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
 7. At each change in direction and at maximum 50-foot spacing.
 8. Upstream and downstream from turning vanes.
 9. Upstream or downstream from duct silencers.



10. Control devices requiring inspection.
 11. Elsewhere as indicated
- B. Install access doors with swing against duct static pressure.
 - C. Provide access doors not smaller than 18 inches by 18 inches. Ducts smaller than 18 inches are to be provided with access doors 2 inches smaller than the width by 18 inches long.
 - D. Where removable hung ceiling panels are installed below access doors, provide markers showing the access door location clearly.
 - E. Label access doors.

3.6 PLENUMS AND EQUIPMENT CASING

- A. Install casings according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- B. Seal all penetrations airtight. Cover with escutcheons and gaskets, or fill with suitable compound so there is no exposed insulation. Apply sealant to joints, connections, and mountings.
- C. Field-cut openings for pipe and conduit penetrations; insulate and seal according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- D. Support large casings on floor or foundation system. Secure and seal to base.
- E. Support components rigidly with ties, braces, brackets, and anchors of types that will maintain housing shape and prevent buckling.
- F. Small plenums:
 1. Provide standing seams with additional right angle bend and cap with No. 18 gauge galvanized "U" cap galvanized steel plenums for in-line centrifugal and axial flow fans.
 2. Provide the number of access doors as shown on the Drawings, minimum of one (1), for each sheet metal plenum.
 3. Provide drain pan construction for air intake and discharge plenums; apply two (2) coats of mastic sealant to all joints; pitch bottoms for effective drainage.



G. Large plenums and equipment casing:

1. Butt top edges of vertical panel into the bottom of the horizontal or sloping top panels with the joint fully caulked. Form the interior top and bottom edges of the casing with continuous angle, caulked where it adheres to casing. Form panels occurring at corners of casings to "L" shape so that no joint occurs at such corners. Make vertical and horizontal seams (connecting any panels) with caulked 1½ inches by 1½ inches by ½ inch angles. In addition provide necessary internal structural bracing members.
2. Caulk joints to make them airtight. Gasket the bottoms of air chambers at the curb to prevent air leakage. Provide knee braces and additional bracing for chamber roofs, as required, to prevent sagging.
3. Place longitudinal reinforcing angles on the inside of the casing in accordance with the following schedule:

Height of Side Walls or Width of Roof	Number Angles	Angle Spacing
Up to 6 feet	0	--
6 feet to 8 feet	1	Middle
8 feet to 12 feet	2	1/2 points
Over 12 feet	Variable centers	4 feet

4. Provide angle size of 1½ inches by 1½ inches by 1/8 inch to 12 feet casing length, and 1-3/4 inches by 1 3/4 inches by 3/16 inch over 12 feet casing length.
5. Size mixed air plenums for air handling units to prevent stratification across coils. Install baffles as required to maintain plus or minus 5°F temperature variation across coil face area.

3.7 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in the "DUCT SCHEDULE" section of this specification according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- B. Ductwork leakage in excess of SMACNA Standards for the seal class listed will not be acceptable. Seal ductwork and seams with an approved sealant as required to comply with this leakage requirement.
- C. Clean and dry all surfaces thoroughly prior to application.
- D. Apply with caulking gun, trowel or spatula.



- E. Join surfaces to be sealed immediately after application of sealant.
- F. Follow manufacturer's instructions carefully for application, storage and cleanup.
- G. Do not use sealant which is beyond manufacturers recommended shelf life.
- H. Underground ductwork shall be sealed with a solvent based sealant.

3.8 DUCT MOUNTED SMOKE DETECTORS

- A. Locate and install duct mounted smoke detectors in the ductwork in accordance with the manufacturer's recommendations and the requirements of NFPA.

3.9 DUCT SCHEDULE

- A. The ductwork on this project falls into classifications as indicated below. Follow SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for material gauge unless otherwise noted.

Ductwork / System	Pressure Classification "W.G."	Seal Class	Duct Material	Material Gauge
Downstream of fan-powered terminal, pinch down VAV or PRV.	+1"	A	Galvanize Sheet Steel	SMACNA
Ductwork on the discharge of air handling units, except outside air handling units.	+2"	A	Galvanized Sheet Steel	SMACNA
Outside air and toilet exhaust ductwork on the building side of the volume damper on each floor.	+2" & -2"	A	Galvanized Sheet Steel	SMACNA
Outside air makeup and exhaust duct for smoke exhaust systems.	+2" & -2"	A	Galvanized Sheet Steel	SMACNA
Outside air handling unit discharge ductwork, risers, and ductwork to the volume damper on each floor.	+3"	A	Galvanized Sheet Steel	SMACNA



Ductwork / System	Pressure Classification "W.G."	Seal Class	Duct Material	Material Gauge
Toilet exhaust ductwork, risers, and runouts to the volume damper on each floor.	-3"	A	Galvanized Sheet Steel	SMACNA

- B. Comply with the pressure class and seal class listed for the construction in each classification. Cross-break or use mechanical transverse beading on rectangular ductwork 12" and wider and install as indicated on the Drawings and as specified. Make beading at least 1/16" deep at the center of the bead and a maximum of 3/8 inch wide at the base of the bead.
- C. Elbow Configuration:
1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Rectangular Elbows."
 - a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
 - b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
 - c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Vanes and Vane Runners," and figure for "Vane Support in Elbows."
 2. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Round Duct Elbows."
 - a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," table for "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.
 - (1) Radius-to Diameter Ratio: 1.5.
 - b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
 - c. Round Elbows, 14 and Larger in Diameter: Standing seam.



D. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Branch Connection."
 - a. Rectangular Main to Rectangular Branch: 45-degree entry.
 - b. Rectangular Main to Round Branch: Spin in.
2. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "90 Degree Tees and Laterals," and figure for "Conical Tees." Saddle taps are permitted in existing duct.
 - a. Velocity 1000 fpm or Lower: 90-degree tap.
 - b. Velocity 1000 to 1500 fpm: Conical tap.
 - c. Velocity 1500 fpm or Higher: 45-degree lateral.

END OF SECTION



SECTION 23 21 23

PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide pumps in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Condensation Pump Units.

1.4 SUBMITTALS

- A. Submit manufacturer's latest data.
- B. Shop drawing submittals to indicate certified pump curves NPSH, pump performance characteristics with pump and system operating points plotted.

1.5 QUALITY ASSURANCE

- A. Select pumps to operate at or near their point of peak efficiency, allowing for operation at capacities of approximately 25% beyond design capacity. In addition, select the design impeller diameter so that the design capacity of each pump (GPM and TDH) does not exceed 85% of the capacity obtainable with maximum impeller diameter at the design speed for that model.
- B. In order to insure stable operation and to prevent any possibility of hunting, the pump curve must be continuously rising from maximum capacity up to the shutoff point.
- C. Make the entire pump assembly including, but not limited to, the casing or enclosure, suction and discharge flanges, and seals, suitable for operation with the "Pump Working Pressure" and temperatures indicated on the Drawings. For the purpose of this specification, the pump working pressure is defined as the sum of the scheduled maximum suction pressure and the maximum dynamic head at shutoff developed by the pump for pumping duty specified. Test each entire pump assembly hydrostatically at the factory at least 50 psig pressure above the pump working pressure.
- D. Perform a complete factory electric operating and sequence test, capacity performance test, and hydrostatic test for each factory assembled pumping system prior to



shipment. Include a system operating flow test from zero to 100% of design flow for the pumping unit with the specification suction and net discharge pressure conditions specified on the Drawings. Verify the accuracy of the system flow meter with an independent calibrated test flow meter. The factory operating and performance test may be witnessed by the Commissioner and the City of New York. Notify the Commissioner in writing at least three (3) weeks prior to the factory performance test. Before the pumping assembly is shipped from the factory, transmit certified factory performance test data for factory testing including flow, head, and horsepower at all flow rates on a plot of the system flow test. Certify that the pumps have been satisfactorily tested as specified hereinbefore and are in compliance with the requirements of the Contract Documents. Do not install the pumping system before the test data has been reviewed by the Commissioner

1.6 WARRANTY

- A. Warranty shall be for 1 year from date of substantial completion and shall cover replacement parts on all components.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide pressure gauge tap and cock on suction and discharge connection of each pump.
- B. Motors to be of such size that they will operate continuously without exceeding it's H.P. rating, exclusive of service factor, at design capacity and head.
- C. Provide pump casing of close grained cast iron free from blow holes, sand pockets and other detrimental defects. Liquid passageways to be smooth and contoured to permit maximum efficiency. Casing to be designed for working pressure as scheduled and to be hydrostatically tested at 150% of the maximum working pressure. Suction and discharge flanges to be drilled to ANSI standards for operating pressure specified.
- D. Provide on the mechanical seals for each open system water pump, impurity eliminator constructed throughout of 316 stainless steel and suited to the system scheduled working pressure. Factory pipe the impurity eliminator and provide with isolating ball valves and valved bypass piping. Piping to be Schedule 40 galvanized steel pipe.
- E. The impeller supplied for the specified conditions to limit shaft deflection at the seal to no more than .002 inches.

2.2 CONDENSATION PUMP UNITS

- A. Provide ½ gallon nylon tank with float operated switch.
- B. Pump to be cast aluminum with epoxy coating and ¼" MNPT discharge connection.



- C. Motor to be 120 volt, 1/40 horsepower.
- D. Overall height to be maximum of 6".

PART 3 - EXECUTION

3.1 GENERAL

- A. Rigidly bolt the pump base to the vibration isolation base and fill with concrete or grout after installation on the isolation base. After final alignment, dowel all pumps and motors 25 horsepower and over to the base. All vertically mounted pumps to be doweled into place after final alignment.
- B. The contractor to be responsible for aligning in the field prior to startup of flexibly coupled pumps. Alignment to be with dial indicator with accuracy of plus or minus .002 inch. The contractor must submit a written report certifying that the alignment work has been performed by his personnel and that the pumps are ready for operation.
- C. Pumps to be leveled up on tapered steel wedges in such manner to permit a minimum of 3/4 inch of grout between the pump base and the top of the concrete base.
- D. Pump motors are to be covered during construction period and if the motor has to be run the Contractor will be responsible to make sure that the area in which the motor is running is clean.
- E. The Contractor to provide lifting eye ring above each vertical in-line pump to facilitate removal of motors for restoration.
- F. Paint the entire assembly of each pump with two coats of enamel after shop testing.
- G. All operating controls and safety devices must be demonstrated after each system has been installed and put into operation at the project site.
- H. Provide drains for bases and stuffing boxes piped to discharge into floor drains.
- I. Provide air cock and drain connection on horizontal pump casings.
- J. Provide pumps with bronze mesh start-up strainers. The Contractor to remove fine mesh strainer after system has been flushed.

END OF SECTION



**Department of
Design and
Construction**

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SECTION 23 25 00

PIPE CLEANING AND CHEMICAL WATER TREATMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide flushing, cleaning and chemical treatment program in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Pipe Cleaning.

1.4 SUBMITTALS

- A. Submit shop drawings listing chemicals and services provided for all systems.
- B. Provide written report containing log and procedure of system cleaning, giving times, dates, problems encountered and condition of water.

1.5 QUALITY ASSURANCE

- A. Retain a chemical company, from approved list, to provide water treatment, feed equipment, testing equipment and chemicals for the systems as defined herein and as may be required to maintain the integrity of the piping systems and mechanical equipment.
- B. The water treatment chemical and service supplier must be a recognized specialist, active in the field of industrial water treatment for at least three (3) years, whose major business is in the field of water treatment, and who has full time service personnel within the trading area of the job site. Laboratory facilities must be available.
- C. Furnish and install all equipment and material on this project in accordance with the requirements of the contract, suitable for its intended use on this project, approved by the U.S. Environmental Protection Agency (EPA), and local Department of Environmental Protection, and so certified by the manufacturer.



PART 2 - PRODUCTS

2.1 PIPE CLEANING

- A. Furnish all required pipe cleaning chemicals, chemical feed equipment, materials, and labor necessary to clean the piping as herein specified. In addition, permanently install necessary chemical injection fittings complete with stop valves and coupon racks, etc.
- B. Provide a pre-startup non-foaming, liquid detergent dispersant cleaner for cleaning of all systems to remove oil and foreign matter from the piping and equipment prior to the final filling of the systems. Use a chemical that is not injurious to persons, piping, pipe joint compounds, packings, coils, valves, pumps and their mechanical seals, tubes or other parts of the system.
- C. Furnish instructions dictating the quantities of the cleaner to use, methods and duration of the operation.

2.2 MANUFACTURERS

- A. Water treatment program to be provided and maintained by:
 - 1. Nalco
 - 2. Metropolitan Refining Co.
 - 3. Hayes-Trane, Mogul
 - 4. Tenco.
 - 5. Or Approved Equal

PART 3 - EXECUTION

3.1 GENERAL

- A. Install all equipment, chemicals, water devices, etc. in accordance with water treatment specialist's directions and drawings, for all systems previously noted. Contractor will provide 1-inch taps to bring system water to desired locations. Minimum 2 on each main supply and return on closed loop systems. Minimum 4 on each main supply and return on open loop systems.
- B. Installation and startup shall be supervised by factory representatives of the equipment manufacturer and chemical manufacturer.



- C. Shipping containers shall be disposed of or refilled off the premises at no additional cost.

3.2 PRELIMINARY CLEANING

- A. Clean new piping internally by flushing prior to the application of pressure tests, and before the chemical cleanout procedures specified herein. Provide temporary strainers at the inlet to the chilled water, condenser water, and hot water pumps before the start of cleaning procedures.
- B. Block off and isolate circulating pumps, cooling coils, heating coils, heat exchangers, and steam traps during the preliminary flushing and draining process.
- C. Provide temporary by-passes to fully circulate through all branch piping.

3.3 PIPE CLEANING

A. All Piping Systems

- 1. Provide temporary connections with valves to fill and drain the piping and equipment after completion of the chemical cleanout procedure. Provide temporary blind flanges and/or caps to isolate the piping and equipment.
- 2. Provide temporary piping connections, valves, strainers, bypasses, and blank connections where required to clean out systems.
- 3. After each hydrostatic leak testing procedure is complete, drain the system until empty. The piping systems are internally chemically treated and protected during the hydrostatic testing procedure. Thoroughly clean the piping and flush as follows:
 - a. Cleaning will not take place more than 14 days prior to startup. Give the chemical manufacturer's representative at least 30 days notice prior to startup.
 - b. Prior to the start of the chemical cleaning procedure submit three - two (2) foot lengths of the piping installed on this project to the chemical manufacturer for analysis of the interior coating on the piping.
 - c. Before the chemical cleaning procedure is begun, install in each closed recirculating water system a temporary skid mounted portable side stream filtering system. The filtering assembly shall have 6" flanged connections and multiple cartridge filters capable of at least 600 gpm, an integral Barco type flow venturi, and be pressure rated for the system to which it is connected. Install the filter cartridges and change out until the system is clean. Initially provide twenty (20) micron cartridges, the intermediate set five (5) microns, and the final set one (1) micron.



- d. Add chemical pipe cleaning compound and corrosion inhibitor as recommended by the chemical manufacturer's representative to the system simultaneously with the filling of the system.
- e. Circulate the cleaning compounds in the system for the time period specified by the chemical manufacturer.
- f. Drain the system until empty from its lowest point.
- g. Fill the system again with fresh water and flush thoroughly until clean water is obtained. (Maintain continuous blowdown and make-up as required during flushing operation). Use a one (1) micron cartridge type strainer element at end of drain hose to confirm that discharge water is free of foreign material.
- h. The cleaning and flushing procedure must be approved in writing by the chemical manufacturer. The chemical manufacturer's representative shall supervise and certify in writing the cleaning and flushing of the piping systems. The Contractor shall provide and install injection pumps, water meters, and coupon racks to control and monitor the cleaning process.

END OF SECTION



SECTION 23 26 00

WATER SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide water specialties in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Air Vents.
B. Relief Valves.
C. Strainers.

1.4 SUBMITTALS

- A. Shop Drawings: Submit shop drawings prior to manufacture. Do not proceed with fabrication of equipment until fully approved shop drawings have been returned.
B. Product Data: Submit manufacturer's latest published data indicating rating data, catalog cuts, model numbers, dimensional information, and pressure drops.

1.5 QUALITY ASSURANCE

- A. Comply with all governing codes and all regulations.
B. Comply with the applicable requirements of ASME, ANSI, U.L., ASTM and National Electric Code.

PART 2 - PRODUCTS

2.1 AIR VENTS

- A. Provide air vents with 3/4" IPS inlet connection and 3/8" outlet, suitable for the system and for the system working pressure and temperature. Design vents to eliminate air from the system automatically without permitting the passage of fluid. Construct vents of brass body, copper float and stainless steel valve parts.



- B. Manufacturers
 - 1. Bell & Gossett
 - 2. Sarco
 - 3. Hoffman
 - 4. Amtrol
 - 5. Armstrong
 - 6. Or Approved Equal

2.2 RELIEF VALVES

- A. Provide diaphragm operated safety relief valve, ASME labeled, for relieving pressure. Refer to Drawings for pressure rating of valve and relief setting. Discharge to be through NPT connection.
- B. Provide valve with a low blow-down differential constructed of bronze or iron body. The valve seat and all moving parts exposed to fluid will be of non-ferrous material.
- C. Manufacturers
 - 1. Bell & Gossett
 - 2. Amtrol
 - 3. Armstrong
 - 4. McDonnell & Miller
 - 5. Kunkle
 - 6. Or Approved Equal

2.3 STRAINERS

- A. Provide basket "Y" pattern iron body strainers for the pressure ratings as described herein. Strainers to be self-cleaning with screen free area a minimum of three times the inlet pipe area. Provide strainer basket cleanout cap with tapping to permit connecting of blow-down valve.
- B. The following model are provided to establish a minimum standard:
 - 1. 150 psig up to 2" - "Y" pattern, with 20 mesh stainless steel screen with screw ends.



2. 150 psig 2½" to 12" - "Y" pattern, with .125" perforations, stainless steel screen, flanged ends.

C. Manufacturers

1. Sarco
2. Hoffman
3. Crane
4. Zurn
5. Or Approved Equal

PART 3 - EXECUTION

- 3.1 Provide automatic air vents at high points of all piping and as required for removal of air from the system using ¾" steel pipe suitable for the pressure service between the main pipe and inlet. Provide ⅜" OD hard drawn type I copper tubing from vent outlet for overflow in case of defective action. Copper tubing shall run into a suitable drain. When vents are located above hung ceilings, connect all vent drains to a common drain main and pipe to nearest slop sink or floor drain. Provide ¾" stop valve in the inlet line for servicing of automatic air vent. Manual vents may be substituted for automatic vents, at system high points, only as directed by the Commissioner.
- 3.2 A ¼" vent line from each air vent to nearest floor drain, or as directed, to suit job conditions. At Commissioner's discretion, provide soft temper copper tube pigtail on manual vents, in lieu of ¼" vent line, so that vent can be discharged into a bucket.
- 3.3 Install relief valves in upright position with discharge piped to nearest floor drain.
- 3.4 STRAINER INSTALLATION
 - A. On open systems, install strainers immediately upstream of each automatic control valve with the same size as the inlet pipe indicated on the drawings, not reduced size serving the control valve.
 - B. Provide approved valved dirt blowout extensions on each strainer. Locate each blowout valve at hand-height.
 - C. Clean the strainers as necessary until accepted by Commissioner.
 - D. Provide temporary strainer in the suction line of each pump during construction, testing and balancing. Replace with permanent strainers after acceptance by Commissioner.



- E. Minimum strainer body at pump inlet connections: 3 inch.
 - F. Prior to installation, disassemble strainer, coat with anti-seize compound and reassemble.
 - G. Install strainers with ample space for basket removal. Where shown on the Drawings, provide quick opening 1" blow-off valve with hose bibb end.
- 3.5 Install suction diffusers on pump inlets with ample space for basket removal. Where pumps are mounted on inertia pads, suction diffuser will be supported with steel pipe section on inertia pad. All other installations, the suction diffuser will be supported by steel pipe section and a neoprene pad 1" thick. Remove start-up strainer after start-up and pipe cleaning has been accepted by Commissioner.

END OF SECTION



SECTION 23 33 13

DAMPERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide dampers in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Combination Fire/Smoke Dampers.
B. Volume Dampers.
C. Splitter Dampers.
D. Backdraft Dampers.
E. Automatic Damper Installation.

1.4 SUBMITTALS

- A. Submit complete manufacturers data on all dampers required by this section, including sizes, location, quantity, and construction details.
B. Submit samples of dampers as requested by the Commissioner.

1.5 QUALITY ASSURANCE

- A. Fabrication testing and installation to be in compliance with U.L., and NFPA. Fire dampers to be U.L. labeled for 1½ or 3 hour rating as indicated on the Drawings. Refer to Contract drawings for fire ratings of slabs and partitions being penetrated.
B. Comply with Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Details and details as shown on the Drawings.



PART 2 - PRODUCTS

2.1 COMBINATION FIRE/SMOKE DAMPERS

- A. Provide combination fire/smoke dampers as shown on the Drawings in ducts piercing fire rated walls and floors, and where shown on the Drawings.
- B. Provide normally closed dampers that are electrically operated. Provide factory-mounted U.L. approved actuators, relays and damper position switches.
- C. Dampers to be of opposed multi-blade construction and classified in accordance with U.L. Standard 555 and 555S in all respects including size limitations. Use Class 1 dampers, with maximum leakage of 4 cfm/sq.ft., in ducts with velocities at or over 2000 FPM, and Class 2 dampers, with maximum leakage of 10 cfm/sq.ft., in ducts with velocities under 2000 FPM, unless noted otherwise on the Drawings. Minimum size Class 1 damper, 12 x 12. Minimum size Class 2 damper, 9 x 9.
- D. Damper construction to be minimum 16 gauge galvanized steel frame and blades. Side seal to be Type 304 flexible stainless steel with bronze or stainless steel shaft bearings in end plate. Damper linkage to be outside air stream.
- E. Provide dampers designated as "FSD-FL" with a fusible link which will close and lock damper on increased air temperature over 165°F 212°F.
- F. Provide dampers designated as "FSD" and "FSD-3" with an electrically resettable link which will close and lock damper on increased air temperature over 165°F. The link to be manually resettable at the damper linkage without need of link replacement. Provide damper position indicator external of damper.
- G. Provide dampers designated as "FSD-HS" and "FSD-HS3" as normally closed and provided with a means of automatically opening dampers remotely from the Fire Command Center when the air temperature is below the damper linkage degradation temperature of 250°F 350°F. This will be accomplished by
 - 1. a thermal link which will disengage the damper actuator at or above the degradation temperature of the damper. The release of the link will cause the damper to close and lock until the link has cooled to below the degradation temperature. Activation of the actuator will re-engage the damper linkage in this situation.

OR

- 2. a dual heat sensor, one set at 160°F and one set at degradation temperature. The first sensor will be bypassed on temperatures below the degradation temperature, on a signal from the Fire Command Center. The second sensor will be in series with this signal and prevent damper opening if temperatures exceed the damper degradation temperature. Provide dampers with position indicator switches to provide remote status of open or closed positions.



- H. Provide dampers designated as "FSD-RA" as normally open and provided with a means of maintaining damper closed during "normal" situations. Provide means to automatically open dampers remotely from the fire command center, or as described in the controls specification.
- I. Manufacturers
 - 1. Ruskin
 - a. Model FSD35 (Class 2)
 - b. Model FSD60 (Class 1)
 - c. Model FSD31 (3 hour)
 - 2. Imperial
 - a. Model 770 (FSD Class 2 only)
 - b. Model 710 (FSD-HS or FSD Class 2 only)
 - 3. Nailor-Hart
 - 4. Air Balance
 - 5. Arlan
 - 6. Or Approved Equal

2.2 VOLUME DAMPERS

- A. Provide volume dampers as shown on the Drawings and as required for proper balancing and distribution of air, in the various branches of the ductwork for use in balancing the system. Dampers to be installed separately and independently of the registers hereinafter specified to be set behind supply, return and exhaust air grilles. Provide multi-blade dampers in ducts above 24 inches in width or 16 inches in height. Coordinate with the air balancing subtrade specialist and provide all additional dampers required for proper air balance.
- B. Provide volume dampers of the quadrant type, of heavy construction, pivoted to turn easily and provided with approved operating and locking devices mounted on outside of the duct in an accessible place.
- C. For all volume dampers located above inaccessible ceilings, provide remote cable operators. Complete with fastening device and hex key operator.



2.3 SPLITTER DAMPERS

- A. Provide SMACNA Standard splitter dampers for ductwork smaller than 28 inches in width.

2.4 BACKDRAFT DAMPERS

- A. Provide balanced, tight closure, 1/8-inch thick aluminum backdraft dampers of the self-operating type where indicated on the Drawings. Fabricate damper frames from extruded aluminum with mitered corners. Blades to be extruded aluminum with extruded vinyl edge seals. Blade/frame assembly to be weather resistant with blades overlapping the frame. Damper bearings to be bronze oilite nylon or cyclohex. Provide bird screen over opening.

- B. Manufacturers

- 1. Ruskin
- 2. Prefco
- 3. Or Approved Equal

2.5 AUTOMATIC DAMPER

- A. Install all automatic dampers.

PART 3 - EXECUTION

3.1 FIRE DAMPERS AND FIRE/SMOKE DAMPERS

- A. Provide conveniently located access doors, of ample size for resetting the dampers. Duct mounted grilles, registers or diffusers can be used for access as long as such access is readily available as determined by the Commissioner.
- B. Galvanize or paint with one coat of rust inhibiting paint the entire fire damper assembly before installation.
- C. In the open position with damper shutter stored, provide 95 percent free area.
- D. All actuators of automatic fire dampers (FD-H) and combination fire/smoke dampers (FSD) are connected by the Contractor to the controlling device. The Contractor will provide all wiring, conduit pneumatic tubing, circuit protective devices, etc., as necessary to meet this requirement.
- E. Fire/smoke dampers designated as FSD-HS will be installed in ducts and penetrations of rated walls and floors which are part of a smoke control and/or evacuation system.



These dampers may be controlled during normal operation by the A.T.C. BMS system; however, during a smoke or fire emergency, these dampers will be openable from the Fire Command Center.

- F. Design dampers incorporating multiple sections in such a way that the actuators are readily accessible. Coordinate locations so as not to be necessary to remove damper sections, structural, or other fixtures, to facilitate removal of damper motors. Provide access doors where necessary to meet this requirement. In particular, ensure that where in-air stream actuators are provided, they are readily accessible.
- G. Do not install Class 1 fire/smoke or smoke dampers in ducts with any dimension smaller than 12". Expand duct to 12" prior to installation. For Class 2 dampers, the minimum dimension is 9".

3.2 ALL DAMPERS

- A. Mount dampers plumb and level. Provide additional duct bracing and supports to properly support dampers.
 - B. Provide duct access doors for internal access to all fire dampers, combination fire/smoke dampers, smoke dampers, automatic dampers, and backdraft dampers.
 - C. Damper construction to be similar to that of the ductwork to which it connects (i.e., galvanized to galvanized, stainless steel to stainless steel).
- 3.3 Provide on all dampers, extractors, etc. mounted on externally insulated ductwork, 16 gauge elevated platform at least 1/8" higher than the thickness of the insulation. Provide damper shaft with bearing mounted on ductwork within elevated platform

END OF SECTION



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SECTION 23 51 00

VENTS, STACKS AND BREECHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide vents, stacks and breeching in accordance with the contract documents.

1.3 WORK INCLUDED

- A. Gas Vent – Type 'B'
B. Insulated Chimney Stack.
C. Breeching.

1.4 SUBMITTALS

- A. Submit manufacturer's data on materials, pressure drops and installation recommendations.
B. Submit drawings indicating assembly and support of all sections.

1.5 QUALITY ASSURANCE

- A. All vents, stacks and breeching to be U.L. listed.

PART 2 - PRODUCTS

2.1 GENERAL

2.2 GAS VENT – TYPE 'B'

- A. Provide Type 'B' gas vents of double wall construction with outer shell of G90 galvanized steel minimum .018" and aluminum inner liner minimum .012".



- B. Air space between inner and outer liner to be minimum $\frac{1}{4}$ " on sizes up to 8" diameter, $\frac{1}{2}$ " on 10" to 16" and 1" over 16".
- C. Joining of sections shall be twist lock up to 16" diameter and secured with sheetmetal screws on sizes over 16".

2.3 INSULATED CHIMNEY STACK

- A. Provide insulated chimney stack of double wall construction with 1" insulation.
- B. All chimney sections except floor supports, shall be cast in (26 gauge aluminized steel jackets with riveted seams) (11 gauge galvanized steel jackets)($\frac{1}{4}$ " black steel jackets with prime paint). The calcium aluminate cement bonded insulating refractory shall be capable of withstanding up to 1800°F continuous firing with intermittent firing to 2000°F.
- C. The manufacturer shall furnish floor support sections where required. The floor support section shall be factory-built with an 11 gauge or heavier jacket and refractory lined. Installation shall be made with floor support brackets welded to the jacket and attached to the floor as recommended by the manufacturer. A frictional type floor support device is not acceptable. Installation shall allow for $\frac{1}{2}$ " expansion.
- D. All chimney sections shall be joined with silicone sealant supplied by the manufacturer. Acid resistant joint cement shall be used for flue gas temperatures over 600°F.

2.4 BREECHING

- A. Provide a factory-built refractory lined breeching as from the appliances to the chimney.
- B. The breeching manufacturer shall furnish all items which form a part of the assembly, including tee sections, straight section, sections with access and cleanout doors, increasers, elbows and sampling ports as indicated on drawings.
- C. All breeching sections shall be cast on 11 gauge galvanized steel jacket with welded seams. Expansion joints shall be provided as required by the manufacturer utilizing the male and female expansion joint provided by the manufacturer. All section joints other than expansion joints shall be joined with silicone sealant supplied by the manufacturer and welded with a continuous weld. Acid resistant joint cement shall be used for flue gas temperature above 600°F. The insulating refractory shall be capable of withstanding temperatures associated with Medium Heat Chimneys.
- D. The breeching shall be supported with hanger bands provided by the manufacturer and installed in accordance with the manufacturer's recommendations.



2.5 MANUFACTURERS

- A. Jeremias
- B. Van Packer
- C. Metalbestos
- D. Shebler
- E. Or Approved Equal

PART 3 - EXECUTION

- 3.1 The chimney shall be supported on a foundation of masonry or reinforced concrete or other non-combustible material having a fire-resistance rating of not less than three hours. The base of the chimney shall be secured to prevent movement of the chimney and anchor lugs should be used for this purpose whenever possible.
- 3.2 Make sure the sections are properly aligned. The joint between the sections should be sealed with joint cement and the sections must be secured one to another by drawbands.
- 3.3 Install a cleanout section in the chimney assembly but not above the chimney inlet.
- 3.4 Provide a minimum clearance to non-combustible construction for maintenance and inspection purposes as follows: for sizes through 18" I.D. 2" min., for sizes over 18" I.D. 4" min.
- 3.5 Each chimney must be guyed at least once above its fixed base if its height is more than 10 ft. The distance between gus should not exceed 10 ft.
- 3.6 Those portions of a chimney installed within a building and not subjected to windload or other forces, may have a maximum stabilizer spacing of 35 ft. for chimney sizes through 18" I.D. and 40 ft. for chimney sizes through 60" I.D.

END OF SECTION



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SECTION 23 52 10

PIPING AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. Provide piping and accessories in accordance with the Contract Documents.

1.2 SUMMARY

- A. Pipe.
- B. Fittings.
- C. Unions and Couplings.
- D. Escutcheons.
- E. Sleeves.
- F. Welding Procedures.

1.3 DEFINITIONS

- A. No definitions are included in this section.

1.4 PERFORMANCE REQUIREMENTS

- A. Piping and piping auxiliary components shall meet or exceed the performance requirements specified in this specification section.

1.5 SUBMITTALS

- A. Submit AutoCAD computer generated shop drawings indicating anchoring details, anchor points, guide details, etc.
- B. Submit AutoCAD computer generated drawings of location and size of sleeves for openings in floors and walls



- C. Submit AutoCAD computer generated detailed piping layouts at 3/8" = 1'-0" scale for approval. Piping layouts shall be submitted for each individual construction phase, and for the entire completed project.
- D. Submit manufacturer's data for hangers and fittings.
- E. Submit dimensioned drawings to the Commissioner for approval showing pipe penetrations through core walls, slabs and other structural elements, anchor and guide locations, etc.
- F. Submit a schedule for pipe fittings.
- G. Submit a schedule for pipe sleeves.
- H. Submit a set of welding procedures for each pipe service.
- I. Submit a list of pipe welders proposed for all shop and field welding.
- J. Submit mill certificates for piping and fittings.
- K. Submit an overall piping schematic drawing (similar to a riser or isometric diagram) showing entire installed system.
- L. Submit plan drawings showing piping point loads to structure and supplementary steel layouts for all systems.
- M. Submit a line-by-line statement of compliance or non-compliance with this specification section.

1.6 DESCRIPTION

- A. Provide piping and accessories in accordance with the Contract Documents.

1.7 WORK INCLUDED

- A. Pipe.
- B. Fittings.
- C. Unions and Couplings.
- D. Escutcheons.
- E. Sleeves.
- F. Welding Procedures.



1.8 QUALITY ASSURANCE

- A. All piping work to conform to the latest edition of the appropriate ANSI Code for Pressure Piping and Power Piping, including latest amendments.
- B. Employ only skilled welders, each holding a currently active certificate, dated within 12 months, from a recognized testing laboratory, indicating satisfactory welding test results per the American Welding Association or ASME Boiler and Unfired Pressure Vessel Code, Section IX, Welding Qualifications. Retest is required if welder has not performed welding for a period of 90 days. Maintain copies of certificates at the job site. Non-certified welders shall not be employed.
- C. The piping shown on the Drawings is indicated schematically to show the general distribution and system configuration. Coordinate with the work of other Sections and Divisions of the Specifications so as to provide a complete system, including approved rerouting, horizontal and vertical offsets, etc., to make the piping distribution fit within the confines of shafts, ceiling spaces, chases, equipment rooms, etc., all to the satisfaction of, or as directed by, the Commissioner.
- D. Test steel pipe in accordance with the latest edition of the ASME standard for welded steel pipe under B31.9.

PART 2 - PRODUCTS

2.1 PIPING

- A. Piping, fittings and accessories to be suitable for the pressure and temperatures of the service. Ascertain system working pressure and provide piping accordingly, based on the systems to be tested at 150 percent of maximum system working pressure.
- B. Galvanizing: Hot process inside and outside of pipe with zinc coating, minimum 3 oz. per sq. ft.
- C. For butt-welded piping, bevel ends as specified under "Welding of Piping". For screwed joint connections, ream cut ends of pipe to full diameter. Socket welded piping shall only be permitted for 1-1/2 inches and smaller. Ends shall be without burrs or other inward projections at the cut ends.
- D. All steel pipe is ERW or seamless type ASTM A-53, Grade B, unless noted otherwise. Dimensions and weights of steel pipe to conform to ANSI Standard B16.10.
- E. All other piping shall conform to the latest edition of ANSI B31.9 Code for pressure and power piping, including latest amendments.
- F. For welded pipe, fittings shall be welding fittings and all pipe flanges shall be welding neck type.



- G. Copper pipe to be hard drawn conforming to ASTM B-88.
- H. Refrigerant tubing shall be cleaned and dehydrated at the factory and shipped sealed with a holding charge of nitrogen.

2.2 PIPE FITTINGS

- A. Comply with latest edition of ANSI B16.3, B16.5, B16.9 and B16.11 standards.
- B. Provide steel elbows of long radius pattern.
- C. Fittings to be of the same schedule (weight) as the pipe to which it will be welded. Submit cut samples for approval if directed. Provide fittings which maintain full wall thickness throughout, ample radius and fillets, and proper bevels or shoulders at ends.
- D. Provide carbon steel welding flanges at all flanged valves and equipment, and as required for union connections. Flanges to be either slip-on type, bored to match diameter of pipe and front and back welded thereto, or welding neck pattern. Use flanges with a working pressure equal to 150 psi, or a minimum of 150 percent of the maximum system working pressure. Flanges for high pressure service to be 300 psi rating. High pressure service as relates to piping, fittings, valves and accessories is defined under these Contract Documents at an operating pressure of 15 psig or higher.
- E. Provide cadmium plated or galvanized machine bolts with heavy pattern semi-finished hexagonal steel nuts to join flanges. Use studs threaded both ends where necessary to facilitate removal of valves or disassemble flanged fittings. All bolts used shall be "B-7" bolts plus studs plus threaded rods, using "2H" nuts.
- F. Provide 1/16 inch thick, non-asbestos gaskets between flanges made of compressed sheet on piping.
- G. Use tape on male threads of screwed pipe (female).
- H. Screwed fittings to be inside threaded with threads cut clean and true.
- I. Copper fittings to be brazed fittings conforming to ASTM B16.5, B16.18 and B16.22.
- J. Branch piping connections for all service piping to utilize tee fittings, reduced elbows, or shaped nipples only. No Weld-O-Lets, Thread-O-Lets or "stab-in" connections are permitted.
- K. Branch piping connections for service piping shall utilize fittings, , or shaped nipples only. No "Stab-in" connections are permitted.
- L. Provide reducing/increasing long radius elbows at pump inlet and outlet connections.



2.3 UNIONS AND COUPLINGS

- A. Provide unions where required for the removal of equipment. For piping 3" and smaller, use ground joint type of malleable iron with brass seats for iron pipe, and made of brass for brass pipe and copper tubing. For piping 4" and larger use 150 psi forged steel slip-on flanges for ferrous piping and bronze flanges for copper piping.
- B. Insulating Coupling Type: At each joint between steel or zinc (galvanized) and copper; up to 2" size, "Dielectric Union"; larger sizes, Capitol Series FG, flange type with insulator spacers and washers.

2.4 REFRIGERANT PIPING AND FITTING SCHEDULE

- A. Piping:
 - 1. DHP Copper Tubing, ACR Cleaned and Capped.
- B. Fittings:
 - 1. ANSI B16.22 Wrought Copper, ACR Cleaned and Capped.
- C. Flanges:
 - 1. 125# Sweat Bronze Companion Flange ASTM B584 or Unions.
- D. Joints:
 - 1. Brazed with bag silver filler metal.
- E. Branch Connections:
 - 1. Will be made with Tee Fittings.
- F. Bolts and Nuts:
 - 1. ASTM A307 Grade B7 Bolts, Grade 2H Nuts
- G. Gaskets:
 - 1. Compressed fiber gasket
 - 2. Isolation gasket sets where applicable.

2.5 DIESEL ENGINE EXHAUST PIPING AND FITTING SCHEDULE

- A. Piping:
 - 1. 12" and larger will be Standard Weight A 53 Gr B ERW Pipe, Black Steel.



2. 10" and smaller will be Schedule 40 A 53 Gr B ERW Pipe, Black Steel.
- B. Fittings:
1. 2 ½" and larger will be weld fittings same schedule weight as the pipe to which it will be welded. ANSI B 16.9 ASTM A-234.
 2. 2" and smaller will be screwed cast iron fittings 125#.
- C. Flanges:
1. 2 ½" and larger will be 150# Weld Neck or Slip On Flanges. ANSI B 16.5 ASTM 105.
 2. Flat face flanges will be used when bolting to equipment with cast iron casings.
- D. Joints:
1. 2 ½" and larger can be welded or flanged at the contractors option.
 2. 2" and smaller will be screwed.
- E. Branch Connections:
1. Where applicable branch connections to steel pipe will be made with tees, wolets, tolets, solets, or ½ couplings.
- F. Bolts and Nuts:
1. ASTM A307 Grade B7 bolts, Grade 2H Nuts
- G. Gaskets:
1. Compressed fiber gasket (Suitable for 1200°F)

2.6 FUEL OIL #2 PIPING AND FITTING SCHEDULE

- A. Piping:
1. 12" and larger will be Standard Weight A53 Gr B Seamless Pipe, Black Steel.
 2. 4"-10" and smaller will be Schedule 40 A 53 Gr B Seamless Pipe, Black Steel.
 3. 3" and smaller will be schedule 80 A53 Gr B Seamless Pipe, Black Steel
 4. Outdoor, direct-bury, all sizes shall be A53 Gr B Seamless Pipe, Black Steel, Schedule according to sizes above and be pre-engineered, pre-insulated, secondary containment type pipe.



B. Fittings:

1. 1 1/2" and larger will be weld fittings same schedule weight as the pipe to which it will be welded. ANSI B 16.9 ASTM A-234
2. 1 1/4" and smaller will be Socket weld 300# fittings.
3. No Threaded fittings are permitted without approval by the Commissioner.

C. Flanges:

1. 2 1/2" and larger will be 300# Weld Neck or Slip On Flanges. ANSI B 16.5 ASTM 105

D. Joints:

1. 2 1/2" and larger will be welded. Tank and special oil handling fittings may be screwed.
2. 2" and smaller will be screwed or socket welded at Contractors Option.

E. Branch Connections:

1. Where applicable branch connections to steel pipe will be made with Tees, or 1/2 couplings.

F. Bolts and Nuts:

1. ASTM A307 Grade B7 Bolts, Grade 2H Nuts

G. Gaskets:

1. Flex Italic Type 'CG'.

2.7 VENTS AND EQUIPMENT DRAINS PIPING AND FITTING SCHEDULE

A. Piping:

1. 12" and larger will be Standard Weight A53B ERW Black Steel Pipe.
2. 10" and smaller will be Schedule 40 A53B ERW Black Steel Pipe.
3. 2" and smaller can be L Copper Tubing Hard Drawn, Soft Annealed or A53B ERW Schedule 40 T&C Black Steel Pipe.

B. Fittings:

1. 2 1/2" and larger will be Weld Fittings the same schedule as the pipe to which it will be welded. ANSI B 16.9 ASTM A234.



2. 2" and smaller will be Threaded Black Cast Iron Fittings 125# or ANSI B16.29 Wrought Copper Fittings (Contractors Option to install larger sizes.)

C. Flanges:

1. 2 1/2" and larger will be 150# Weld Neck or Slip On Flanges ANSI B16.5, ASTM 105
2. 2" and Down will be 125# C1 Screwed Flanges.
3. Copper sweat will be 125# Sweat Bronze Companion Flange ASTM B584.

D. Joints:

1. 2 1/2" and larger will be welded.
2. Copper systems Soldered with 95/5 SN/SB.
3. Threaded 2" and down.
4. Di-Electric Fittings or Isolation gasket sets will be used between Copper/Steel services.

E. Branch Connections:

1. 2 1/2" and larger will use fittings or fabricated laterals.
2. Copper system will be made with Tee Fittings.

F. Bolts and Nuts:

1. ASTM A307 Grade B7 Bolts and Grade 2H Nuts
2. Exterior Cooling Tower will be hot dipped galvanized, all other exterior locations can be plated.

G. Gaskets:

1. Compressed fiber gasket
2. Isolation gasket sets where applicable.

2.8 ESCUTCHEONS

- A. Cast iron or cast brass, deep type, to cover sleeve hubs or fitting projections. Provide escutcheons for exposed piping through floors, ceilings, walls and partitions in finished areas, and piping through all fire rated separations. Attach escutcheon to building material, not to pipe.



2.9 SLEEVES

- A. Construct sleeves for pipes passing through partitions, hung or furred ceilings, etc., of not lighter than 18 gauge galvanized steel.
- B. Provide standard weight galvanized steel pipe sleeves at all penetrations of foundation walls, block walls, reinforced concrete walls, and all floor and roof slab penetrations.
- C. Provide 25 gauge waterproof galvanized sheetmetal counter-flashing at all pipe roof penetrations.

2.10 MANUFACTURERS

- A. Pipe
 - 1. U.S. Steel "National"
 - 2. Ohio Pipe
 - 3. LTV-E
 - 4. Van Lewen
 - 5. Perma-Pipe
 - 6. Thermacor
 - 7. Or Approved Equal
- B. Welding Fittings
 - 1. Weldbend
 - 2. Tubco
 - 3. Cajon
 - 4. Naylor
 - 5. Ladish
 - 6. Van Lewen
 - 7. Or Approved Equal
- C. Copper Pipe and Fittings
 - 1. Mueller Brass



2. Nibco
3. Reading Tube
4. Or Approved Equal

PART 3 - EXECUTION

3.1 GENERAL

A. Preparation

1. Ream and de-burr pipes and tubes.
2. Clean of scale and dirt, inside and outside, before assembly.
3. Remove welding slag or other foreign material from piping.

B. Installation

1. General:
 - a. The drawings indicate generally the size and location of piping and while sizes must not be decreased, the Contractor may change locations of pipes in order to accommodate conditions at the job.
 - b. Closely plan and coordinate concealed piping and ductwork above suspended ceilings to avoid interferences, and install to maintain suspended ceiling heights shown on Contract drawings.
 - c. Install exposed work in a neat, workmanlike manner; parallel to the closest wall with maximum headroom. Avoid light fixtures.
 - d. Properly grade piping to secure easy circulation and prevent noise and water hammer. Pitch horizontal pumped piping 1 inch in 60 feet upward in direction of flow. Pitch piping 1 inch in 40 feet downward in direction of flow. Pitch gravity piping one foot in 100 feet downward in direction of flow.
 - e. Install (at traps, instruments, etc., and wherever else directed) approved unions, to permit easy connection and disconnection.
 - f. Make riser branches and other offsets with 4-elbow swings including copper risers and branches.



- g. To meet job conditions offset supply and return mains up and down. Provide drain cocks with hose connection and chained cap (minimum 3/4 inch) at low points and vent traps at high points.
- h. After systems are in operation, if coils do not circulate quickly and noiselessly (due to trapped or airbound connections), make proper alterations in these defective connections including altering finished construction and refinishing without additional cost.
- i. Pipe Nipples: Pipe 3 inch in length and less is considered a nipple. Nipples to be of extra heavy construction. Do not use close nipples.
- j. Do not use short lengths or nipples at locations where a full length of pipe will fit.
- k. Make piping connections to coils and equipment with offsets provided with screwed or flanged unions so arranged that the equipment can be serviced or removed without dismantling the piping. Do not screw unions directly to coil header piping connections.
- l. Cut screw threads clean and true. Do not use bushings. Make reductions with eccentric reducers or eccentric fittings to permit draining unless otherwise indicated. Ream out pipe 2 inch and less after cutting to remove burrs.
- m. Make flanged connections with flange faces true and perpendicular to the center line of the pipe to which the flanges are attached.
- n. Allow space for pipe insulation.
- o. Provide dielectric couplings at all junctions of copper and steel or galvanized piping.
- p. Provide for expansion and contraction of piping systems.
- q. Use main sized saddle welded or threaded connections , type branch connections for directly connecting branch lines to mains in steel piping if main is at least one pipe size larger than the branch for up to 6 inch mains and if main is at least two pipe sizes larger than branch for 8 inch and larger mains. Do not project branch pipes inside the main pipe. Use of welding tees are permitted for all sizes.
- r. Cap all openings in pipes during progress of the work.
- s. Do not connect bottom of pipe risers until riser is complete. Rod or tap to clear loose material before making bottom connection.



- t. Correct leaks in piping immediately using new materials. Leak-sealing compounds or peening is not permitted.
2. Supports:
 - a. Support or suspend piping properly on stands, clamps, hangers, etc., of approved design and make. Design supports to permit free expansion and contraction while minimizing vibration. Anchor pipes where shown or required by means of steel clamps, or other approved means, securely fastened to the pipe and the building construction. Follow MSS standards for supports of piping.
 - b. Provide structural pipe supports including supplemental steel channels, angles, columns, etc., necessary to complete the installation. The provision of structural supports over and above that required for the building structure is the responsibility of this Section.
 - c. Prior to installation of hanger rods and other pipe supports, obtain approval from the Commissioner for proposed method of hanging and for exact location of all mounting points. Submit weights and location of all piping to the Commissioner for approval well in advance of general construction work to allow sufficient time for structural redesign to accommodate the installation.
 - d. Place piping in proper alignment and position prior to connection to anchors, expansion loops, joints and equipment. Furnish jacking devices, temporary steel structural members and assembled structures as necessary. Remove temporary equipment and structures at the completion of the work.
 - e. Reinforce piping at anchor points.
 - f. For life safety systems only seismic supports are required as indicated in the Building Code. Contractor shall provide signed and sealed calculations and submittals by a Professional Engineer licensed in State of New York for proper seismically designed supports.
 3. Sleeves:
 - a. Provide sleeves for all pipes passing through floors, rated partitions and walls of sufficient diameter to accommodate pipe covering where such is required. Set sleeves for concrete floors, walls, and other masonry work in place before the floors or walls are poured or built. Locate sleeves secure in place so that space all around the pipes, after the pipes are installed in place is about equal. Anchor sleeves by use of anchor flanges embedded in concrete or at each end of sleeve. Properly firestop around sleeves after wall is constructed.



- b. Provide sleeves for all pipes passing through non-rated partitions or ceilings. Size sleeves to accommodate pipe covering where applicable. Sleeve seam to be drive slip. Sleeve to be flanged 1" at each end to lock sleeve into penetration.
 - c. For sleeves at penetrations of the metal deck, attach to the deck prior to the pouring of the deck concrete. Set sleeves in such a manner so that no concrete fills their interior during the concrete pouring operations.
 - d. Caulk floor sleeves for exposed pipes watertight and project sleeve approximately 2" above the finished floor. Finish sleeves flush with the bottom of slab and also with the finished faces of wall.
 - e. Provide sleeves with an inside diameter at least ½" greater than outside of pipe served, including pipe insulation which must be continuous through sleeve, except as detailed on the Drawings.
 - f. Where piping penetrates non-rated walls, partitions, etc., pack space between piping and sleeve with mineral wool. At penetrations through foundation walls, rated walls, and floor slabs provide firestop material as specified and shown on the Drawings.
 - g. Do not support pipes by resting clamps on sleeves. Clamps must extend beyond sleeve and be supported outboard of sleeve in an approved manner. In no case shall sleeves be cut or slotted to accommodate pipe clamps.
 - h. Where space for future pipes and conduits is required, provide sleeves and fill with lightweight concrete.
 - i. Sleeves penetrating floor and roof slabs shall extend at least 2" above slab.
 - j. Cover all pipe/sleeve/firestopping gaps using escutcheons.
4. Drain Installation:
- a. Coils and vessels which contain water to have connections suitably located, and valved outlets, to permit individual venting and draining.
 - b. Provide valved drains with hose bibb at low points of piping systems and at the bottom of each riser.
 - c. Provide cooling coil condensate drains, fan drains, and all unit casing drains with 2-inch minimum trap seal, unless otherwise noted, to spill over floor drains.



- d. Provide 1-inch minimum drain lines in sheet metal intake and discharge plenums not indicated to have floor drains. Pipe drains to nearest approved indirect waste.
5. Except as noted, make soldered joints with 95% tin and 5% antimony solder, having a melting point of not less than 460°F. Thoroughly clean solder joints before the application of the solder. Cut pipe square with burrs removed and apply flux before soldering.
6. Make brazed joints using brazing alloys with a melting point at or above 1,000°F.
7. Install automatic valves, insertion pipe wells and energy meters in piping systems.

3.2 WELDING OF PIPING

- A. Where shown on drawings, specified or directed, use welded joints, outlets and flanges. Welded joints may also be provided elsewhere, at the Contractor's option, except at points where it may be explicitly specified or directed to leave flanged joints.
- B. Whenever welded piping connects to equipment valves or other units needing maintenance, servicing, or possible removal, flange the connecting joints. Match the pressure rating of the pipe flanges with the pressure rating of the flanges on the equipment to which the piping connects. Provide flanged pipe sections to permit removal of equipment components.
- C. Welding Process: Sizes 4 inch and smaller, use either gas welding (oxyacetylene process) or metallic arc process; sizes above 4 inch, use metallic arc process.
- D. Preparation of Pipe Ends: For thicknesses up to 3/16 inch, ends shall be finished square or with 37½ degree bevel with a 1/16 inch band; for thicknesses 3/16 inch to 3/4 inch inclusive, ends shall be machined or ground to have a 37½ degree bevel with a 1/16 inch band per latest edition of ASTM B31.1.

END OF SECTION



SECTION 23 53 00

FUEL HANDLING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide fuel oil handling systems in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Steel Single Wall Storage Tanks.
B. Leak Detection System.
C. Electronic Fuel Level Gauge
D. Fuel Oil Pumps.
E. Day Tanks.
F. Piping, Valves and Accessories.

1.4 SUBMITTALS

- A. Submit full technical rating data, catalog cuts, model numbers, dimensional installation details, capacities, construction details, piping details, wiring diagrams, and installation instructions.
B. Submit shop drawings of the tank for approval. The shop drawings shall indicate the size, construction data, tapping connections and location of the tappings.
C. System vendor shall coordinate product data presented by leak monitoring system and double wall fuel storage tank to provide a comprehensive set of interfaced drawings which will serve as the basis for system evaluation by Commissioner and installation by Contractor.



- D. Installation Plans: Provide Commissioner accurate as-built plans which show the size and location of any new underground or above ground tank and piping system. These plans must include a statement by the installer that the system has been installed in compliance with the State and NYC standards as well as the Department of Environmental Protection.

1.5 QUALITY ASSURANCE

- A. Comply with the following governing standards:
1. ASTM Specification D4021-92 and UL-1316 for Glass Fiber Reinforced Polyester Underground Petroleum Storage Tanks.
 2. Underwriters' Laboratories, Inc.
 3. National Fire Protection Assoc. (NFPA 30) Flammable and Combustible Liquids Code and (NFPA 31) Standards for Installation of Oil Burning Equipment.
 4. National Sanitation Foundation Testing Laboratory, January 1984, listing of Plastic Piping System Components and Related Materials, Standard 15.
 5. Steel Tank Institute.
- B. Construct, test and install the tanks in accordance with NFPA recommendations and furnish with Underwriters' label. Comply with all governing Federal, State and NYC requirements and with the Department of Environmental Protection.
- C. All tanks, pumps, piping and fuel oil accessories shall comply with all governing Federal, State and NYC codes and all regulations. Comply with Underwriters' Laboratories requirements and Department of Environmental Protection.
- D. Factory test all fuel tanks at 15 psig after fabrication.
- E. Furnish major elements of the fuel systems by a single source vendor to assure design, installation and service interface and to provide in-warranty and post-warranty unified responsibility for instructing of personnel and supply of on-site parts to City of New York.
- F. Provide City of New York M.E.A. number.



PART 2 - PRODUCTS

2.1 STEEL SINGLE WALL STORAGE TANK

- A. Provide above ground steel single wall fuel storage tanks of size and capacity as shown on Drawings. Tank design and construction to be in accordance with Underwriters' Laboratories, Inc., Standard UL-142 for above ground tanks. Ends of tanks shall be welded. Each tank shall bear a UL-142 label. Tank to be minimum ¼" carbon steel.
- B. Manhole: Provide manhole on the top of the tank, complete with gasket, bolts and cover. See Drawings for quantity and sizes.
- C. Venting: In accordance with U.L. provisions, tank(s) shall have a normal vent opening and an emergency vent. An 18" manhole in the top of the tank with a cover attached by one-half the normal number of bolts shall be provided; arrange the bolts such that the cover will not be prevented from lifting a minimum of 1½" to prevent internal pressure from exceeding 2.5 PSI.
- D. Fittings: Tank(s) shall be equipped with threaded pipe connections for fill, supply, return, gauge, drain and normal vent. See Drawings for sizes.
- E. Accessories
 - 1. Provide steel support saddles constructed of minimum 5/16" 3/8" 1/2" "tee" construction. Base "tee" to be a minimum of 4" high. Provide number of saddles required to not exceed 12 foot spacing. A minimum of 2 saddles will be required.
 - 2. Provide steel ladders inside tank welded in place prior to shipment on all tanks over 4 foot diameter. All accessories to be painted with red primer after fabrication is complete.
- F. Coating: Paint tank on the exterior only, with red primer.
- G. The tank manufacturer shall submit calculations to the Commissioner demonstrating that the normal / emergency tank vents are adequately sized to provide the required emergency vent vapor flow while limiting the vented tank volume back pressure to a level less than the maximum pressure by the design of the tank

2.2 FUEL OIL LEAK DETECTION SYSTEM

- A. Furnish and install the following for monitoring the condition of the fuel oil tank and fuel oil piping. Panels to be mounted as shown on Drawings and as directed by site representative.
 - 1. Electronic control panel.



2. Fuel tank vault sensor.
- B. Provide a continuous leak detection system utilizing electro-optic technology. Controller shall be capable of distinguishing liquid hydrocarbons from water.
1. Alarm Controller: Alarm console to be NEMA 4X with remote sensor test capability at console utilizing test button. When pressed the test button will test entire system electronics from control panel to the sensors. Console to be UL listed to provide intrinsically safe output circuits to electro-optic sensors in Class I, Group D hazardous locations. Console must monitor interstitial space and/or piping sump for presence of liquid. Each alarm condition to be visually indicated by a dedicated red L.E.D. indicator for fuel leak or high level or an amber L.E.D. indicator for water leak or low level which is to remain lit until alarm condition is corrected. Each alarm condition to also be audibly annunciated via a 95-decibel piezoelectric pulsing horn which can be silenced via the horn silence button. Console shall also provide a green "system detecting" indicator. Each alarm to have N.O. dry contacts for control purposes, as well as low voltage outputs for NEMA 4X RA-series remote audio / visual alarm panel.
 2. Remote alarm panel: Remote audio / visual NEMA 4X alarm panel is to be mounted by filling area outside hazardous area. Each high level alarm condition to be visually indicated by a dedicated red L.E.D. indicator which is to remain lit until alarm condition is corrected. Each alarm condition to also be audibly annunciated via a 95-decibel piezoelectric pulsing horn with auto time out.
- C. Provide for Monitoring Panels:
1. Power Source: 120 volts AC (from emergency power panel).
 2. Two additional light bulbs.
 3. Hasp for padlock.
 4. Mounting hardware.
- D. Sensors
1. Provide and install sensors for double wall tanks to monitor leaks into the interstitial space. Sensors shall be solid state electro-optic technology and shall have capability of distinguishing between liquid hydrocarbons and water. Sensor shall be compact shape and have flexible shaft so it can be installed and removed from grade without the use of a pull string. Sensors shall have stainless steel electrode and shall be third party certified.



2. Provide and install sensors for brine-filled interstitial spaces of double wall fiberglass tanks. Sensors shall be solid-state electro-optic technology. Sensor shall be easily tested without removal from tank and shall be third party certified.
3. Provide and install sensors for double wall fuel oil piping. Sensors shall be solid-state electro-optic technology and operate at any angle. Sensor shall be capable of being tested remotely without removal of device and shall be third party certified.

E. Manufacturers

1. OMNTEC
2. Preferred Utilities
3. ISP
4. Or Approved Equal

2.3 ELECTRONIC TANK FUEL LEVEL GAUGE

- A. Furnish and install remote reading electronic tank gauging systems, utilizing a liquid sensitive electronic probe type level sensor to provide a continuous indication on a remote instrument, and providing a digital indication of the actual tank content in gallons. The instrument shall have a die cast aluminum housing with gasketed, hinged door. The digital display shall be not less than .8" high and provide a flashing display at predetermined high and low liquid level. The system shall operate on 120V, 60 Hz with an intrinsically safe circuit at the tank. The gauging system shall be equipped with 2 additional contacts providing a 4-20 MA output.
- B. Unit shall be suitable for ambient temperatures from 40°F to +120°F.
- C. Alarm functions of the tank gauging system to be as follows:
 1. Low Level on Tank: Flashing display on gauge and transmitting of alarm signal to remote location. Alarm silencing pushbutton silences bell, display continues to flash until situation is corrected.
 2. High Level Alarm: Flashing display on gauge.
 3. Provide a 4-20 maDC output for interface with the BMCS for high and low level alarms and tank capacity. Contractor shall be provided with necessary scaling factors to allow the system to display gallons of fuel remaining in tank.



- D. Provide an overfill alarm system consisting of the following:
1. A separate tank mounted level switch constructed of a sealed brass probe screwed into an opening on top of the tank. A magnetic switch shall be provided in a factory encapsulated housing protected from fuel vapors. A closed cell magnetic float will be the sole moving part.
 2. Audible/Visual Alarm for the tanks. Provide a NEMA 4 weatherproof cabinet containing a 4" alarm bell with automatic silencing, an enclosed protected minimum 30 watt flashing light for each tank, bell silencing pushbutton and alarm test pushbutton.
 3. Contacts for 4-20 MA output signals to the BMCS.
 4. A steel "caution" sign with porcelain enameled bright yellow background and 2" black lettering, to alert operator to the presence of an overfill alarm system.
 5. Mount equipment as shown on drawings or as directed by the Commissioner. Contractor to provide wiring between all components.
 6. Manufacturers:
 - a. Preferred Utilities
 - b. ISP
 - c. Omntec
 - d. Innovative Components
 - e. Uehling Instrument
 - f. Or Approved Equal

2.4 FUEL OIL PUMP SETS

- A. Provide factory-assembled packaged duplex fuel oil pump sets with components mounted on a steel base support fabricated of ¼" steel plate with 3" steel side rails continuously welded to the base. Base support to be fabricated with 1" overflow lip and provided with ½" plugged drain connection. The base shall be provided with steel brackets for mounting and support of the electrical control panel. Pipe shall be schedule 40 black steel with screwed fittings. Each pump set shall consist of the following components:
1. Two (2) vane or gear type positive displacement fuel oil pumps with capacities as scheduled. Pumps to be direct connected by flexible coupling to motor. Pump shall be capable of pulling a minimum of 19" Hg vacuum.



2. Fuel Oil Temperature Regulator: Shall be self-contained, direct acting, with an adjustable range, 250 lb. brass body, stainless trim and monel stem. Regulator shall be protected by a steam strainer.
3. One (1) duplex oil strainer, sized equal to the suction line piping, for suction side service. Strainer shall have one-piece cast-iron body and shall be suitable for pressure to 200 PSI. Strainer baskets to be fabricated of brass mesh and to come complete with selector handle and locking handwheel.
4. Two (2) fuel oil pump relief valves. Each valve to be cast bronze body with brass and bronze internals. Valves to have 300 lb. body rating with adjustable range 25 to 100 psi.
5. Gate valves shall be provided on suction and discharge side of each pump and prior to all pressure gauges and switches. Valves to have threaded bronze bodies, with bonnet, discs and stem of bronze. Packing to be fuel oil resistant.
6. One (1) 4" liquid-filled pressure gauge to be placed on discharge side of each pump. The gauge shall read 0 to 300 psi.
7. One (1) 4" liquid-filled compound gauge having dial range from 30" of vacuum to 15 psi, and shall be placed on the suction and discharge sides of strainer. Case shall be black-finished steel, with steel dial. Movement to be brass with phosphor bronze bourdon tube.
8. Oil Pressure Regulator: Will maintain scheduled pressure at the set outlet by bypassing oil to the return line. Regulator to have cast iron body, 250 psi rating, diaphragm operator, stainless trim.
9. Vertical ball check valve with cast bronze body and bronze internals to be located on the discharge side of each pump.
10. Control panel shall be mounted to base support bracket. Panel to be fabricated of 14 gauge steel, all-welded construction and finished in durable enamel. Panel shall be factory-wired and include required items to provide for automatic changeover from one (1) pump to the other and operation of standby pump should operating pump fail.
11. Control panel for each generator fuel oil pump set shall include the following:
 - a. Logic to control level in day tank via level controller.
 - b. Fuel oil pump motor circuit breakers.
 - c. Fuel oil pump motor starters.
 - d. Fuel oil pump selector switch for hand or automatic changeover.



- e. Control circuit fuse.
- f. Lights for day tank high and low level and leak alarm (via rupture basin leak alarm switch).
- g. Lead/lag alternator relay for backup pump operation.
- h. Lead pump fail relay and light and alarm.
- i. Lights to indicate each pump "ON".
- j. Dry contacts for interface with BMCS for each pump on/off status and lead pump failure alarm, day tank high level (each) day tank low level (each) and leak alarm (each).
- k. Disconnect for each pump motor.

12. All pump sets shall be factory wired and piped requiring only final field connections.

B. Manufacturers

- 1. Viking
- 2. Preferred Utilities
- 3. Kraisel
- 4. Roper
- 5. Or Approved Equal

2.5 DAY TANKS

- A. Provide a minimum of a 275 gallon day tank as shown on the Drawings of all welded 12 gauge carbon steel and constructed in accordance with NFPA 30. Tank shall be complete with all fittings and mounted in a 12 gauge rupture basin.
- B. Provide openings as shown on the Drawings including a 6" square, gasketed inspection port. All openings to be along the top centerline of the tank with the exception of a 1" drain located along the bottom centerline.
- C. Inside of tank to be epoxy coated and exterior to be painted after fabrication with corrosion resistant primer paint.



- D. Provide a top mounted float operated tank gauge, vent protector and a level controller containing four (4) level control switches. The level switches shall serve the following functions:
1. Level 2 ... with a fuel level reduction to four inches above the engine supply tapping, "normal low" Level 2 switch closes to start the selected tank fill pump. The level will rise until "normal high" Level 3 switch opens to stop the pump four inches below the tank overflow tapping. The distance between Level 2 and Level 3 is the normal liquid level differential of the tank.
 2. Level 1 ... is an emergency "low-low" level switch one inch above the engine fuel supply tapping. Switch closure starts the backup tank fill pump and powers an audible and visual "low level" alarm at the Level Control Center.
 3. Level 4 ... is an emergency "high-high" level switch one inch below the tank overflow tapping. Switch opening shuts down all tank fill pumps and powers an audible and visual "high level" alarm at the Level Control Center.
- E. Provide a fire safety switch to automatically stop remote fuel transfer pump when ambient temperature rises to 165°F.
- F. Provide a rupture basin sized to contain 1 ½ times the capacity of the day tank. Rupture basin to be all welded construction with turned edges and a structural steel channel mounting base. Provide a 1" plugged drain with strainer and a ¾" connection to receive a leak detection switch.
- G. Provide a sidewall mounted leak detector in the rupture basin. Leak detector shall be snap action magnetic reed switch protected against vapors and liquids. The switch shall be activated by a horizontal lever float. Provide required electronic controls to signal tank fill pumps to stop, sound a local alarm bell and transmit an alarm signal to BMCS. Switch assembly to be U.L. listed and explosion proof.
- H. Manufacturers
1. Preferred Utilities
 2. Phillips
 3. Simplex
 4. Easco
 5. Or Approved Equal



2.6 FUEL OIL PIPING, VALVES AND ACCESSORIES

A. Vent Terminals

1. Provide full size vent protector constructed of galvanized cast iron with threaded connection and of weatherproof design.

B. Fill Box

1. Provide watertight locking fill boxes where shown on the Drawings. Fill line and sounding line to terminate in locking type fill cap-box assembly constructed of cast iron with a gasketed cast iron lid. The removable locking cap shall be bronze, screwed into a bronze insert into the fill cap body. Provide a cast iron key for removal of lid and cap. Provide a bronze padlock and keys.
2. Provide watertight fill boxes where shown on the drawings. Fill line and sounding line to terminate in heavy duty one piece cast iron street box, fitted with a chrome tanned leather gasket.

Tank fill and sounding line shall not be directly attached to box. Provide a cast iron fill cap for piping in box with required key to remove cap.

3. Storage tank fill lines shall terminate in a 3.6 gallon Spill Container, including a composite top-seal, tight fill adapter and locking fill cap. To prevent damage from frost heave, normal settling, or roadway traffic, the spill compartment shall have a flexible bellows protected by a ribbed gravel shroud. The noncorrosive resin spill compartment shall be readily removable to allow soil testing directly through the spill container without breaking concrete. The drain valve shall close with tank pressure to help prevent leakage during tank testing or filling.
4. Provide hinged rectangular fill box to house fill and sounding lines. Box to sit flush with sidewalk construction. Construct box entirely of cast iron and provide with lockable latch. Provide a cast iron fill cap for piping in the box with required key to remove cap.

C. Secondary Containment Piping

1. All secondary fuel oil piping prefabricated as DOUBLE-PIPE type containment system. Protect pipe from the exterior environment by a secondary containment pipe. The system supplier shall have at least three (3) years of experience in the manufacturer of secondary containment pipe systems. Factory fabricate all straight sections, fittings and other accessories to job dimensions and design to minimize the number of field connections. Air test all secondary containment joints completed at the factory. The containment shall be drainable and air pressure testable.



2. Provide product pipe of fiberglass reinforced plastic filament wound using continuous glass filaments and epoxy resins to form a structural wall over a resin rich corrosion resistant interior liner. All joints shall be socket type with epoxy adhesive. Supply straight sections in 20 to 30 foot random lengths.
3. All pipe and fittings rated at 125 psi wsp.
4. Construct the secondary containment pipe of a multi-layer composite fiberglass reinforced thermosetting resin pipe comprised of a two-part corrosion barrier not less than 45 mils thick and a filament wound structural wall. The glass to resin ratio for the inner surface, corrosion barrier and structural wall shall be not greater than 20:80, 30:70 and 70:30, respectively. The outer layer shall contain .2 to .3% by weight of ultraviolet inhibitors for protection during outdoor storage.
5. The structural wall of the filament wound secondary containment shall have the following minimum properties:

Strength	ASTM Test	Value
Hoop	D-1599	40,000 psi
Axial Compression Tension	D-695 D-2105	18,000 psi 20,000 psi
Flexural	D-790	20,000 psi

Modulus of Elasticity	ASTM Test	Value
Hoop	D-638	3.0 x 10 ⁶ psi
Axial	D-2105	1.5 x 10 ⁶ psi
Flexural	D-790	1.5 x 10 ⁶ psi

6. Provide wall thickness of 150 mils for sizes 14 inches and below, 200 mils for 16 inches through 22 inches, 250 mils for 24 inches through 30 inches.
7. Support spacing per manufacturer based on pipe diameter, pipe material, and operating temperature of the product pipes. In all cases, pipes within the secondary containment shall be supported at not more than 10 foot intervals. Design these supports to allow for continuous air-flow and drainage of the secondary containment in place. When used with a leak location/detection cable, provide guides at supports that facilitate cable pulling and prevent cable damage during pulling operations.



8. Design end seals and other subassemblies and factory prefabricate to prevent the ingress of moisture into the system. All subassemblies shall be designed to allow for complete drainage of the secondary containment.
9. Provide secondary pipe leak detection sensors.
10. Any concealed fuel oil piping shall be welded.

PART 3 - EXECUTION

3.1 GENERAL

- A. Obtain all permits required. Provide adequate notice to inspector(s) for installation and testing of new equipment.
- B. Provide Commissioner with information and filled-in forms for registration of this facility with New York D.E.C., DOB and EPA.
- C. Provide and install foot valve at bottom of suction stub in tanks, sized for full line size.
- D. Retest all fuel oil tanks after installation.

3.2 OIL PIPING

- A. Provide pressure gauges as shown on Drawings in fuel oil suction and return lines at locations visible from the floor. Gauge on the suction side to be 4½" diameter with 0 to 30" vacuum range at one inch vacuum graduations. Gauge on discharge side to be 4½" diameter with a 0 to 30 lbs. range at one-lb. graduations
- B. Oil piping to be provided with ground joint unions near each piece of apparatus, to facilitate connecting and disconnecting. Piping must be properly valved, as approved. Each oil line to engine boiler chiller/heater to be provided with a cutoff gate valve.
- C. Provide double drain valves in series with single hose connection for draining oil at all low points of system.
- D. Oil pipe connections to tanks to be properly graded and shall be provided with a minimum of three (3) elbow swing joints with arms of ample length to permit movement of the tank or pipe in any direction without impairing the efficiency of the pipe connections, and to be so constructed that any settlement of the tank will tend to tighten the threads in said joints. Screwed elbows shall be used at swing joints only; all other underground pipe fittings shall be welded.
- E. Oil piping outside of building to be run underground and pitched back to fuel oil tanks. Piping inside of buildings to run as shown on Drawings, and be properly supported. All piping must be free from vibration.



3.3 SECONDARY CONTAINMENT PIPING

- A. Install the system in accordance with the directions furnished by the manufacturer and as approved by the Commissioner. The secondary containment shall be air tested at 10 PSIG, and the product piping shall be hydrostatically tested to 50 PSIG or 1½ times the operating pressure, whichever is greater. The test pressures shall be held for not less than one hour. The Contractor shall strictly adhere to the installation guidelines supplied by the system manufacturer and shall keep the secondary containment system clean and dry at all times during the installation process.
- B. Pitch pipe to drain back to secondary containment collar on tank.

3.4 ABOVE GROUND TANKS

- A. Install above ground tank on a 4" high concrete pad with steel saddles leveled and grouted in place to assure full bearing. Provide buffer pad of suitable material between tank and saddles.
- B. Install fuel oil day tanks on an angle iron stand within rupture basin. The entire assembly to be field painted after installation is complete with red primer.

3.5 TANK MONITORING AND GAUGES

- A. Install fuel monitoring system and sensors in tank as per manufacturer's recommendations.
- B. Provide wiring from sensors to monitoring panels. Run wires in 1" rigid galvanized underground conduit.
- C. Mount gauges, alarms, bells, etc. in Facility Office. Mount bell near tank vent pipe, 6'-6" above grade. Provide wiring between equipment as required.
- D. Manufacturers
 - 1. OMNTEC
 - 2. Preferred Utilities
 - 3. ISP
 - 4. Or Approved Equal



3.6 PUMPS

- A. The pump manufacturer to be responsible for aligning in the field prior to startup of all flexible coupled pumps. Alignment to be with dial indicator with accuracy of ± 0.002 inch. The pump manufacturer must submit a written report certifying that the alignment work has been performed by his personnel and that the pumps are ready for operation.
- B. Pumps to be leveled up on tapered steel wedges in such a manner as to permit a minimum of 3/4 inch of grout between the pump base and the top of the concrete base.

END OF SECTION



SECTION 23 62 10

AIR COOLED AIR CONDITIONING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide air cooled air conditioning units in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Split System Air Cooled A/C Unit.
B. Air Cooled Condensing Units.

1.4 SUBMITTALS

- A. Shop Drawings
1. Submit dimensioned drawings with operating weights, piping connections, wiring diagrams, and control interface diagrams.
 2. Submit wiring diagrams for all controls, including panel layout and remote devices.
- B. Product Data: Manufacturer's latest listed data for materials, equipment and installation.
- C. Test Reports
1. Certified sound power levels.
 2. Certification of all factory tests as required herein.
 3. Statement of compliance with the requirement of the contract.
- D. Submit sound power levels and rating data for all units. Noise level from the units are not to exceed NC-38 beyond 10 feet from fan room.



- E. MEA or BS&A number.

1.5 QUALITY ASSURANCE

- A. Each unit, including factory-installed options, is to be U.L. listed, performance tested and rated in compliance with ARI 210 and ARI 360, Commercial and Industrial Unitary Air Conditioning Equipment.
- B. Design unit to conform to ANSI-B9.1 and UL 465.
- C. Performance test all units at the factory prior to shipment.
- D. Manufacturer of the unit is responsible for the performance of units, including static pressure and sound attenuation effects of the discharge plenum arrangement.

1.6 WARRANTY

- A. Warranty shall be for 5 years from date of substantial completion and shall cover replacement parts on all components.

PART 2 - PRODUCTS

2.1 SPLIT SYSTEM AIR COOLED UNITS

A. General

- 1. Units to be completely packaged, including filters, evaporator coils, multiple compressors, internal vibration isolation and fan section. Units to require only connection of three phase power, refrigerant piping, remote sensors, control wiring and duct connections prior to operating units. Units to be mounted on 1" cork and neoprene pads, to be provided by the unit manufacturer.
- 2. Provide units pre-piped, pre-wired, factory assembled and factory tested, with all controls pretested prior to shipping.
- 3. Provide a terminal strip with each electrical component individually and separately wired to strip.

B. Cabinet, Casing and Frame

- 1. Unit framework to be formed of structural steel members of 12 to 14 gauge mild steel. After assembly paint the framework for maximum protection against rust. Exterior panels to be fabricated of 18 gauge galvanized steel finished with a baked acrylic enamel over an epoxy primer. Provide neoprene gasketing between panels and frame members; panels to be attached to the



frame with quick release latches (no sheetmetal screws). Insulate sections including compressor compartment with 1" thick, 3-lb./cu. ft. density fiberglass having an R value of 4.16.

2. Arrange units for full front, side and rear service access to all mechanical, electrical and refrigeration controls, adjustment of expansion valves, check out of compressors, adjustment of head pressure controls, check out of electrical control panel, without disrupting or interfering with air flow.
3. Provide discharge acoustical plenums lined internally with a minimum of 2" thick, 4 lb/cu.ft. density fiberglass that is in accordance with prototype designs previously tested in a full scale mock-up environment by an acoustical consultant. If the plenum is not built at the factory, it is the manufacturer's responsibility to provide the Contractor with the exact construction details and specifications for the plenum to be constructed by the Contractor.

C. Supply Fan and Motor

1. Provide single width, forward curved Class II supply fans secured to a machined, ground and polished solid steel shaft. Coat shaft with a rust inhibitor and support by two outboard bearings selected for a minimum 200,000 hours average life. Provide drives with variable pitch sheaves with multiple V-belts sized for 150% of nominal motor horsepower. Mount supply fan motor on a sliding base. Mount fan and motor assembly on a heavy duty steel frame supported by springs designed for 90-99% isolation efficiency.
2. Provide three-phase NEMA design 'B', 40°C continuously rated fan motor with energy-saving design, .85 power factor, NEMA 'T' frame, open drip-proof, operating at 1750 rpm and supplied with grease-lubricated ball bearings.

D. Direct Expansion Coil

1. Provide direct expansion coil with 1/2" OD seamless copper tubes expanded into aluminum fins, not less than 3 rows deep or more than 12 fins per inch. Provide evaporator coil with a distributor with side port for hot gas bypass and thermostatic expansion valve with adjustable superheat and external equalizer. Test coil at 300 PSIG air pressure under water, completely dehydrate and pressure test with refrigerant.
2. Provide coils with heavy gauge, insulated, galvanized steel drain pans complete with mastic coating for corrosion protection.

E. Filters

1. Provide filters having a 40% ASHRAE dust spot efficiency, U.L. Class I pleated media type 2-inch deep.



F. Refrigerant Circuits

1. Each refrigerant circuit is to be an independent circuit completely piped, tested, dehydrated and fully charged with oil and refrigerant R-22. The refrigerant circuits are to include compressor, condenser coil with integral liquid sub-cooler, liquid line service and charging valve, filter drier, and sight glass. Compressor units to include suction and discharge line braided-wire isolators.

G. Evaporator Defrost Thermostat

1. Provide defrost thermostat package with enclosure, wiring and hardware for field installation.

2.2 AIR COOLED CONDENSING UNITS

A. General

1. Provide units pre-piped and pre-wired, factory assembled and factory tested, with all controls pre-tested prior to shipping.
2. Assemble all condensing unit components on a common base in a weatherproof housing. Provide hermetic compressors designed for use with Refrigerant 22, condenser coil, condenser fans and motors, refrigerant reservoir, charging valve, all controls and holding charge of R-22.
3. Provide a terminal strip with each electrical component individually and separately wired to strip.

B. Condenser Coil

1. Construct condenser coil of aluminum plate fins, mechanically bonded to seamless copper tubes. Circuit coil for sub-cooling. Test coils to 425 psi.

C. Condenser Fans and Motors

1. Furnish belt-driven, centrifugal fans arranged for vertical horizontal discharge. Provide condenser fan motors of the permanently lubricated type, resiliently mounted. Provide a safety guard for each fan. Include controls for cycling fans for intermediate season operation and low ambient control. Balance each fan statically and dynamically.

D. Compressor(s)

1. Furnish compressors of serviceable hermetic design with external spring isolators and an automatically reversible oil pump.



2. Provide hermetically sealed compressor with overloads and inherent winding thermostat protection for the compressor motor.

3. Provide crankcase heater.

E. Controls

1. Locate factory wired controls in a separate enclosure. Provide high- and low-pressure switches and compressor overload devices. Incorporate a positive acting timer to prevent short cycling of compressor if power is interrupted. Timer to prevent compressor from restarting for approximately 5 minutes after shutdown.

F. Casing

1. Make unit casing fully weatherproof for outdoor installation. Construct casing of galvanized steel, zinc phosphatized and finished with baked enamel.

2. Provide openings for power and refrigerant connections. Make panels removable for servicing. Provide heavy duty coil guards, unit mounting rails and drain holes.

2.3 MANUFACTURERS

A. Carrier

B. Trane

C. Daikin AC

D. Or Approved Equal

PART 3 - EXECUTION

3.1 Provide refrigerant piping and accessories to connect condensing units condensers to air conditioning units according to manufacturer's instructions.

3.2 STARTUP AND TESTING

A. Manufacturer's service technician to check alignment of bearings, drives and motors after installation to ensure that no misalignment exists, or make any necessary alignment adjustments prior to startup.



- B. The manufacturer shall furnish a start up check list to the Commissioner at least two months prior to start up. The list must be explicit as to the various items to be checked prior to start up.
- C. Before units are started up, manufacturer to pump new grease into bearing housings to force out old grease and provide adequate lubrication.
- D. Before acceptance of the equipment by the Commissioner, conduct all tests as required to demonstrate that the equipment operates mechanically, electrically and acoustically as specified.
- E. Conduct a satisfactory performance test in the presence of the Commissioner. Any units found to vibrate beyond acceptable levels must be rebalanced in the field at the Contractor's expense.

END OF SECTION



SECTION 23 73 05

FANS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide centrifugal and axial fans in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Centrifugal Fans
1. Tubular Centrifugal
- B. Roof Exhaust Fans.

1.4 SUBMITTALS

- A. Submit manufacturer's latest published data for dimensions, materials, accessories and installation details.
- B. Submit full technical rating data based on tests in accordance with current AMCA standards and in an AMCA approved laboratory. Include manufacturer's certified fan performance curves, and certified sound power ratings. Correct all ratings and curves for altitude and temperature where applicable.

1.5 QUALITY ASSURANCE

- A. Construct all fans, except vaneaxial adjustable blade, to comply with the requirements of the latest editions of the Air Moving and Conditioning Association (AMCA) Standards and Bulletins. Certify these fans by AMCA for performance ratings and provide the AMCA Performance and Construction Seal.
- B. Install fans, with their accessories, to comply the recommendations of the National Fire Protection Association (NFPA).



1.6 WARRANTY

- A. Warranty shall be for 3 years from date of substantial completion and shall cover replacement parts on all components.

PART 2 - PRODUCTS

2.1 GENERAL - ALL FANS

- A. Unless noted otherwise, provide discharge direction and drive arrangement to suit space conditions and conform as closely as possible to the layouts shown on the Drawings.
- B. Provide fans that are quiet operating and non-overloading over the entire range of operation.
- C. Provide fan motors in accordance with section entitled "Electric Motors." Size motor to drive its respective fan when the fan is operating at a speed 5% in excess of that required to meet the scheduled fan performance. Do not select motors within the service factor for this range.
- D. Provide fan starters.
- E. Statically and dynamically balance fan wheels/impellers at the factory and so certify.
- F. Provide precision self-aligning bearings designed to prevent leakage of oil or grease. Provide cups, oil chambers, lubrication fittings in accessible locations for ease of lubrication. Provide heavy duty split pillow block bearings with tapered, double-row spherical roller assemblies. Provide bearings with service life in excess of 200,000 hours at maximum cataloged fan operating conditions.
- G. Provide copper lubrication leads, for lubrication of internal motors and bearings, extending to a capped termination point external to the fan casing.
- H. Extend wire leads on fans driven by direct motor drive from the motor in air tight rigid walled conduit, to a junction box mounted external to the fan casing.
- I. On fans driven by belt drive provide standard "V-groove" type belts and sheaves suitable for the service intended. Fan sheaves are non-adjustable type with removable machined bushings. Provide adjustable pitch type motor sheaves with double locking feature, to 10% above and below the rated fan speed. Dynamically balance sheaves with over three grooves. For fan motors over 10 horsepower, provide at least two belts. Design multiple belt drives capable of carrying the entire load with one belt broken. Provide preformed expanded metal or sheetmetal belt guards, with grommeted tachometer ports at the fan and motor shafts, for all exposed sheaves and belts.



- J. For motors in the airstream, provide TEAO or ODP type motors.
- K. Provide solid hot rolled steel drive shafts, accurately turned and polished to a close tolerance where in contact with bearings. Secure fan wheels/impellers to the drive shaft by a key and keyway assembly.
- L. Manufacture fans of materials and finishes suitable for the service intended.
- M. Construct wheels/impellers exposed to normal atmospheres of mild steel, hot dip galvanized, and finished with two layers of factory applied non-scaling paint.
- N. Construct fans exposed to corrosive atmospheres of corrosion resistant materials suitable for intended use, and factory finished with epoxy or other approved corrosion resistant coatings.
- O. Provide fans exposed to elevated temperatures with components rated for high temperature service. Do not use belt drive assemblies exposed to the airstream. Use direct drive motors certified for high temperature service.
- P. Construct fans used to convey flammable vapors of non-sparking (non-ferrous) materials, and use explosion proof motors.
- Q. Electrically ground fan and drive to prevent accumulation of static charge.
- R. Completely house fan assemblies exposed to weather in weatherproof enclosures including motor and drive.
- S. Fan wheels/impellers and casings shall be relieved of residual stresses produced in the forming process.
- T. Provide fans used to exhaust grease laden vapors with motor drive and bearings completely external of air stream.
- U. Provide housings with integral inlet and discharge flanges, complete with bolt holes for duct connections.
- V. Provide parallel vane pre-rotation vortex dampers at the fan inlet for variable volume control. Furnish and install all necessary linkages and accessories required for automatic control.
- W. Provide variable frequency drive.
- X. Provide gasketed access doors to permit routine maintenance and inspection of motor and internal components.



2.2 CENTRIFUGAL FANS

A. Tubular Type

1. Provide backward inclined or airfoil fan wheels as indicated on the Drawings, in a cylindrical housing, with integral inlet venturi and airflow straightening vanes, arranged to impart unidirectional air flow.
2. Weld fan blades to the hub plate and rim. Backward inclined blades may be securely riveted to the hub plate and rim. Precisely cast aluminum fan wheels and machine finish.
3. Match the wheel inlet ring to a close tolerance with integral deep spun aerodynamic venturi inlets.
4. Provide radial air flow straightening vanes at the fan discharge.

B. Manufacturers

1. Loren Cook
2. Barry Blower
3. Buffalo
4. Trane
5. Greenheck
6. Penn
7. Aerovent
8. Peerless
9. Or Approved Equal

2.3 ROOF EXHAUST FANS

- A. Provide roof exhaust fans of the centrifugal, belt-driven type. Construct fan housing of heavy gauge aluminum.
- B. Construct all spun parts with a rolled bead for added rigidity and spun so as to seal the pores of the aluminum providing greater resistance against oxidation and deterioration.
- C. Provide all-aluminum fan wheel of the centrifugal blower type backward inclined blades and a tapered inlet shroud. Statically and dynamically balance wheels.
- D. Provide inlet cone of aluminum centrifugal blower type.



- E. Enclose motor and drives in a weather-tight compartment, separate from the airstream. Design to provide air for cooling the motor to the motor compartment by way of an air passage from an area free of contaminated exhaust fumes.
- F. Provide motors of the heavy duty, permanently lubricated, sealed ball bearing type. Size drives for 165% of motor horsepower capabilities and of the cast iron type, keyed to the fan and motor shafts. Provide variable pitch drives.
- G. Construct fan shaft of steel construction, turned, ground and polished to precise tolerances in relationship to the hub and bearings.
- H. Provide drive belts of the oil-resistant, non-static, non-sparking type with life expectancy of over 24,000 hours.
- I. Provide bearings flanged and of the permanently lubricated, permanently sealed, ball bearing type capable of over 200,000 hours bearing life.
- J. Provide the entire drive assembly and wheel removable, as a complete unit, from the support structure without disassembling the external fan housing. Mount the complete drive assembly on rubber vibration isolation.
- K. Provide direct drive units of identical construction as belt drive units, except for drives, belts, and fan shaft bearings.
- L. Construct units of Type B construction and carry a one-year warranty.
- M. Construct all belt drive units requiring Type A construction, interior and exterior parts, including wheel, wheel hub, supporting posts, fan shaft, drive assembly, and all outside fasteners, of aluminum or non-ferrous material. Include a five-year warranty.
- N. Provide fans licensed to bear the AMCA ratings seal for air and sound performance.
- O. Manufacturers
 - 1. Loren Cook
 - 2. Greenheck
 - 3. Penn
 - 4. Aerovent
 - 5. Peerless
 - 6. Or Approved Equal



PART 3 - EXECUTION

- 3.1 Install fans in accordance with manufacturer's recommendations and as shown on the Drawings. Follow SMACNA and AMCA recommended procedures for fan installations, belt guards, duct connections, etc.
- 3.2 Provide flexible connections to provide sufficient separation of ductwork from fan assembly to prevent metal-to-metal contact.
- 3.3 Install fans and motors with proper support and vibration isolation.
- 3.4 Provide sufficient clearances around fans for access and servicing of components. Install fans such that access doors, motors, belts, lubrication lines, electrical connections, etc. are readily accessible and not obstructed by other installations or structures.
- 3.5 Bump start fans to check that fan wheel/impeller rotation corresponds to the desired direction of air flow. Correct fans found to be rotating in a direction opposite to that desired.
- 3.6 Tighten belt drives, taking into account the service factor and any other design of the drive. Exercise care not to overtension belts.
- 3.7 Check all bolts and fasteners to ensure proper tightness. Do not overtighten nuts and bolts.
- 3.8 Check bearings and motor for proper lubrication, taking care not to overlubricate. Use only lubricants recommended by the manufacturer.
- 3.9 Provide a drain at the bottom of the housing for fans discharging upward from the roof. Pipe drains from housings of interior fans discharging directly up through the roof indirectly to a floor drain. Pipe drains from housings of kitchen grease exhaust fans to a grease interceptor.

END OF SECTION



SECTION 23 84 40

SPACE HEATING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide heating units in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Unit Heaters.

1.4 SUBMITTALS

- A. Submit manufacturer's latest information on construction details, capacity data and installation details.

1.5 QUALITY ASSURANCE

- A. All electric heating units to be U.L. or ETL rated and bear certifying label.

PART 2 - PRODUCTS

2.1 UNIT HEATERS - PROPELLER FAN TYPE

- A. Provide propeller type unit heaters with heating elements, motor driven propeller type fans, all installed in a metal casing, finished with lacquer or baked-on enamel.
- B. Motor speeds not to exceed 1,500 rpm. Remove and replace any unit heaters which are found to be objectionably noisy in the opinion of the Commissioner.
- C. Each unit heater to be properly supported from building construction and braced, as necessary to prevent sway. Unit heaters shall not be supported by the piping to which they are connected.
- D. For electric unit heaters, provide heating elements of sheathed nickel-chromium wire.



2.2 CONTROLS

A. Unit Heaters

1. Thermostats shall be furnished by the manufacturer. Thermostats shall be line voltage, and designed to operate on a 3° differential over a temperature range of 45°-75°.

- B. Provide cabinet heaters with integral thermostats controlling the unit fan. Provide an On/Off switch with overload protection, wired to prevent the fan from operating when the heating medium is not available.

2.3 MANUFACTURERS

A. Unit Heaters

1. Trane
2. Modine
3. Airtherm
4. York
5. Or Approved Equal

PART 3 - EXECUTION

3.1 ACCESSORIES

- A. Provide all required accessories for a complete installation/mounting and as shown on the Contract Documents.

END OF SECTION



SECTION 23 85 00

VARIABLE FREQUENCY CONTROLLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide variable frequency controllers (VFC) in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Variable Frequency Controller.
- B. Control Interface.

1.4 SUBMITTALS

- A. Provide manufacturer's descriptive literature, installation instructions, operating instructions, and maintenance and repair data.
- B. Provide all electric wiring control diagrams for the VFC operation.

1.5 QUALITY ASSURANCE

- A. Test all integrated circuits (TTL) and all components used for circuit board construction to an acceptance criteria of 0.5% AQL (Accepted Quality Level).
- B. Conduct in-circuit testing of all printed circuit boards to insure proper mounting and correct value of all components.
- C. Burn-in all printed circuit boards for at least 24 hours, at a minimum of 70°C, and temperature cycled.
- D. Functionally test final printed circuit board assemblies via computerized test equipment where all tests and acceptance criteria are preprogrammed and test results are stored as detailed quality assurance data. The Commissioner and City of New York may witness the factory tests. Provide at least two (2) weeks written notice prior to start of the factory test.



- E. Combine-test all fully assembled controls for performance and functionality at the manufacturer's factory with fully loaded induction motors. Analyze the combined test data to insure adherence to quality assurance specifications.
- F. Design and build the variable frequency controllers to the following standards:
 - 1. E.T.L. and/or U.L.
 - 2. NEMA - ICS-3-303.
 - 3. F.C.C. Class A.
 - 4. IEEE STD 444 (ANSI C34.3).

PART 2 - PRODUCTS

2.1 GENERAL

- A. The manufacturer must provide local, in-house service backup which must include factory properly trained personnel specifically for electrical component maintenance and troubleshooting.
- B. Purchase motors and variable frequency controllers from a single source. Verify in writing that the motors and variable frequency controllers operate together as a system; fully compatible and without excessive noise or vibration.

2.2 DESIGN

- A. Provide 460 VAC variable frequency controllers of the pulse width modulated (PWM) design that operate directly from three phase, 460 VAC $\pm 10\%$, 60 hertz utility power. The VFC will generate a sine-coded, adjustable voltage/frequency three phase output for complete speed control of any NEMA B squirrel cage induction motor. The VFC to maintain a 120% current overload capability for 60 seconds with automatic stall prevention and voltage boost to prevent nuisance tripping during load or line side transient conditions. The VFC not to induce voltage line matching distortion back to the building electrical power supply system and to maintain a power factor of not less than 0.95 throughout its speed range. Provide a tuned line filter, adjusted as required to prevent any electrical distortion back into the building electrical power supply system. Comply with FCC Class A noise emissions standard and so label.
- B. Provide the variable frequency controller with the following basic design:
 - 1. Converter: Consists of a modularized diode rectifier and capacitor assembly which will first convert, then filter and maintain a fixed DC voltage source from the fixed voltage and frequency input.



2. Inverter: Inverter uses power transistor semiconductors with a minimum rating of 1100 VAC on 460 VAC controls to invert the converter generator fixed DC voltage into a sine-coded pulse width modulated output.
3. Control Logic: Consists of a single printed circuit board and incorporates an 8-bit, or larger, microcomputer central processing unit to control all inverter, converter, base drive and external interface functions.
4. Terminal strip for input signals from Building Control System for remote start/stop and speed control signal capabilities. Refer to the controls documents for interface and coordination.
5. Enclosure: NEMA 1 enclosure, for typical indoor locations. Utilize NEMA Type 32 for outdoor locations and NEMA Type 4 for wet locations subject to water spray or very high humidity.

2.3 FEATURES

- A. Include with the variable frequency controller the following minimum design features as standard:
 1. Sine-coded, pulse width modulated output.
 2. Eight (8) bit, or larger, microcomputer control logic.
 3. Maximum and minimum speed adjustment capability.
 4. Controlled speed range of 20:1, or greater.
 5. Overload capability of 20% for 60 seconds.
 6. Process follower 4-20 mA or 1-10 VDC, input.
 7. Minimum of three (3) selectable output frequency ranges.
 8. Fifteen selectable volts/hertz patterns.
 9. Touch-pad operator controls or adjustable potentiometer with at least four (4) segment digital frequency/speedometer or digital readout displaying: output frequency, status, percent current, and percent response signal.
 10. Input disconnect/circuit breaker with thru-door handle.
 11. Torque or current limiting circuit.
 12. Coast or ramp to stop.
 13. Electronic reversing.



14. Adjustable acceleration and deceleration.
 15. Fault indicators.
 16. Fault contacts for interface with BMCS controls systems
 17. External start/stop signal capability from the building control system.
 18. External speed control from a 4-20 mA or 0-10 VDC signal from control system.
- B. Provide the variable frequency controller with the following protective features as a minimum:
1. Ground fault protection.
 2. Electronic thermal motor overload or current limit control.
 3. Current limited stall prevention during acceleration, deceleration, and run conditions.
 4. Automatic restart, after momentary power loss or momentary over-voltage. No restart into ground fault.
 5. Controls for start into a rotating motor.
 6. Anti-windmill protection.
 7. Fault indicators shall indicate the following fault conditions:
 - a. Over-current
 - b. Overload
 - c. Over-voltage
 - d. Over-temperature
 - e. Control function error.
 8. DC bus discharge indicator.
 9. Current limiting DC bus fuse.
 10. Isolated operator controls.
 11. Phase-to-phase short circuit protection.
 12. Heat sink over-temperature protection.



- C. Make the following adjustments available on all variable frequency controllers:
1. Acceleration - 0.2 to 1800 seconds or 0.1 to 300 seconds.
 2. Deceleration - 0.2 to 1800 seconds or 0.1 to 300 seconds.
 3. Volts/hertz adjustments.
 4. Maximum frequency range.
 5. Minimum frequency.
 6. Maximum frequency.
 7. Carrier frequency.
 8. Torque limit.
 9. The inverter supplier to provide line filters on the line to prevent interference from the line to the drive and prevent any electrical harmonic distortion back to the building electrical power supply system.
 10. Provide a signal isolator to isolate the control signal to and from the inverter drive.
- D. Provide the variable frequency controller with the following additional features:
1. One (1) door interlocked main power input disconnect circuit breaker to provide positive shutdown of all input power to the drive.
 2. The complete circuit breaker and overload relay package shall be mounted in the inverter cabinet or may also be available in its own separate enclosure adjacent to the inverter.
 3. 2200 Microfarad ride-through capacitor which shall provide assistance to maintain the D.C. bus voltage for a two-second momentary power loss or furnish automatic restart capability which allows restart into a rotating motor.
 4. One (1) complete set of service parts for each size inverter consisting of the following:
 - a. Control fuses.
 - b. Control board.
 - c. Drive board.
 - d. Transistors.



e. Capacitors.

E. Manual Bypass

1. Provide all the circuitry necessary to safely transfer the motor from the VFC to the power line, or from the line to controller at zero speed. Include a separate cabinet for the bypass circuit to house all devices which must be energized at either 480 VAC or 115 VAC.
2. On the bypass cabinet include a door interlocked main power input disconnect circuit breaker, providing positive shutdown of all input power to both the bypass circuitry and the VFC. Motor protection to be provided in both the "Controller" mode and the "Bypass" mode by a motor overload relay.
3. The bypass cabinet door to include a "Controller-Off-Bypass" selector switch and "Controller Mode" indicator light and a "Bypass Mode" indicator light. Provide terminals for remote light indication of mode selection.
4. Include a door interlocked input disconnect circuit breaker for the bypass circuit installed in the VFC to facilitate troubleshooting and testing of the controller safely, both energized and de-energized, while operating in the "Bypass" mode.
5. Factory install the manual bypass with magnetic contactors.
6. Controller to be constructed so as to allow power to be disconnected from either mode yet maintain power to the other mode for uninterrupted motor operation. This disconnecting means must completely isolate either mode for maintenance purposes.

2.4 ENVIRONMENT

- A. Design the variable frequency controller to operate within the following environmental and service conditions:
1. Ambient service temperature - 10°C to 40°C.
 2. Ambient storage temperature - 20°C to 60°C.
 3. Humidity - noncondensing to 90%.
 4. Altitude to 3300 feet.
 5. Service factor - 1.0.
 6. Input voltage - three phase, 460 VAC \pm 10%.
 7. Input frequency - 60 hertz \pm 5%.



2.5 MANUFACTURERS

- A. Asea-Brown-Boveri Parametrics
- B. Robicon
- C. Eaton
- D. Toshiba
- E. Or Approved Equal

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All drive components including motor, sheaves, belts, fans pumps must have vibration levels checked at all speeds between 20 percent and 100 percent of the driven unit's design rpm. Vibration must be checked at fan pump shaft bearings in radial (vertical and horizontal) and axial directions. If excessive vibration is found at any frequency, special balancing and structural changes must be provided to minimize harmonic vibrations.

END OF SECTION



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SECTION 23 86 00

ELECTRIC MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide electric motor controllers in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Combination Starters and Disconnect Switches.

1.4 SUBMITTALS

- A. Shop Drawings

1. Submit a list of motor controllers required for the project. This list should include equipment tag, equipment motor size, starter type, starter features.
2. Submit a statement of compliance, or non-compliance for each clause of this specification section.
3. Submit a statement of understanding that each starter has a withstand rating that is coordinated with the electrical system installation.
4. Submit shop drawings and manufacturer's data for all items in accordance with the conditions of the contract.
5. Include control diagrams, unit wiring diagram for each motor controller, assembly outline drawings, summary sheets, shop interwiring diagrams, field connection diagrams, and nameplates with legends.

- B. Include a statement verifying coordination with the automatic temperature controls and the fire alarm system.



1.5 QUALITY ASSURANCE

- A. Motor Controllers: Comply with Underwriters' Laboratories standard UL-508 (being transitioned to WL 60947) and National Electrical Manufacturers Association Standard ICS 2-2000.
- B. Disconnect Switches: Comply with National Electrical Manufacturers Standard ICS 2-1996, Part 8 (R 2004, R 2009).
- C. Warranty shall be for 5 Years from date of substantial completion and shall cover replacement parts on all components.

PART 2 - PRODUCTS

2.1 COMBINATION STARTERS AND DISCONNECT SWITCHES

- A. Provide suitable fully coordinated starting and controlling equipment for motors as required.
- B. Consult with each trade affected to determine the exact requirements for each device.
- C. Coordinate with Contractor to establish required auxiliaries, including relays, contacts, terminals and the like. All three phase starters to have a minimum of (2) normally open and (2) normally closed auxiliary contacts.
- D. All starter interface and termination points for Contractor shall be made at a terminal strip provided with the motor controller.
- E. Provide individual starters fully enclosed in neatly finished ventilated boxes of code gauge steel, machine formed and welded. Provide boxes arranged for floor, wall or angle iron frame mounting including a door with a spring catch handle with facility to lock handle in open position.
- F. Provide engraved nameplates for each unit, nomenclature of each to be approved prior to fabrication.
- G. Provide starters for motors less than 1/2 horsepower, as 120 volt, 1-phase, 60 cycle, or 277 volt 1-Phase, 60 cycle, alternating current service with pilot light. Provide manual starters with overload protection and lockout type disconnect switch to control such motors, except where interlocks or automatic controls are required. In such cases, provide magnetic across-the-line starters.
- H. Fire smoke dampers, smoke dampers and automatic louver dampers will be started using addressable relay modules provided by the fire alarm or building control compactor.



- I. Provide starters for motors 1/2 horsepower to 100 horsepower as magnetic across-the-line, combination Motor Circuit Protector or Circuit Breaker type. Such starters to be 208 or 480 volt, 3-phase, 60 cycle, alternating current service.
- J. Provide starters for motors over 100 horsepower to be magnetic, combination Soft Start with Motor Circuit Protector Switch. Such starters to be 208 or 480 volt, 3-phase, 60 cycle, alternating current service.
- K. Provide magnetic starters subject to manual start and in direct view of the motors they control with momentary contact start and stop buttons built into cover. Provide magnetic starters subject to electrical interlock or automatic control with Hand-Off-Automatic switches built into cover. Provide selector switches in starters to be of the maintained-contact type, water tight and dust tight.
- L. Provide starters with water tight and dust tight, (5) pilot lights on the following indications: Hand, Off, Auto, Run, and Overload.
- M. Provide starters for service at voltages higher than 120 volt with transformers for 120 volt secondary service built into each starter casing to serve control circuits.
- N. Provide each starter subject to electrical interlock and/or automatic control with the necessary auxiliary contacts plus one additional set of normally open and normally closed auxiliary contacts. Provide one set of terminals for each control circuit.
- O. Provide magnetic starters with Solid State Electronic Overload Relay which shall protect all three phases with a wide range current setting and trip class to allow field adjustment for specific motor FLA. Interchangeable heater elements are not acceptable. Overload relay shall provide phase failure, phase loss, locked rotor and stall protection.
- P. Provide coils, cores, resistance, insulation, contacts, trippers, etc., for starters and relays. The motor circuit protector shall be UL listed 508 current limiting manual motor starters with magnetic trip elements only. The breaker shall carry a UL 508F rating which provides for coordinated short circuit rating for use with the NEMA rated motor contactor and provides a minimum interrupting rating of 30 KAIC for the combination starter.
- Q. Provide over/under voltage and phase monitoring capability. Monitor shall be field adjustable for both over and under voltage levels and a delay time before returning to normal operation after a trip.
- R. Mount individual motor controllers in NEMA Type 1A enclosures for typical indoor locations. Utilize NEMA Type 3R for outdoor locations and NEMA Type 4 for other wet locations or locations subject to water spray or very high humidity.
- S. Coordinate the withstand rating of all starter components with the Contractor and with the requirements of the electrical system. Starters that do not have appropriate withstand rating shall be removed from the project – at no cost – for operator safety.



2.2 MANUFACTURERS

- A. Cerus
- B. General Electric
- C. Square D
- D. Siemens
- E. Eaton/Cutler Hammer
- F. Allen Bradley
- G. Or Approved Equal

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Various pieces of packaged equipment will be provided with starters installed by manufacturer at the factory.

END OF SECTION



SECTION 26 02 50

SYSTEMS IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide fixed identification of all distribution equipment and conductors in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Fixed identification for:
1. Switchboards.
 2. Panelboards.
 3. Feeder Switches.
 4. Disconnect Switches/Enclosed Circuit Breakers.
 5. Feeder Switches (Fuse Identification).
 6. Remote Smoke Detector Lamps and Test Stations.
 7. Wall Plates.
 8. Motor Controllers.
 9. Automatic Transfer Switches.
 10. Generator Control Panels.
 11. Pullboxes, Enclosures and Cable Terminations.
 12. Fire Alarm Jacks and Warden Stations.
 13. Luminaires.



14. Transformers.

1.4 SUBMITTALS

A. Identification procedures shall be noted and scheduled on the applicable shop drawings.

1.5 QUALITY ASSURANCE

A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:

1. Industry standards shall apply.
2. NFPA 70.
3. ANSI AI13.1 and NFPA for color coding.
4. ANSI Z535-4.
5. OSHA Standards.

PART 2 - PRODUCTS

- 2.1 Unless otherwise noted, nameplates shall be black bakelite plates with white engraved upper case letters enclosed by white border on beveled edge.
- 2.2 Nameplates for equipment supplied by the emergency system shall be red bakelite with white lettering.
- 2.3 All nameplates must be engraved and must be secured with rivets, brass or cadmium plate screws. The use of Dymo type or the like is unacceptable.
- 2.4 Lettering heights unless otherwise noted must be as follows:

Item	Lettering Height
Switchboards	2"
Panelboards	1/2"
Transformers	1/2"
Feeder Switches	1/4"
Disconnect Switches/Enclosed Circuit Breakers	1/2"
Feeder Switches (Fuse Identification)	1/4"



Item	Lettering Height
Remote Smoke Detector Lamps	1/8"
Wall Plates	1/8"
Motor Controllers	1/4"
Automatic Transfer Switches	1/2"
Generator Control Panels	1"
Pullbox, Enclosures and Cable Terminations	1/8"
Fire Alarm Phone Jacks and Warden Station	1/8"

- 2.5 Cable tags must be flameproof secured with flameproof non-metallic cord.
- 2.6 Nameplate inscriptions must bear the name and number of the equipment to which they are attached as indicated on the Contract Drawings. The Commissioner reserves the right to make modifications in the inscriptions as necessary.
- 2.7 The Commissioner reserves the right to request additional nameplates at the time of review of shop drawings and upon site observations. These shall be furnished at no additional cost to the City of New York.
- 2.8 Do not manufacture or install nameplates until approved by the Commissioner.

PART 3 - EXECUTION

3.1 SWITCHBOARDS

- A. Furnish and install a master nameplate for each switchboard, engraved with the equipment identification indicated on the Contract Drawings. Mount at top of the incoming section.
- B. Provide on each main switch an identifying nameplate. Where multiple mains are employed each switch shall be numbered. Inscription shall be "Main Switch" or "Main Switch No. 1" et al.

3.2 PANELBOARDS AND TRANSFORMERS

- A. Furnish and install a nameplate for each panelboard engraved with the identification indicated on the Contract Drawings. Mount at top of panel.
- B. After installations are complete, provide and mount under sturdy transparent shield in the directory frame of each panel door, a neat, accurate and carefully typed directory properly identifying the lighting, receptacles, outlets, and equipment each overcurrent device controls.



- C. Include on directory the panel identification, the cable and raceway size of panel feeder, and the feeder origination point.
- D. Provide a nameplate for each transformer engraved with the primary and secondary feeder sizes.

3.3 DISCONNECT SWITCHES AND ENCLOSED CIRCUIT BREAKERS

- A. Furnish and install a nameplate for each disconnect switch and enclosed circuit breaker engraved with the equipment designation.

3.4 MOTOR CONTROLLERS

- A. Furnish and install a nameplate for each motor controller or combination motor controller for both individual motor controllers. Engraving must indicate the motor served and the type of service (e.g., AC-1 - 1st floor supply, EF-2 - electric closet exhaust).
- B. Final equipment names shall be coordinated with the Commissioner prior to fabrication.

3.5 FEEDER SWITCHES

- A. Furnish and install for each feeder switch including, but not limited to those in switchboards, those in switch and fuse panelboards, etc. two (2) nameplates as follows.
 - 1. The first nameplate must be white background with red lettering. Engrave with the words "REPLACE ONLY WITH ____ FUSE". Engrave with proper fuse trade name and ampere rating (i.e. Bussmann LPS-R 100).
 - 2. The second nameplate shall indicate the load served, the size and type of cable and raceway example:

Panels LP-4, LP-5, LP-6
4#500 MCM-THHN-CU-3-1/2"C.

3.6 REMOTE SMOKE DETECTOR LAMPS AND TEST STATIONS

- A. Furnish and install a nameplate on each remote smoke detector lamp and/or test station. Engraving must indicate the address of the device to which the lamp is connected as per the shop drawings marked "NO EXCEPTIONS NOTED."
- B. Provide additional fire alarm device labeling as indicated in the fire alarm specification section.



3.7 WALL PLATES

- A. Furnish and install an engraved wall plate for each switch controlling loads which are not local to the switch. Engraving shall be as directed by the Commissioner.
- B. Furnish and install engraved wall plate for each receptacle indicating the panel and circuit number.

3.8 PULLBOXES, ENCLOSURES AND CABLE TERMINATIONS

- A. Furnish and install cable tags on each cable which enters a pullbox, enclosure, switchboard, and at terminations. Mark tags with type written inscription noting the load served, type and size of cable and the overcurrent device protecting the cable.

3.9 FIRE ALARM PHONE JACKS AND WARDENS STATIONS

- A. Furnish and install an engraved wall plate on each warden's station and portable fire alarm phone jack. Engraving must indicate the floor and location of the device per the shop drawings marked "NO EXCEPTIONS NOTED."

3.10 LUMINAIRES

- A. Where connected to other than 120 volt circuit, provide each fixture with the ballast voltage stenciled on the ballast cover in letters not less than ½ inch high.

3.11 AUTOMATIC TRANSFER SWITCHES

- A. Furnish and install a red nameplate for each automatic transfer switch. Engraving shall indicate the switch number, the load served, feeder sizes, and the sources of normal and generator power.

3.12 GENERATOR CONTROL PANEL

- A. Furnish and install a red nameplate for each generator control panel. Engraving shall indicate the generator controlled by the panel.

END OF SECTION



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SECTION 26 02 65

TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide complete field acceptance testing of equipment and systems throughout in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Testing, adjusting, and balancing for:
1. Wire and Cable (600 Volts and Below).
 2. Motor Controllers, including variable frequency drives.
 3. Motors.
 4. Engine Generator, Switchboard, and Automatic Transfer Switches.
 5. Grounding.

1.4 SUBMITTALS

- A. Provide test results as required herein and in each section of this Division.

1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents comply with the latest applicable provisions and the latest recommendations of the following:
1. Industry standards shall apply except as otherwise specified.
 2. Testing Agency Qualifications: as specified in each section within this specification containing electrical testing requirements.
 3. NETA.



PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide all labor, and materials required by shop and field acceptance testing, adjusting, and balancing as specified in the Contract Documents and as required by the Commissioner.

2.2 SYSTEMS

- A. The following systems shall be tested, inspected and certified.

1. Wire and Cable (600 Volts and Below):

- a. Inspect all splices and terminations and make mechanically and electrically tight during a fifteen (15) day period immediately prior to final acceptance of the work.
- b. Perform standard 600 volt insulation resistance test with "megger" tester and all conductors. Test shall show insulation resistance in excess of minimum values required by the NETA and continuity. Submit certification to the Commissioner.

2. Motor Controllers:

- a. Submit with certification in tabular form a complete listing of all motors on the project for which motor controllers, including variable frequency drives, have been furnished. Include on this listing, the nameplate full load amperes of each motor and the size overload heaters installed in each motor controller.

3. Motors:

- a. Test all motors under load and verify that motor rotation is correct.

4. Engine Generator, Switchboard, and Automatic Transfer Switches:

a. Factory Testing:

- (1) Prior to shipment of the engine-generator set from the factory, a certified load test shall be performed and the results submitted to the Commissioner for review before shipment of the unit. The test shall verify the proper operation of all alarms and shut down circuits.
- (2) The test shall also demonstrate compliance with the set performance criteria as specified herein.



- (3) Testing shall be performed as follows:
- (a) In a period of four (4) hours with a loading of 25, 50, 75, and 100 percent of rated load. Step loading procedure shall be utilized (i.e. 25 percent first hour, 50% second hour, etc.).
 - (b) Maintain 100% load for one (1) hour.
 - (c) Verify operation of all shut down and alarm points specified.
 - (d) Perform transient response testing to verify performance as specified. Load steps shall be performed as follows.
 - (i) 0% - 25% 0%
 - (ii) 0% - 50% 0%
 - (iii) 0% - 75% 0%
 - (iv) 0% - 100% 0%
 - (e) All load steps shall be recorded on a chart recorder or light beam oscilloscope.
- (4) Factory testing shall be accomplished using resistive and reactive load banks to match the kilowatt and kVA requirements set forth in the Contract Documents.

b. Field Testing:

- (1) After completion of the installation, the Contractor shall arrange with the Commissioner for a full load test of the engine generator and related automatic transfer switches (ATS) and switchboard. Assure all ATS time delays have been set. The generator shall be required to start-up and accept full load within 10 seconds. The unit shall continue to operate for not less than four (4) hours at 100 percent rated load. The test shall also include demonstrating that all alarms, signals, shut down devices, elevator recall, etc., are functioning properly. The Contractor shall be responsible for securing all temporary load-banks, etc., required for the full load tests. Actual building loads shall be utilized for this testing, augmented with temporary load banks as required.



- (2) This Contractor shall supply all fuel for the testing. Upon acceptance by the Commissioner, the day tank and main fuel oil tank shall be filled to capacity after testing.
- (3) Perform testing of all by-pass isolation switches per the manufacturer's requirements.

5. Switchboards:

- a. At the completion of the equipment installation, each switchboard shall be field tested in the presence of the Commissioner. Field tests shall be conducted by the service organization of the manufacturer.
- b. Inspect physical, electrical, and mechanical condition. Clean all equipment interiors and exterior.
- c. Verify appropriate anchorage, required code clearances, correct alignment, physical connections, and grounding.
- d. Confirm all overcurrent protective devices are in place and are of the appropriate rating.
- e. Field tests shall include the following:
 - (1) Operation of each disconnecting means under full load.
 - (2) Operation of all metering equipment.
 - (3) Operation of all alarm devices.
 - (4) Verify that windings turn-ratio measurements and polarities are correct.
 - (5) Operation of all surge protective devices.
- f. The manufacturer shall observe all cable bracing both incoming and outgoing, and certify that same is provided in accordance with the manufacturer's recommendations.
- g. The ground fault systems shall be set at the level specified by the equipment supplier. Each system shall be tested by checking coordination between ground fault and phase to ground fault of a 1P-20 ampere lighting branch circuit.
- h. Buswork shall be infrared tested and shall be retorqued in accordance with manufacturer's recommendations. Submit certification of same.
- i. Perform ground resistance tests.



- j. Perform transformer insulation resistance tests.
6. Grounding:
- a. Upon completion of the electrical grounding system, the contractor shall test the grounding system for stray currents, grounds, shorts, etc. These tests shall be performed with approved calibrated instruments.
 - b. Perform point-to-point tests to determine the resistance between the main grounding system and all electrical equipment frames, system neutral, and all derived neutral points.
 - c. The Contractor shall submit in writing to the Commissioner a letter indicating the ohmic resistance of the service grounds and a statement that the grounding system is free of all defects, stray currents, shorts, etc.

2.3 CALIBRATION

- A. Calibrate and adjust all components in accordance with manufacturer's procedures and recommendations or as required, for the following categories of equipment:
 - 1. 600V switchboards.
 - 2. Transformer taps.
 - 3. Lighting fixtures (lamp positions, reflector positions, etc., as required).
 - 4. Motor starters.
 - 5. Generator Controls and synchronization.
 - 6. Lighting controls, including all sensors.
- B. Provide overloads in all motor starters, in accordance with motor nameplate data and as recommended by the manufacturer.



PART 3 - EXECUTION

- 3.1 Notify the Commissioner ten (10) days prior to the testing dates. If the Commissioner so elects not to witness a specific test a statement of certification must be forwarded to the Commissioner for his approval.
- 3.2 Conduct tests at a time agreeable to the Commissioner. Provide all required labor as necessary.
- 3.3 Products which are found defective or do not pass such tests shall be removed and replaced at the Contractor's expense. All tests shall be repeated until equipment meets all testing criteria.
- 3.4 Arrange for and conduct all required tests and inspections. All fees for testing and inspection shall be paid by the Contractor.
- 3.5 All test results shall be submitted to the Commissioner.

END OF SECTION



SECTION 26 02 80

EQUIPMENT CONNECTIONS AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide final connections to equipment and coordinate same in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Equipment to receive final connections shall include but not be limited to the following:
1. Motors and Equipment.
 2. Appliances.
 3. Owner Furnished Equipment.

1.4 SUBMITTALS

- A. None required.

1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of Industry Standard and NETA.

PART 2 - PRODUCTS

- 2.1 Only those products listed in this Division shall be employed.



PART 3 - EXECUTION

3.1 EXAMINATION OF DOCUMENTS

- A. Contractor shall carefully examine the document familiarize himself with all designs on the document affecting the proposed installation of equipment requiring electrical connections and shall make all required coordination for complete connection of all equipment.
- B. Connections shall be made in accordance with the manufacturers' recommendations and reviewed shop drawings.

3.2 MOTORS AND EQUIPMENT

- A. Connections for and coordination of motors and equipment requiring electrical connections shall be included but not limited to the following:
 - 1. Install motor controllers and disconnect switches for each motor and each piece of equipment.
 - 2. Verify that the motor rotation is correct and reconnect if necessary.
 - 3. Provide separate ground conductor in flexible metal conduit so as to provide an electrically continuous ground path. Ground all equipment.
 - 4. Provide motor branch circuit conductors and connections to each individual motor controller and from each controller to the motor through an approved disconnect switch. Make final connection in a minimum of 24 inch length of liquid-tight, flexible, metal conduit.
 - 5. Provide all necessary wiring and connections for interlocking, remote and automatic controls. Installation of equipment and wiring shall be in compliance with the manufacturer's recommendations.
 - 6. Where equipment is fed from a branch circuit routed in or under the slab, terminate branch circuit at a junction box on 2 foot rigid conduit stub-up and make final connection to equipment in liquid-tight, flexible, metal conduit. Provide suitable knee brace on conduit stub-up.
 - 7. Where equipment is fed from overhead, support conduit feeder descending from ceiling on flanged floor fitting with conduit type fitting connecting to a motor with 24-inch minimum of liquid-tight flexible metal conduit.
 - 8. Where nameplate on equipment indicates fuse protection, the disconnecting means shall be equipped with time delay fuses.



3.3 APPLIANCES

- A. Connections for and coordination of appliances shall include but is not limited to the following:
1. The basic requirements for motors and equipment specified above shall apply where applicable.
 2. Where cord and plugs are provided with the appliances, Contractor shall coordinate the receptacle installation to match. Information on the Contract Documents as to a receptacle type is for bidding purposes only.
 3. Direct connected equipment shall be serviced by disconnecting means.

END OF SECTION



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SECTION 26 02 90

CEILING, FLOOR AND WALL ELECTRICAL PENETRATION FIRE SEALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide pre-mixed putty sealant at wall, ceiling and/or floor electrical penetration fire seals in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Wall, ceiling and/or floor electrical penetration fire seals.

1.4 SUBMITTALS

- A. Product Data
1. Submit manufacturer's product data for all fire seals, including barrier rating.

1.5 QUALITY ASSURANCE

- A. Except as modified and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
1. ASTM E-814, "Fire Test of Penetration Fire Stops."
 2. ANSI/UL 1479, "Fire Tests of Through Penetration Firestops."
 3. ASTM E-119, "Fire Tests of Building Constructions and Materials."
 4. ANSI/UL263, "Fire Tests of Building Construction and Materials."
 5. ASTM E-84, "Surface Burning Characteristics of Building Materials."
 6. ANSI/UL723, "Surface Burning Characteristics of Building Materials."
- B. All products shall contain no VOC nor emit odors.
- C. All products shall be U.L. listed for their intended uses.

Ceiling, Floor and Wall Electrical Penetration Fire Seals



1.6 PERFORMANCE REQUIREMENTS

- A. Provide products that upon curing, do not re-emulsify, dissolve, leach, break down or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during and after construction.
- B. Openings within walls and floors designed to accommodate cabling systems subjected to frequent cable changes shall be provided with re-enterable products specifically designed for retrofit.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver through-penetration firestop system products to the project site in original, unopened containers or packages with intact and legible manufacturer's labels identifying product and manufacturer, date of manufacture; lot number; shelf life, if applicable; qualified testing and inspection agency's classification marking; and mixing instructions for multicomponent materials.
- B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants or other causes.

1.8 PROJECT CONDITIONS

- A. Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limitations recommended by the manufacturer.
- B. Do not install through-penetration firestop systems when substrates are wet due to rain, frost, condensation, or other causes.
- C. Do not use materials that contain flammable solvents.
- D. Do not install water-based or products that are conductive when wet in contact with energized electrical conductors. Exercise care when energizing penetrants.

1.9 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes or cut openings to accommodate through-penetration firestop systems.
- C. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.



PART 2 - PRODUCTS

2.1 FIRE SEAL PUTTY SYSTEM

- A. System shall provide immediate fire seal, require no curing time and emit no hazardous or toxic fumes.
- B. Require no special tools and shall be capable of being installed from one side.
- C. No derating whatsoever required of wiring systems passing through seal.
- D. Field modified for additions or deletions of raceways or cables.
- E. Reusable materials to accommodate penetration changes.

2.2 MISCELLANEOUS FIRE SEAL PRODUCTS

- A. Firestop devices: Factory-assembled steel collars lined with intumescent material sized to fit specific outside diameter of penetrating item.
- B. Cast-In-Place Firestop Device: Single component molded firestop device installed on forms prior to concrete placement with totally encapsulated, tamper-proof integral firestop system and smoke sealing gasket.
- C. Composite Sheet: Intumescent material sandwiched between a galvanized steel sheet and steel wire mesh protected with aluminum foil.
- D. Fire Rated Grommet: Molded two-piece grommet made from plenum grade polymer with a foam inner core for sealing individual cable penetrations.
- E. Firestop Plugs: Re-enterable, foam rubber plug impregnated with intumescent material for use in additional sleeves and sleeves with cable.
- F. Firestop Putty: Intumescent, non-hardening, water resistant putties containing no solvents, inorganic fibers or silicone compounds.
- G. Firestop Putty Pads: Intumescent, non-hardening putty pads to be installed on metallic and nonmetallic electrical switch and receptacle boxes when horizontal separation between boxes is less than 24".
- H. Wrap Strips: Single component intumescent elastomeric strips faced on both sides with a plastic film.
- I. Latex Sealants: Single component latex formulations that upon cure do not emulsify during exposure to moisture.
- J. Silicone Sealants: Moisture curing, single component, silicone elastomeric sealant for horizontal surfaces (pourable or nonsag) or vertical surfaces (nonsag).



- K. Firestop Pillows: Re-enterable, non-curing mineral fiber core encapsulated with an intumescent coating contained in a flame retardant bag.
- L. Mortar: Portland cement based dry-mix product formulated for mixing with water at Project site to form a non-shrinking, water-resistant, homogenous mortar.
- M. Silicone Foam: Multicomponent, silicone-based liquid elastomers, that when mixed, expand and cure in place to produce a flexible, non-shrinking foam.

2.3 MANUFACTURERS

- A. Nelson Firestop
- B. Hilti
- C. 3M
- D. Dow Solutions
- E. STI Inc.
- F. Or Approved Equal

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examination of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
- B. Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, scale, laitance, rust, release agents, water repellants, and any other substances that may inhibit optimum adhesion.
- C. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.2 GENERAL

- A. Install fire seal in accordance with the manufacturer's requirements..
- B. Place minimum of 0.5 inches of putty around each penetrating item. When not possible build up cone around penetrating items, using second layer of putty. Slope cone at 30 degrees from wall or floor.



- C. Wall openings shall not have unsupported space of putty greater than 4 inches and floor openings an unsupported opening of 1.5 inches.
- D. Provide ceramic wool temperature rated 2300°F in conjunction with putty in accordance with manufacturer's instructions.
- E. Provide ceramic fiberboard temperature rated 2000°F in conjunction with putty in accordance with manufacturer's recommendation.
- F. Firmly anchor penetrating items prior to putty installation. Provide all necessary anchor bolts, fittings, etc. as necessary.

3.3 FIELD QUALITY CONTROL

- A. Inspections: City of New York shall engage a qualified independent inspection agency under separate contract to inspect through-penetration firestop systems.
- B. Keep areas of work accessible until inspection.
- C. Where deficiencies are found, restore or replace through-penetration firestop systems so they comply with requirements.

3.4 ADJUSTING AND CLEANING

- A. Remove equipment, materials and debris, leaving area in undamaged, clean condition.
- B. Clean all surfaces adjacent to sealed openings to be free of excess through-penetration firestop system materials and soiling as work progresses.

3.5 INSTALLATION

- A. Provide fire seals at all cable and conduit penetrations through fire-rated walls, floors and ceilings, and where noted on the Contract Drawings. Coordinate with architectural and structural drawings for location of fire-rated walls.
- B. Install in accordance with the manufacturer's directions to provide barrier rating equal to or greater than the barrier rating of wall.

END OF SECTION



**Department of
Design and
Construction**

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SECTION 26 05 19

600 VOLT WIRE AND CABLE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide 600 volt wire and cable in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Wire and Cable.
B. Connectors and Terminations.
C. Electrical Tape.

1.4 SUBMITTALS

- A. Product Data: for each type of conductor, connectors and termination assemblies.
B. Field Test Reports.

1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
1. Underwriters' Laboratories labeling of all insulations and jackets.
 2. NEC
 3. NRTL
 4. Connections
 - a. 486A & 486B.
 5. Mineral Insulated (MI) Cable



- a. U.L. 2196.

PART 2 - PRODUCTS

2.1 WIRE AND CABLE

A. General

1. Provide wire and cable with a minimum insulating rating of 600 volts, except for wire used in 50 volts or below applications. For control or signal systems, use 300 volt minimum or 600 volt where permitted to be incorporated with other wiring systems.

B. Conductors

1. Provide factory fabricated electrical grade, annealed copper conductors and fabricated in accordance with ASTM B3 standards.

C. Stranding and Number of Conductors

1. No. 12 and 10 AWG conductors shall be solid.
2. Conductors larger than No. 10 AWG shall be stranded in accordance with ASTM Class B stranding designations.
3. Control wires shall be stranded in accordance with ASTM Class B stranding designations.

D. Insulated Single Conductors

1. Type THW or THWN - Thermoplastic insulation suitable for use in wet locations up to 75°C.
2. Type THHN - Flame Retardant: Heat-resistant thermoplastic insulation, nylon jacket rated for 90°C temperature rating.

E. Multi-Conductor Control and Supervisory Control Cables

1. Size No. 16 AWG, minimum.
2. Suitable for direct burial, open air, duct or conduit installation.
3. Temperature Rating: 75°C Wet or Dry.
4. Uninsulated ground wire.



5. Cross-linked polyethylene conductor insulation; thickness satisfying requirements of ICEA.
6. Flame retardant overall polyvinyl jacket satisfying the requirements of ICEA.
7. Individual conductors bound together with overall binder tape prior to jacket application.
8. Individual conductors rating of 300 volts (instead of 600 volts) for cables designated Supervisory Control Cable.
9. Factory color coded.

F. Manufacturers

1. Products by any manufacturer meeting the performance requirements specified herein may be utilized, but are not limited to, the following manufacturers:
 - a. American Insulated Wire Corp.
 - b. General Cable Corporation
 - c. Southwire Company
 - d. Belden
 - e. Pyrotenax/Tyco
 - f. Or Approved Equal

2.2 CONNECTORS

A. Wire No. 10 AWG and Smaller

1. Hand-Applied:
 - a. Coiled tapered, spring wound devices with a conducting corrosion-resistant coating over the spring steel and a plastic cover and skirt providing full insulation for splice and wired ends. Screw connector on by hand.
2. Tool-Applied:
 - a. Steel cap, with conduction and corrosion resistant metallic plating, open at both ends, fitted around the twisted ends of the wire and compressed or crimped by means of a special die designed for the



purpose. Specifically fitted plastic or rubber insulating cover wrap over each connector.

- b. Hydraulic tool of same manufacturer as lug which shall emboss on the connector the proper die number for inspection.

B. Manufacturers

1. Hubbell
2. OZ/Gedney
3. Thomas & Betts.
4. Or Approved Equal

2.3 INSULATING TAPE

A. Provide vinyl plastic tape that meets the requirements of UL 510 and has the following characteristics:

1. 8.5 mil minimum thickness.
2. ASTM D-3005 Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape – Type 1.
3. Rated 600 volts and 105°C, suitable for indoor and outdoor applications.
4. Retains flexibility, adhesion, and applicable at temperature ranges from 0 through 100°F without loss of physical or electrical properties.
5. Resistant to abrasion, moisture, alkalis, acid, corrosion, and sunlight.

2.4 WIRE PULLING LUBRICANT

- A. Provide wire pulling lubricant that is compatible with the conductor insulation, has a maximum coefficient of friction of 0.055, and is stable up to a temperature of 180°F. For cold weather installations, provide wire pulling lubricant suitable for conduit temperature.
- B. Compatibility with conductor insulation shall be determined in accordance with IEEE Std 1210 Standard Tests for Determining Compatibility of Cable-Pulling Lubricants with Wire and Cable.



2.5 MINERAL INSULATED CABLE

- A. Factory assembly of one (1) or more conductors insulated with highly compacted magnesium oxide insulation, enclosed in a seamless, liquid, and gas tight continuous copper sheath.
- B. Conductors shall be solid, high electrical conductivity copper (suitable for equipment grounding purposes) with a cross sectional area corresponding to standard sizes.
- C. Insulation shall allow for proper spacing of conductors. Thickness on insulation shall be at least 55 mils for cable from No. 14 AWG through 250 MCM.
- D. Mineral insulated cable shall be classified by Underwriters Laboratories as having a two (2) hour fire resistive rating.
- E. MI Cables shall be rated for 90° C and 600 volts.
- F. Fittings shall be identified for such use.
- G. Provide required gland conduit fitting; three (3) terminal kits; 2-3 hole brass plates, and required tools for each termination point.
- H. Manufacturer: Pyrotechnax/Tyco, Omegaclad, Watlox or Approved equal.

PART 3 - EXECUTION

3.1 WIRE AND CABLE

- A. Provide a complete system of conductors in a raceway system. Mount wiring through a specified raceway, regardless of voltage application.
- B. Contract Drawings do not indicate size of branch circuit wiring; use No. 12 AWG as a minimum. For 20 ampere branch circuits whose length from the panel to the furthest outlet exceeds 100 feet for 120-volt circuits or 150 feet for 277-volt circuits, use No. 10 AWG or larger for the entire branch circuit installation.
- C. Provide dedicated neutral conductor for each dimmer branch circuit and for each ground fault interrupter branch circuits.
- D. Provide a shared neutral conductor, one (1) standard wire size greater than the branch circuit phase conductor, for all branch circuits to receptacle loads.
- E. Conductor Types
 - 1. Type THW or THWN - Use for lighting, receptacle and motor circuits and for panel and equipment feeders.



- 2. Type THHN - Use for lighting branch circuit wiring installed and passing through the ballast channels of fixtures.
- F. Do not install wire in incomplete conduit runs nor until after concrete work and plastering is completed and moisture is swabbed from the conduits. Eliminate splices wherever possible. Where necessary, splice in readily accessible pull, junction, or outlet box.
- G. Provide cable supports for all vertical risers where required by the NEC not to exceed the following for copper conductors.

Copper Minimum Conductor Size	Vertical Supports
No. 18 AWG to No. 8 AWG	100 ft.
No. 6 AWG to No. 0 AWG	100 ft.
No. 00 AWG to No. 0000 AWG	80 ft.
211,601 CM to 350,000 CM	60 ft.
350,001 CM to 500,000 CM	50 ft.
500,001 CM to 750,000 CM	40 ft.

- H. Flashover or insulation value of joints to be equal to that of the conductor. Use Underwriters' Laboratories listed connectors rated at 600 volts for general use and 1,000 volts for use between ballasts and lamps of gaseous discharge lighting fixtures.
- I. Use terminating fittings, connectors, etc., of a type suitable for the specified cable furnished. Make bends in cable at termination prior to installing compression device. Make fittings tight.
- J. Color Coding

- 1. Provide consistent color coding of all AC feeders, sub-feeders, motor circuits and the likes as follows:

	208Y/120 Volts Code	460Y/265 Volts Code
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Grey
Ground	Green	Green
Isolated Ground	Green/Yellow Striped	N/A



2. Factory color code wire No. 2 AWG and smaller. Where color coding cannot be readily provided because of limited quantities involved, provide either of the following:
 - a. Plastic adhesive tape applied spirally and half-lapped over exposed portions of conductors within manholes, boxes, and similar enclosures. Tape shall be $\frac{3}{4}$ " minimum.
 - b. Colored tubing cut and inserted over ends of wire prior to installing terminals.
 - c. Provide black conductor insulation where colored tape is used to for color coding.
3. Wire No. 1 AWG and larger may be color coded by color taping of the entire length of the exposed ends.
4. Color code wiring for control systems installed in conjunction with mechanical and/or miscellaneous equipment in accordance with the wiring diagrams furnished with the equipment.

3.2 INSTALLATION

A. General

1. Provide tools, equipment and materials to pull all wire and cable into place and to make required splices and termination.

B. Wire and Cable in Conduit, Duct or Wireway

1. Utilize roller bearing swivel to prevent twisting of cables entering the conduit or duct.
2. Take precautions to avoid entrance of dirt and water into the conduit and ducts.
3. Clean conduits and ducts to remove any pulling compound prior to pulling of cables.
4. Do not damage conductor insulation, braid jacket or sheath during installation. Any damaged conductors shall be replaced immediately.
5. Do not bend conductors to less than the manufacturer's recommended radius.
6. Lubricate cable if required for pulling.
7. Make splices only in pull boxes, junction boxes and outlet boxes.



8. Utilize cable reels on jacks for pulling through pull boxes, ducts and conduits so bends will not be excessive and conductors will not touch sharp edges; use feeding tube where required.
9. For large diameter cables, utilize properly sized pulling grips (endless woven basket two to four feet long of ductile steel).
10. Do not exceed maximum recommended pulling tension of wire and cable.
11. Fire seal around cables penetrating fire rated barriers.
12. Provide proper supports of the cables installed in cable support boxes, in accordance with the NEC.

C. Splices, Terminations and Connections

1. General: Except where lugs are furnished with the equipment, provide terminals and connectors suitable for the quantity, conductor size and direction of entry (top or bottom).
2. Insulated Flanged Terminals: Provide for connection of conductors No. 12 AWG and smaller to device terminals; do not exceed three (3) terminals at any single connections.
3. Circumferential Compression Type Connectors or Cytolok spring compression terminator (Provide for Splices and Connections No. 6 AWG and larger):
 - a. Use for incoming and outgoing cable connections at enclosures and for ground connections.
 - b. Use manufacturer's approved tool and correct size hex head which embosses die number on the connector or lug.
 - c. Make crimped indentations parallel with insulation putty.
 - d. Fill voids and irregularities with insulation putty.
 - e. Cover neatly with four (4) layers of vinyl plastic tape except where insulated covers are permitted; half-lap tape in two (2) directions.
 - f. Use spring-held bakelite covers over splices or taps only with the approval by the Commissioner.

D. Wire Marker Identification Labels

1. Utilize labels for those circuits where individual conductor identity is indicated on the Contract Drawings.



2. Apply to wires and cables at terminals and in all pull, junction and splice boxes.
3. Do not cut and splice multi-conductor control cable for purpose of labeling.
4. Clean surfaces before applying labels.

3.3 MINERAL INSULATED CABLE INSTALLATION

A. Examination

1. Verify that the factory installed temporary end seals are intact.
2. Verify that no moisture has entered cable installation.

B. Storage

1. Cables shall be shipped from the manufacturer with ends sealed against moisture.
2. Protect the exposed cable ends with shrinkable, molded polyolefin end caps or other suitable means such as standard conduit sealing compound and PVC tape.
3. Cable shall be stored in a clean dry location.

C. Handling

1. Cable shall be uncoiled by rolling or rotating supply reel.
2. Take precautions necessary to prevent damage to cable from contact with sharp objects, such as when pulled over foreign material on sheaves.

D. Installation

1. The wiring cable shall be installed according to the manufacturer's recommendations, the instructions in the Installation Specification or Manual and the requirements of the UL Fire resistance Directory listing.

E. Field Quality Control

1. Inspect cable for physical damage and proper connection.
2. Measure tightness of any bolted connections and compare torque measurements with manufacturer's recommended values.
3. Verify continuity of each conductor.
4. Prior to energizing cables, measure insulation resistance of each cable. Tabulate and submit for approval.



5. Provide certification from cable manufacturer that installation is in accordance with their requirements.

3.4 FIELD TESTING

- A. Test system wiring for continuity, grounds and short circuits prior to connection of any equipment.
- B. Test final equipment connections for continuity of grounds and short circuits.
- C. Insulation Resistance of Feeders and Subfeeders
 1. Test with megger for insulation resistance. Insulation resistance to comply with ICEA values.
 2. Correct faults and sections with faulty insulation.
- D. Remove and replace defective conductors and retest.

END OF SECTION



SECTION 26 05 26

GROUNDING SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide a low impedance grounding system in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Ground Connectors and Clamps; Grounding, Bushings and Locknuts.
B. Welding Type Ground Connectors.
C. Compression Type Grid Connectors.
D. Ground Rods, Plates, and Clamps.
E. Electrical Insulating Tape.
F. Compound for Compression Connectors.
G. Fuel Oil Tank Grounding.

1.4 SUBMITTALS

- A. Shop Drawings
1. Provide a complete set of shop drawings showing service and all grounding methods as called for on the Contract Documents and required by the NEC and all applicable codes.
 2. Submit wiring diagrams for electrical grounding and bonding work which indicates layout of ground rods, location of system grounding electrode connections, and routing of conductors. Diagrams shall indicate sizes of all equipment to be used, including all connection details.
 3. Product data of all equipment to be used.



4. Testing procedures which will be used for all field test reports.
 5. Qualification data for the testing agency and the agency's field supervisor.
- B. Test Reports
1. Submit test reports certifying resistance values for buried or driven grounds and water pipe grounds.

1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
1. Underwriters Laboratory Standard No. U.L. 467 and 486A.
 2. ANSI/IEEE C2 – National Electrical Safety Code.
 3. IEEE Standard No. 142-1982, 1100-1992, and 80-2000 and IEEE 837-2002.
 4. NETA.
 5. NFPA 70 – National Electric Code (NEC).
 6. ASTM B3, B8, and B33.
 7. NEMA GR1.
- B. Testing Agency Qualifications: An independent agency that is a member company of a nationally recognized testing laboratory (NRTL) as defined by OSHA.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Ground Conductors: Bare or green color coded, insulated, annealed stranded tinned copper conductor as indicated on the Contract Documents; insulated conductor to conform with the requirements of the conductor specification section herein.
- B. Provide green THW insulated for 600V copper equipment grounding conductor between the ground bus of the source distribution panel or switchboard and each load being served. Provide separate grounding conductor for each branch circuit, unless otherwise indicated on Contract Documents.



- C. Mechanical Connectors: Tin-plated aluminum alloy, U.L. approved and stamped for use with aluminum or copper conductors. Connectors shall be two (2) bolt type, heavy duty type and be highly conductive.
- D. Plate Electrode: Highly conductive copper plates, minimum 1/4" thick, 24 inch square.
- E. Bonding Jumper Braid: Copper braided tape, constructed of 30-gauge bare copper wires and properly sized for indicated applications.
- F. Grounding Bus: Bare, annealed copper bars of rectangular cross section (1/4" x 4"), with insulators and a minimum length of 24". Utilize type 304 stainless steel bolts, washers and nuts.

2.2 IDENTIFICATION AND LABELING

- A. Grounding conductors shall be marked with tie wrap style cable markers.

2.3 MANUFACTURERS

- A. Erico Products, Inc.
- B. Appleton Electric Company, a Division of Emerson
- C. Kearney, a Division of Cooper Industries.
- D. O-Z/Gedney Electric Company, a Division of Emerson
- E. Raco, Inc., a Division of Hubbell, Inc.
- F. Thomas & Betts Electrical
- G. Or Approved Equal

PART 3 - EXECUTION

3.1 GENERAL

- A. Purpose of the Grounding System.
 - 1. Adequate path for ground fault currents.
 - 2. Safety to personnel from accidental electric shock hazards.
 - 3. Prevention of hazardous discharge of static electricity.



- B. Whether or not indicated on the Contract Documents, provide continuous ground path for all electrical circuits from point of utilization back to source through ground wires, bonded metallic conduit runs, grounded cable trays, and related items.
- C. **Electrical Equipment:** Provide complete exterior and interior grounding system, including grounding provisions for all switchboards, switchgear, transformers, motors, emergency generators and other equipment as indicated on the Contract Documents and required by NEC Codes.
- D. **Miscellaneous Equipment:** Provide complete grounding for equipment as indicated on the Contract Documents and required by applicable NEC Code.
- E. Equipment grounds shall be installed in the same raceway with the associated phase conductors.
- F. Grounding systems shall be provided in accordance with the requirements of the New York City Electrical Code and NEC Article 250.
- G. All ground conductors and bonding jumpers shall be stranded copper installed in conduit. All ground conductors shall be without joints and splices over its entire length.
- H. The system neutral shall be grounded at the service entrance only, and kept isolated from the grounding systems throughout the building. Ground shall be permanently installed and tested prior to energizing any equipment or service.
- I. Each system of continuous metallic piping and ductwork shall be grounded in accordance with the requirements of the NEC Article 250.
- J. Mechanical equipment shall be bonded to the building equipment grounding system. This shall include but is not limited to fans, pumps, chillers, etc.
- K. Non-metallic conduits and portions of metallic piping and duct systems which are isolated by flexible connections, insulated couplings, etc., shall be bonded to the equipment ground with a flexible bonding jumper or separate grounding conductor.
- L. Metal raceways, cable armor, cable sheath, enclosures, frames, fittings and other metal noncurrent-carrying parts that are to serve as grounding conductors shall be effectively bonded where necessary to assure electrical continuity and the capacity to conduct safely any fault current likely to be imposed on them. Any nonconductive paint, enamel, or similar coating shall be removed at threads, contact points, and contact surfaces or be connected by means of fittings so designed as to make such removal unnecessary.



3.2 SERVICE GROUNDING SYSTEM

- A. Provide a bare copper bus bar mounted within the electrical service room. Bus shall be 4" H x 1/4" W x 2' L minimum, equipped with type 304 stainless steel mounting brackets and fasteners. Provide the required insulators.
- B. Extend two (2) service grounding connectors in separate raceways from the ground bus to the ground bus in each switchboard.

3.3 SWITCHBOARD

- A. Bond each section of the switchboard, housing and service conduits entering same to the ground bus.

3.4 SEPARATELY DERIVED SYSTEMS

- A. Equipment grounding conductors shall be provided for separately derived systems and shall be grounded to building steel, cold water pipes, etc., or an alternate grounding means. Equipment grounding shall consist of but is not to be limited to the following:
 - 1. Lighting transformers.
 - 2. Power transformers.
 - 3. Electric generator sets.

3.5 RECEPTACLES

- A. Receptacles shall be grounded to the outlet box by means of a bonding jumper between the outlet box and the receptacle grounding terminal.

3.6 CONCENTRIC KNOCKOUTS

- A. Provide grounding type bushings for conduits terminated through multiple concentric knockouts not fully knocked out inside of the panelboards. Ground bushing with No. 12 AWG copper to the panelboard ground bus.

3.7 TOGGLE SWITCHES

- A. Provide grounding clip on each toggle switch. Mount over device mounting strap such that contact is made between mounting strap, faceplate and outlet box.
- B. Provide devices with ground screw, where required, and bond this with No. 10 AWG conductor to the associated outlet box.



3.8 GROUNDING METHODS

- A. Ground rods shall be copper-clad steel not less than 3/4 inch in diameter, ten (10) feet long, driven full length into the earth. The maximum resistance shall not exceed five (5) ohms. If this resistance cannot be obtained with a single rod, additional rods shall be installed not less than ten (10) feet on center. If sectional type rods are used, two (2) additional sections may be coupled and driven with the first rod. Ground plates can be used as alternates for rods in hard soil/rock conditions; however, resistance criteria must remain.
- B. The metal frame of the building, where effectively grounded. Install a ground rod at the base of each corner column and at intermediate exterior columns at distances not more than sixty (60) feet apart.
- C. A metal underground water piping system used for grounding shall be in direct contact with the earth for ten feet or more and shall be electrically continuous. Provide bonding jumpers at the water meter and at the insulating joints.
- D. Steel reinforcing bars used for grounding shall be encased by at least two (2) inches of concrete, located within and near the bottom of a concrete foundation or footing that is in direct contact with the earth. Reinforcing bars shall be minimum 1/2 inch diameter and consisting of twenty feet of one (1) or more steel reinforcing bars.
- E. All bonding jumpers for the above grounding systems shall be sized in accordance with the NEC Article 250.

3.9 INSTALLATION

- A. Grounding Grid
 - 1. Install grounding grids with ground rods and cables as indicated on the Contract Documents and Code.
 - 2. Avoid splices in ground conductors.
 - 3. Connectors:
 - a. Install mechanical connectors in above ground accessible locations only.
 - b. Install welding type ground connections or irreversible compression connection type grid grounding connectors underground, above grade, building steel, electrode connections, in manholes, or at inaccessible locations only. All connections must comply with industry standards.
 - c. Thoroughly clean contact surfaces before making connections.



- d. Apply manufacturer's oxide inhibitor compound for compression connectors to conductors prior to crimping.
 - e. Made connections using compression type grid grounding connectors with approved manufacturer's hydraulic tool and correct size hex head die which, for inspection, embosses proper die number on connector.
4. Make connection from ground grid to equipment ground buses as required by the NEC and as shown on the Contract Documents.
 5. Provide for future disconnection for testing at all locations where building ground loop or grid connects to exterior or interior steel.
 6. Wrap conductors with self-fusing electrical tape and cover with vinyl electrical tape where insulation of grounding system connections is required.
- B. Cold Water Pipe Grounding
1. Make connection with clamp type fitting; do not damage the incoming water pipe.
 2. Bond ground conductor and its conduit to the street side of the water pipe.
 3. Install No. 4/0 AWG bonding jumper with ground clamps around (input and output) the water meter.
- C. Ground Conductors
1. Route along the shortest and straightest paths possible, except as otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
 2. Underground Grounding Conductors: Use bare copper conductor. Bury at least 24 inches below grade.
 3. Size as shown on the Contract Documents or as required by NEC Table 250-95.
 4. Where ground conductors are required, install insulated copper ground conductors in steel conduit.
 5. Where ground conductors are protected by metallic conduit, bond the conductor to the conduit at both ends.
 6. Connect ground conductors to appropriate ground buses (as in switchboards and distribution panelboards, etc.).



7. Tighten screws and bolts for grounding and bonding connectors and terminals according to the manufacturer's published torque-tightening values. Where these requirements are not available, use those specified in UL 486A and UL 486B.
- D. Grounding Plates: Provide a minimum of three (3) plates and locate a minimum of six (6) feet from each other and at least the same distance from any other grounding electrode.
1. Install a minimum 30 inches below finished floor or final grade.
 2. Interconnect with grounding-electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make these connections without damaging copper coating or exposing steel.
- E. Conduit Attachment to Electrical Equipment
1. Ground conduits to metal framework of the electrical equipment with double locknuts or grounding bushings and bonding jumpers unless otherwise noted.
 2. Install bonding jumpers at all electrical equipment to provide continuous ground return path through the metallic conduit system.
 3. Install NEC approved bonding jumpers across expansion fittings between conduit sections for ground path continuity.
 4. Where motors or other utilization equipment are connected to the electrical system with flexible conduit, the conduit shall be equipped with a ground conductor.
- F. Wiring Troughs
1. Bond together wiring troughs containing power circuits and tie to ground bus at the switchboards, panelboards; install minimum No. 4/0 AWG copper conductors for bonding between cable systems and switchboards ground buses.
 2. Install a minimum No. 2 AWG insulated copper conductors for bonding between cable support system and conduit dropouts, service equipment or cabinets.
 3. Apply antioxidant compound to contact surfaces for all bonding connections to cable trays.
 4. Install bonding jumpers across hinged joints.
- G. Receptacles and Switches



1. Install bonding jumpers between the outlet box and receptacle grounding terminal except where contact device or yoke is provided for grounding purposes.

H. Wireways

1. Install grounding jumpers for bonding between wireways and other panelboards, conduits, switchboards, and at any other point where a solid connection would otherwise not be provided in supporting the system to insure a continuous ground path.

I. Panelboards

1. Install bonding jumpers inside all panelboards to bond the feeder conduit to panelboards, except ground panelboards containing branch circuits each having less than 150 amperes current carrying capacity, with two (2) standard locknuts and bushings, one (1) inside and one (1) outside, run up wrench tight.

J. Dry-Type Transformers

1. Provide grounding in accordance with NEC Article 250.
2. Install bonding jumper across flexible conduit from the transformer housing to the rigid conduit.

K. Sheet Metal Boxes

1. Install bonding jumpers inside all sheet metal boxes containing one (1) or more feeders with current carrying capacity of 150 amperes or greater, to bond one (1) conduit with another.
2. Ground boxes containing branch circuits only or feeders each less than 150 amperes current carrying capacity, with two (2) standard locknuts and bushings, one (1) inside and one (1) outside, run up wrench tight. Two (2) standard locknuts and bushings, one (1) inside and one (1) outside, run up wrench tight.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing and inspecting agency to perform the field tests and inspections and prepared test reports.
- B. Testing Equipment: Vibroground by Associated Research, Inc.; or Megger Earth Tester by James G. Biddle Co. or approved equal.
- C. Method: Three (3) electrode fall of potential as prescribed by instrument manufacturer.



- D. Drive additional ten-foot ground rods spaced ten (10) feet apart, if necessary, until total resistance of system is measured at five (5) ohms or less. Retest to demonstrate compliance.
- E. The test report shall include, but is not limited to:
 - 1. Date of test.
 - 2. Time of day.
 - 3. Weather condition.
 - 4. Date of last rainfall $\geq \frac{1}{2}$ " in a 24 hour period.
 - 5. Soil type.
 - 6. A plot of all readings indicating a level spot in the curve at a system resistance.

3.11 FIELD TESTING

- A. Visual inspection of all systems, raceway and equipment grounds shall be made to determine the adequacy and integrity of the grounding. All ground testing results shall be properly recorded, witnessed, and reported to the Commissioner.
- B. After installing the grounding system, but before permanent electrical circuits have been energized, test for compliance with requirements.
- C. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.
 - 1. Measure ground resistance not less than two (2) full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - 2. Perform tests by fall-of-potential method according to IEEE 81.
 - a. Measure ground resistance without the soil being moistened by any means other than natural precipitation or natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Ground tests shall be performed using a low resistance, null balance type, ground testing ohmmeter, with test lead resistance compensated for. Measure the resistance of the ground under test and remote earth



or a reference ground as specified. The test instrument shall be the type which compensates for potential and current rod resistances.

- c. Test completed grounding system at the service disconnect enclosure grounding terminal and at ground test wells. Perform tests, by the fall-of-potential method according to IEEE 81.
- d. Testing record shall include drawings locating each ground rod and ground rod assembly and other grounding electrodes, identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

3.12 PERSONNEL INSTRUCTIONS

- A. Building Service Personnel Instructions: Instruct the City of New York's building service personnel in procedures for testing and determining resistance-to-ground values of the grounding system. Also instruct service personnel in preparation and application of chemical solution for earth surrounding grounding rods for reducing ohmic resistance to the required levels.

END OF SECTION



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SECTION 26 05 33

RACEWAYS AND BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide raceways, fittings, boxes, enclosures, and cabinets for electrical wiring in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Rigid Steel Conduit.
B. Rigid Aluminum Conduit.
C. Electrical Metallic Tubing (EMT).
D. Armor Clad (AC) Cable.
E. Flexible Metal Conduit.
F. Liquid-Tight Flexible Metal Conduit.
G. Conduit Fittings.
H. Wireways and Auxiliary Gutters.
I. Outlet, Junction, Cable Support Boxes and Pull Boxes.
J. Identification Labels.



1.4 SUBMITTALS

A. Shop Drawings

1. Full erection drawings where wireways and/or auxiliary gutters are employed. Drawings shall include plan views, elevations, size of wireways, type and quantity of conductors proposed to be installed therein, etc.
2. Indicate duct banks on multi-trade coordinated shop drawings.
3. Indicate all cable support boxes on all submittals.

B. Product Data

1. Submit dimensioned detailed drawings for boxes exceeding 24 inches in any one (1) dimension.
2. Submit manufacturer's catalog data for all raceways, fittings, enclosures, cabinets and accessories.

1.5 QUALITY ASSURANCE

A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:

1. Rigid Steel and PVC Coated Rigid Galvanized Steel Conduit:
 - a. U.L. Standard 6.
 - b. ANSI C80-1 Conduit.
 - c. ANSI C80.4 Fittings.
 - d. NEMA RN-1 2005.
 - e. Federal Specification WW-C-581E.
2. Rigid Aluminum Conduit:
 - a. ANSI C80-5.
3. Electrical Metallic Tubing:
 - a. U.L. Standard 797.
 - b. ANSI C80.3.
 - c. Federal Specification WW-C-563.



4. Armor Clad Cable:
 - a. U.L. Standard 4.
 - b. Federal Specification J-C-30B.
 - c. NEC Article 333.
5. Flexible Metal Conduit:
 - a. U.L. Standard 1.
6. Liquid-Tight Flexible Metal Conduit:
 - a. U.L. Standard 360.
 - b. UL514B Conduit, Tubing and Cable Fittings.
 - c. UL 1660 Liquid Tight Flexible Nonmetallic Conduit.
7. Wireways and Auxiliary Gutters:
 - a. U.L. Standard UL-870.

PART 2 - PRODUCTS

2.1 RACEWAYS

- A. Rigid Steel Conduit
 1. Rigid steel conduit shall be heavy wall, galvanized type.
- B. PVC Coated Galvanized Rigid Steel Conduit
 1. PVC coated galvanized rigid steel conduit shall fully comply with all sections of UL6, NEMA RN-1 2005 and ANSI C80.1 without exception. PVC coated galvanized conduit shall have hot dipped galvanized threads. The external PVC coating shall be a nominal 40 mils of external PVC coating and 2 mils of internal urethane coating. The PVC coating shall be applied by the same manufacturer of the hot dipped galvanized rigid steel conduit.
 2. The galvanized coating of the hot dipped galvanized conduit shall not be disturbed in any fashion prior to the application of the PVC coating in accordance to UL6 and NEMA RN-1 2005 3.1.1.



3. The PVC coated galvanized rigid steel conduit shall comply with all UL listings, providing the hot dipped galvanized coating as the primary means of protection for the conduit and the PVC coating shall be listed as a secondary means of corrosion protection as required by UL6 and NEMA RN-1 2005.
 4. All PVC coated galvanized conduit bodies and fittings shall also be manufactured with 40 mils of PVC coating and 2 mils of internal urethane. All conduit bodies shall be NEMA 4X Rated with encapsulated stainless steel screws.
 5. Manufacturers
 - a. Calbond
 - b. Thomas & Betts – OCAL
 - c. Rob Roy Industries – Plasti Bond
 - d. Or Approved Equal
- C. Rigid Aluminum Conduit
1. Rigid aluminum conduit shall be heavy wall type.
 2. Manufacturers
 - a. Allied Tube & Conduit
 - b. Wheatland Tube
 - c. Grainger
 - d. Or Approved Equal
- D. Electrical Metallic Tubing
1. Continuous, seamless tubing galvanized or sheradized on exterior, coated on interior with smooth hard finish of lacquer, varnish or enamel.
 2. Manufacturers
 - a. Republic Conduit
 - b. Wheatland Tube
 - c. Western Tube
 - d. Or Approved Equal



- E. Armor Clad Cable
 - 1. Conductors rated at 90°C as specified elsewhere herein, uninsulated ground wire, moisture and fungi resistant fillers, and an interlocking steel armor shield.
 - 2. Manufacturers
 - a. AFC Cable
 - b. Southwire
 - c. Or Approved Equal
- F. Flexible Metal Conduit
 - 1. Single strip, continuous, flexible interlocked double-wrapped steel, galvanized inside and outside forming smooth internal wiring channel.
- G. Liquid-Tight Flexible Metal Conduit
 - 1. Liquid Tight flexible metal conduit shall have external PVC jacket and shall be UV stable and shall be machine tool grey in color. Internal construction shall be light-weight aluminum core.
 - 2. Manufacturers
 - a. OZ Gedney / A Division of Emerson
 - b. Hubbell Raco
 - c. Thomas & Betts
 - d. Or Approved Equal

2.2 CONDUIT FITTINGS

- A. Rigid Steel Conduit
 - 1. Threaded type fittings.
- B. Rigid Aluminum Conduit
 - 1. Threaded type fittings.



- C. Conduit Expansion Joints and Deflection Fittings, Rigid Galvanized Steel Conduit. Weather tight, internal ground, expansion joint for galvanized rigid steel conduit.
 - 1. Manufacturers
 - a. Crouse Hinds / A Division of Cooper Industries – Type XJG & XD
 - b. OZ Gedney / A Division of Emerson – Type AX & DX
 - c. Thomas & Betts – Type XJG & XD
 - d. Or Approved Equal
- D. Electrical Metallic Tubing
 - 1. 2½-inch in size and larger may be set screw type. 2-inch in size and smaller, steel compression gland.
 - 2. In slab or concrete work, concrete-tight fittings.
- E. Armor Clad Cable
 - 1. Malleable iron or die-cast zinc with insulating bushing.
- F. Flexible Metal Conduit
 - 1. Compression-type metal fittings.
- G. Liquid-Tight Flexible Metal Conduit
 - 1. Body, gland and lock nut shall be steel of malleable iron. Ground cone shall be steel, sealing ring and insulator shall be blue molded thermoplastic rated at 150°C (221°F) maximum.
- H. Manufacturers
 - 1. All fittings shall comply with UL, NEMA and ANSI Standards as shall be provided by same manufacturer as approved conduit type manufacturers.

2.3 WIREWAYS AND AUXILIARY GUTTERS

- A. Wireways and gutters shall be of sizes and shapes indicated on the Contract Documents and as required to meet the field conditions. Equipment shall be sheet metal, with enamel finish, NEMA 250 rated.
- B. Provide all necessary elbows, tees, connectors, adaptors, etc.
- C. Provide hinged cover secured with captive screws.



- D. Wire retainers shall be provided not less than twelve (12) inches on center.
- E. Manufacturers
 - 1. Square D
 - 2. Wiremold/Legrand
 - 3. Hubbell
 - 4. Or Approved Equal

2.4 OUTLET, JUNCTION AND PULL BOXES

- A. Cast Type Conduit Boxes, Outlet Bodies, and Fittings
 - 1. For rigid steel conduit, ferrous alloy box with inside threaded hubs.
 - 2. For rigid aluminum conduit, aluminum box with inside threaded hubs.
 - 3. For electrical metallic tubing, ferrous alloy box with compression or inside threaded hubs with adapter.
 - 4. Covers: Cast or sheet metal unless otherwise required.
 - 5. Tapered threads for hubs.
- B. Galvanized Pressed Steel Outlet Boxes
 - 1. General: Pressed steel, galvanized or cadmium-plated, minimum of 4" octagonal or square with galvanized cover or extension ring as required.
 - 2. Switch and Receptacle Box, Indoors: Nominal 4" square, 1/2" or 2-1/8" deep as required, with raised cover unless otherwise indicated on the Contract Documents.
 - 3. Lighting Fixture Box:
 - a. 4" octagon with 3/8" fixture stud.
 - b. For suspended ceiling work, 4" octagon with removable backplate where required, and two (2) parallel bars for securing to cross-furring channels and extend flexible metal conduit to each fixture.



- C. Sheet Steel Boxes Indoors
1. No. 12 USS gauge sheet steel for boxes with a maximum side less than 40 inches, and a maximum area not exceeding 1,000 square inches; riveted or welded 3/4 inch flanges at exterior corners.
 2. No. 10 USS gauge sheet steel for boxes with a maximum side 40 to 60 inches, and a maximum area 1,000 to 1,500 square inches; riveted or welded 3/4 inch flanges at exterior corners.
 3. No. 10 USS gauge sheet steel riveted or welded to 1½" by 1½" by ¼" welded angle iron framework for boxes with a maximum side exceeding 60 inches and more than 1,500 square inches in area.
 4. Covers:
 - a. Same gauge steel as the box.
 - b. Subdivided single covers so no section of the cover exceeds 50 pounds.
 - c. Machine bolts, machine screws threaded into tapped holes or sheet metal screws as required; maximum spacing of 12 inches.
 5. Paint: Rust inhibiting primer; ANSI No. 61 light gray finish coat.
- D. Pull and Splice Boxes, Outdoors
1. Aluminum reinforced, with removable covers secured by stainless steel machine screws.
- E. Manufacturers:
1. Cooper Industries
 2. Appleton Electric Company / A Division of Emerson
 3. Erickson Electrical Equipment Co.
 4. Hoffman
 5. Hubbell / RACO
 6. OZ Gedney / A Division of Emerson
 7. Thomas & Betts / Steel City
 8. Or Approved Equal



2.5 IDENTIFICATION LABELS

A. Plasticized Cloth

1. Non-conductive.
2. Waterproof.
3. Capable of withstanding continuous temperatures of 235°F and intermittent temperatures to 300°F.
4. Overcoating for protection against oil, solvents, chemicals, moisture, abrasion and dirt.

B. Heavy, thermo-resistant industrial grade adhesive for adhesion of label to any surface without curling, peeling, or falling off.

C. Legends: Sharp, bold-face, two (2) inch black letters on "Alert" orange background.

D. Label Designations, Nominal System Voltages

208 volts
460 volts

E. Manufacturers

1. W.H. Brady Company
2. Thomas & Betts Corporation
3. DYMO
4. Or Approved Equal



PART 3 - EXECUTION

3.1 APPLICATION OF RACEWAYS

- A. The following applications must be adhered to. Raceways not conforming to this listing must be removed and replaced with specified material at no additional expense.

Raceway Types	Applications
Rigid Steel Conduit	Where exposed to mechanical injury, where specifically required; indoors where exposed to moisture; where required by NEC Code. Outdoor locations, sump and ejector pits, elevator pits, loading docks, garage, window washing equipment, and service feeders. Fire pump feeders concrete encased with 2" of concrete when Mineral Insulated (MI) Cable is not used.
PVC Coated Rigid Galvanized Steel Conduit	Where exposed to extreme outdoor and indoor corrosion and or weather conditions: Stub out of Concrete applications. In applications where two (2) UL Listed Layers of Corrosion protection is required and Hot Dipped Galvanized Conduit as Primary Protection is listed PVC Coating is listed as Primary Corrosion is also UL Listed.
Rigid Aluminum Conduit	Outdoor locations.
E.M.T.	Use in every instance except where another material is not specified.
Armor Clad Cable	Lighting and receptacle branch circuits concealed in dry hollow spaces of a building. May not be used in corridors, places of assembly, or where prohibited by NEC Code. Not acceptable in electrical or mechanical rooms; nor passing through any fire rated condition.
Flexible Metal Conduit	Use in dry areas for connections to lighting fixtures in hung ceilings, connections to equipment installed in removable panels of hung ceilings; at all transformer or equipment raceway connections where sound and vibration isolation is required.



Raceway Types	Applications
Liquid-Tight Flexible Metal Conduit	Use in areas subject to moisture where flexible metal conduit is unacceptable, at connections to all motors.
Wireways and Auxiliary Gutters	Where indicated on the Contract Documents and as otherwise specifically required.

3.2 RACEWAY SYSTEMS IN GENERAL

- A. Provide separate raceways for all wiring systems, including security, data, paging, low voltage et al. All 460Y/265 volt wiring must be kept independent of 208Y/120 volt wiring. Emergency system wiring must be kept independent of the normal system wiring. Provide grounding conductor within all circuits. Minimum size 3/4-inch for home runs and 1-inch minimum for power distribution. Wiring of each type and system must be installed in separate raceways.
- B. Install capped bushings on the raceways as soon as they are installed and remove only when cables are pulled. Securely tie embedded raceway in place prior to embedment. Raceways installed below or in floor slabs must extend a minimum of four (4) inches above the finished slab to the first connector. Lay out work in advance to avoid excessive concentrations of multiple raceway runs.
- C. Locate raceways so that the strength of structural members are unaffected and they do not conflict with services of other trades. Install 1-inch or larger raceways in or through structural members (beams, slabs, etc.) only when and in a manner accepted by the Commissioner. Draw up couplings and fittings full and tight. Protect exposed threads from corrosion with one (1) coat of zinc chromate after installation.
- D. Provide raceway installation (with appropriate seal-offs, explosion-proof fittings, etc.) in special occupancy area, as required. Provide conduit seal-offs where portions of the interior raceway system pass through walls, ceiling or floors which separate adjacent rooms having substantially different maintained temperatures, as in refrigeration or cold storage rooms.
- E. Provide labeled pull wire in all spare or empty raceways. Allow five (5) feet of slack at each end and in each pull box. Tag both ends of the cable denoting opposite and termination location with black india ink on flameproof linen tag.



- F. Above Grade: Defined as area above the finished grade for the building exterior and above the top surface of any slabs (or other concrete work) on grade for the building interior.
1. Install concealed except at surface cabinets and for motor and equipment connections in electrical and mechanical rooms. Install a minimum of six (6) inches from flues, steam pipes, or other heated lines. Provide flashing and counter-flashing for waterproofing of raceways, outlets, fittings, etc., which penetrate the roof. Route exposed raceways parallel or perpendicular to the building lines with right-angle turns and symmetrical bends. Run concealed raceways in direct line and, where possible, with long sweep bends and offsets. Maximum length of six (6) feet for flexible metal conduit. Each section of flexible metal conduit shall contain bonding ground connector bonded at each end and sized as required. Provide connectors with insulating bushings. Provide sleeves in the forms for new concrete walls, floor slabs and partitions for passage of the raceways. Waterproof sleeved raceways where required.
 2. Provide raceway expansion joints for exposed and concealed raceways with necessary bonding ground conductor at building expansion joints and between buildings or structures and where required to compensate for raceway or building thermal expansion and contraction. Provide expansion fittings every 200 feet of conduit.
 3. Provide one (1) empty 3/4 inch raceway for each three (3) spare unused poles or spaces of each flush-mounted panelboard. Terminate empty 3/4 inch conduits in a junction box, which after completion is accessible to facilitate future branch circuit extension. Provide pull lines in each raceway.
- G. Below Grade: Defined as area below the finished grade for the building exterior and below or within the bottom floor slab for the building interior. Below grade raceways shall comply with the following:
1. Extend below-grade raceways two (2) inches minimum above the floor or equipment foundation. Install exterior underground conduits 24 inches minimum below the finished grade. Do not penetrate waterproof membranes unless proper seal is provided.
 2. Protect metallic raceway in earth or apply with two (2) coats of asphalt base paint. Touch up abrasions and wrench marks after conduit is in place.
 3. In lieu of the above, protect raceways with a minimum of 20 mil tape appropriate for the purpose, overlapped a minimum of one-half tape width.
- H. Fire Pump Raceways
1. Encase all raceways for the fire pumps in a minimum 2" of concrete. Concrete shall have a red dye.



- I. Install no raceway in the concrete slab except with the permission of the Commissioner and written consent of the City of New York. Maximum conduit sizes embedded in structural concrete slabs:

Raceway Size	Min. Thickness of Concrete Slab
3/4 in.	4½ in.
1 in.	5 in.

1. Do not install raceways 1¼ inch size and larger in structural concrete slabs.
 2. In no case will the installation of raceways be permitted to interfere with proper placement of principal reinforcement.
 3. Place raceways in the structural slabs between the upper and lower layers of reinforcing steel. Careful bending of the conduits is required.
 4. Space the raceways embedded in concrete slabs not less than eight (8) inches on centers and as widely spaced as possible where they converge at panels or junction boxes.
 5. Install raceways running parallel to slabs supports, such as beams, columns and structural walls, not less than 12 inches from such supporting elements.
 6. Secure saddle supports for conduit, outlet boxes, junction boxes, inserts, etc. with suitable adhesives during concrete pour of the slab to prevent displacement.
- J. PVC Coated Rigid Galvanized Conduit
1. Manufacturer shall provide Certified Field Installers Instruction. All installers of PVC Coated Rigid Galvanized Steel Conduit shall be directed and instructed by the manufacturer and shall provide proof of such direction evidence.
 2. All restorations and patching to PVC Coated Rigid Galvanized Steel Conduit, shall be in accordance with manufacturers recommendations. Contractors shall use manufacturer's patch and restoration kits in order to guarantee certified products are used and compliance with all factory warranty guidelines are met.
- K. Raceways in hung ceilings shall be installed on and secured to the slab or primary structural members of the ceiling, not to lathing channels or T-bars, Z-bars or other elements which are direct supports of the ceiling panels. Secure conduit firmly to the steel with clips and fittings designed for that purpose. Install as high as possible but not less than 1'-0" above the hung ceilings.



- L. Install exposed raceways parallel or at right angles with building lines. Secure raceway clamps or supports to masonry materials by toggle bolts, expansion bolts, or steel inserts. Install raceways to steel construction with appropriate clamps which do not depend on friction or set-screw pressure alone.
- M. Clear raceways of all obstructions and dirt prior to pulling in cables. Use ball mandrel (diameter approximately 85% of the conduit inside diameter) followed by close fitting wire brush and wad of felt or similar material. This assembly may be pulled in together with, but ahead of any cable being installed. Clean all empty raceways similarly. Clear any raceway which rejects ball mandrel, then re-attempt mandrel application.
- N. Support vertically installed raceways less than 2" trade size at intervals no greater than eight (8) feet. Support such raceways 2" trade size or larger and made up with threaded couplings, at intervals no greater than story height, or fifteen (15) feet, whichever is smaller.
- O. Support horizontally installed raceways less than 1" trade size at intervals no greater than six (6) feet. Support such raceways 1" trade size or larger, at intervals no greater than ten (10) feet.

3.3 WIREWAYS AND AUXILIARY GUTTERS

- A. Place wireways installed in hung ceilings such that the covers will hinge upward from the side.

3.4 OUTLET, JUNCTION, AND PULL BOXES

- A. Provide outlet, junction, and pull boxes as indicated on the Contract Documents and as required for the complete installation of the various electrical systems, and to facilitate proper pulling of the cables. Size the junction boxes and pull boxes per the NEC. Size the boxes on any empty conduit systems as if containing conductors of No.4 AWG.
- B. The exact location of outlets and equipment is governed by the structural conditions and obstructions, or other equipment items. When necessary, relocate outlets so that when fixtures or equipment are installed, they will be symmetrically located according to the room layout and will not interfere with other work or equipment. Verify final location of outlets, panels equipment, etc., with the Commissioner prior to installation.
- C. Back-to-back outlets in the same wall, or "thru-wall" type boxes are not permitted. Provide 12-inch minimum spacing for outlets shown on opposite sides of a common wall to minimize sound transmission.



- D. Fit outlet boxes in finished ceilings or walls with appropriate covers, set flush with the finished surface. Where more than one (1) switch or device is located at one (1) point, use gang boxes and covers unless otherwise indicated. Sectional switch boxes or utility boxes are not permitted. Provide tile box or 4 inch square box with tile ring in masonry walls not plastered or furred. Where drywall material is utilized, provide plaster ring. Provide outlet boxes of type and size suitable for the specific application. Where outlet boxes contain two (2) or more 265 volt devices, or where devices occur of different applied voltages, or where normal and emergency devices occur in the same box, provide suitable barrier(s).
- E. All outlet and device box depths shall have sufficient depth to prevent damage to the conductors when devices or utilization equipment are installed as intended in the box.
- F. Types of Boxes and Fittings for Various Locations

Location	Type
Outlet	Galvanized pressed steel
Outlet exposed to moisture or outdoors	Cast type conduit fitting
Splice	Galvanized pressed steel
Splice exposed to moisture or outdoors	Cast type conduit fitting or sheet metal (4½" x 5" x 3" minimum)
Pull or Junction	Cast type conduit fitting or sheet metal (4½" x 5" x 3" minimum)
Pull or Junction - Outdoors	Aluminum (4½" x 5" x 3" minimum)
Terminal	Sheet steel (6" x 6" x 3" minimum)
Terminal - Outdoors	Aluminum (6" x 6" x 3" minimum)

- G. Pull Box Spacing
 - 1. Provide pull boxes so no individual conduit run contains more than the equivalent of four (4) quarter bends (360° total).
 - 2. Conduit Sizes 1¼" and Larger:
 - a. Provide boxes to prevent cable from being excessively twisted, stretched or flexed during installation.
 - b. Provide boxes so that maximum pulling tensions do not exceed the cable manufacturer's recommendations.
 - c. Provide support racks for boxes with multiple sets of conductors so that the conductors do not rest on any metal work inside the box.



3. Conduit Sizes 1 Inch and Smaller, provide boxes at every (Maximum Distances):

150 feet	straight runs
100 feet	runs with one (1) 90° bend or equivalent
75 feet	runs with two (2) 90° bends or equivalent
50 feet	runs with three (3) or (4) four 90° bends or equivalent.

H. Sheet Steel Boxes

1. Boxes shall be sized to permit pulling, racking and splicing of the cables (if not indicated on the Contract Documents). They shall be sized to avoid exceeding the manufacturer's minimum bending radius recommendations for the conductors.
2. Provide access for the removal and replacement of the conductors, splices and equipment.
3. Minimum Dimensions of Boxes in Runs of 1½" or Larger Conduit:
 - a. Straight Pulls: Size length eight (8) times nominal diameter of the largest conduit.
 - b. Angle or U-Pulls: Size such that the distance between the conduit entry and the opposite wall of box is six (6) times the nominal diameter of the largest conduit.
4. Covers: Fasten to the flange or framework of the box with machine bolts, machine screws threaded into tapped holes or sheet metal screws as required.
5. Plug any open knockouts not utilized.

I. Pull and Splice Boxes, Outdoors

1. Where size of the box is not indicated, size to permit pulling, racking and splicing of cables being installed.
2. Braze ground connector suitable for copper cables to the inside of the box.

J. Identification labels for all pull, splice and junction boxes in main feeder and subfeeder runs, shall indicate nominal system voltage:

1. Apply labels after painting of any boxes, conduits, and surrounding areas are completed.
2. Clean surfaces before applying labels; clean aluminum surfaces with solvent wipe.



3. Apply labels on the cover and a minimum of one (1) fixed side; one (1) label visible from the floor where the boxes are installed exposed.

3.5 FIRE PUMP AND SERVICE ENTRANCE RACEWAYS

- A. Use rigid steel heavy-wall conduits.
- B. Encase in concrete with a minimum of 2" of cover.
- C. Utilize red dye in the fire pump duct bank.

3.6 SLEEVES

- A. Where sleeves are required for the installation of electrical work passing through walls or floors, provide as needed. Use galvanized or black enameled rigid steel conduit or Schedule 40 black steel pipe. Do not use aluminum conduit. Where specific sizes are not indicated on the Contract Documents, size sleeves shall provide ½ inch clearance around the outside surface of the item for which installed. Cut flush with the wall surfaces and extend two (2) inches above the finished floor level or as indicated on the Contract Documents. In mechanical rooms, extend sleeve four (4) inches above the finished floor level.
- B. For interior walls and for floors, pack space between the conduit, ground cable or similar items and sleeves to the full depth of the wall or slab thickness with fire stopping material to maintain the required rating.

3.7 CABLE SUPPORT BOXES

- A. Cable support boxes shall be installed and of dimensions as required by the NEC. These boxes shall be built of steel or aluminum with removable cover secured by brass machine screws and shall be stiffened with heavy angle irons. Cable supports shall be type "S" from one of the listed manufacturers in this section or approved equal. Boxes must in all ways be satisfactory to the Commissioner and subject to his approval. Provide ground lug in the box, secured by welding or brazing. Submit shop drawings for approval.

END OF SECTION



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SECTION 26 05 73

OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide computer-based, fault-current and overcurrent protective device coordination studies and arc flash protection study of all electrical equipment indicated on the Contract Documents.
- B. The incoming service available short circuit shall be assumed at 200KA. Contractor shall verify with Con Edison if lower value to be used for calculation.

1.3 WORK INCLUDED

- A. Overcurrent Protective Device Coordination: All overcurrent protective devices (OCPD) proposed for this project shall be selected to be selectively coordinated with the overcurrent protective devices installed on their supply side such that an overcurrent event (overload, short-circuit, or ground-fault) occurring at the lowest level in the system (branch circuit) cannot cause the feeder protective device supplying the branch circuit panelboard to open. This coordination shall be carried through each level of distribution for all branches of both normal and emergency power. Best available settings shall be provided for the normal power system. Emergency power coordination shall coordinate to a level of 0.1 seconds.
- B. For Arc Flash Hazard Analysis: Prepare a computer-based, arc-flash study to determine the arc-flash hazard distance and the incident energy to which personnel could be exposed during work on or near electrical equipment.

1.4 DEFINITIONS

- A. One-Line Diagram: A diagram which shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein.
- B. Protective Device: A device that senses when an abnormal current flow exists and then removes the affected portion from the system.



- C. SCCR: Short-circuit current rating.
- D. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.
- E. PPE: Personal protective equipment.

1.5 SUBMITTALS

- A. The following submittals shall be made for system protective devices specified in all electrical specification sections. The release of electrical equipment submittals (panelboards, engine generators, switchboards, fused switches, circuit breakers, switchboards, etc.) is dependent on the receipt of a complete and accurate overcurrent protective device coordination study. The Commissioner requires a full submittal review period as delineated within these specifications to adequately review the OCPD study against the submitted electrical components prior to release of submittals for equipment procurement. The submittal schedule required by the project requirements shall provide for this review time in the action submittal process. Delay claims arising due to Contractor's failure to coordinate simultaneous action submittals will not be considered by the City of New York. Submittal shall comply with the requirement of the DDC general conditions. The following submittals shall be in digital and hard copy form:
 - 1. Coordination-study input data, including completed computer program input data sheets. Provide editable electronic media, including all SKM files and breaker TCC's.
 - 2. Study and Equipment Evaluation Reports.
 - 3. Coordination-Study Report, signed, dated, and sealed by a Professional Engineer licensed in the state of the New York.
 - 4. Arc-flash study input data, including completed computer program input data sheets.
 - 5. Arc-Flash Hazard Analysis Report; signed, dated, and sealed by a Professional Engineer licensed in the state of the New York.
- B. Product Data: For computer software program to be used for the studies.
- C. Qualification Data: For Coordination Study Specialist and Arc-Flash Hazard Analysis Specialist.
- D. Product Certificates: For coordination-study and fault-current-study computer software programs, certifying compliance with IEEE 399. For arc-flash analysis software, certifying compliance with IEEE 1584 and NFPA 70E.



- E. Service procedures according to requirements in NFPA 70E shall be provided in the equipment manuals.
- F. Operation and Maintenance Procedures: Provide maintenance procedures for use by the City of New York personnel that comply with requirements in NFPA 70E.

1.6 QUALITY ASSURANCE

- A. Studies shall use computer programs that are distributed nationally and are in wide use. Software algorithms shall comply with requirements of standards and guides specified in this section. Manual calculations are not acceptable.
- B. System Study Specialist Qualifications: Comprehensive engineering analysis by a qualified Professional Engineer licensed in the State of New York or personnel properly trained and employed by the equipment manufacturer in required calculation methodology.
 - 1. Analysis shall be performed by a Professional Engineer licensed in the State of New York or personnel properly trained and employed.
 - 2. Registered Professional Engineer licensed in the State of New York shall be a full-time employee of the electrical equipment manufacturer or a professional engineering firm.
 - 3. Report shall be signed and sealed by a Professional Engineer licensed in the state of New York.
- C. Comply with IEEE 242 for short-circuit currents and coordination time intervals.
- D. Comply with IEEE 399 for general study procedures.
- E. Comply with IEEE 1584 for Guide for Performing Arc Flash Hazard Calculations.

PART 2 - PRODUCTS

2.1 COMPUTER SOFTWARE DEVELOPERS

- A. Computer Software Developers: Subject to compliance with requirements, provide products by the following:
 - 1. SKM Systems Analysis, Inc.
 - 2. EDSA Micro Corporation.
 - 3. ESA Inc.
 - 4. Or Approved Equal



2.2 COMPUTER SOFTWARE PROGRAM REQUIREMENTS

- A. Comply with IEEE 399 for fault-current and overcurrent protective device coordination studies.
- B. Comply with IEEE 1584 and NFPA 70E for arc-flash hazard analysis.
- C. Analytical features of fault-current-study computer software program shall include "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.
- D. Computer software program shall be capable of plotting and diagramming time-current-characteristic curves as part of its output. Computer software program shall report device settings and ratings of all overcurrent protective devices and shall demonstrate coordination by computer-generated, time-current coordination plots.

2.3 SHORT-CIRCUIT STUDY REPORT CONTENT

- A. Executive Summary
- B. Study descriptions, purpose, basis and scope of the study.
- C. One-line diagram, showing the following:
 - 1. Protective device designations and ampere ratings.
 - 2. Cable size and lengths.
 - 3. Transformer kilovolt ampere (kVA) and voltage ratings.
 - 4. Motor and generator designations and kVA ratings.
 - 5. Switchboard and panelboard designations.
 - 6. For both normal and emergency power systems.
 - 7. Automatic Transfer Switches.
 - 8. Fused switches and circuit breakers
- D. Study Input Data: As described in "Power System Data" Article
- E. Short-Circuit Study Output:
 - 1. Interrupting Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:
 - a. Voltage
 - b. Calculated symmetrical fault-current magnitude and angle.



- c. Fault-point X/R ratio.
 - d. No AC Decrement (NACD) ratio.
 - e. Equivalent impedance.
 - f. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on a symmetrical basis.
 - g. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on a total basis.
 - h. Incident Energy and Flash Protection Boundary Calculations
- 2. Arcing fault magnitude.
 - 3. Protective device clearing time.
 - 4. Duration of arc.
 - 5. Arc-flash boundary.
 - 6. Working distance.
 - 7. Incident energy.
 - 8. Hazard risk category.
 - 9. Recommendations for arc-flash energy reduction.
- F. Fault study input data, case descriptions, and fault-current calculations, including a definition of terms and guide for interpretation of the computer printout.
 - G. Equipment specific Arc Flash Warning Labels.
 - H. Recommendations for system improvements, where needed.

2.4 ARC-FLASH WARNING LABELS

- A. Provide a 3.5-by-5-inch thermal transfer label of high-adhesion polyester for each work location included in the analysis.
- B. The label shall have an orange header with the wording, "WARNING, ARC-FLASH HAZARD," and shall include the following information taken directly from the final arc-flash hazard analysis.
 - 1. Flash Hazard Boundary
 - 2. Short Circuit Current Available



3. Shock Hazard when Cover is Removed
 4. Limited Approach Boundary
 5. Restricted Approach Boundary
 6. Prohibited Approach Boundary
 7. PPE Requirements, including the following:
 - a. Hazard Risk Category
 - b. Required Minimum Arc Rating of PPE in cal/cm²
 - c. Clothing Description
 8. Engineering report number, revision number, and issue date.
- C. Labels shall be machine printed, with no field-applied markings.
- D. Labels shall provide all flash boundaries, flash hazard levels, voltage levels, shock hazards and recommended PPE.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine Project overcurrent protective device submittals for compliance with electrical distribution system coordination requirements and other conditions affecting performance.
1. Proceed with coordination study and arc-flash study only after relevant equipment final submittals have been assembled, but prior to their submission to the Commissioner.
 - a. Coordination study shall accompany submission of relevant equipment submittals.

3.2 POWER SYSTEM DATA

- A. System Analyst performing the short circuit, protective device coordination study, and arc-flash hazard analysis shall furnish the Contractor with a list of required data immediately after award of the contract. Contractor shall expedite collection of the data to ensure completion of the study and analysis, as required.



- B. For new equipment, use characteristics of the final submitted shop drawing for all equipment. For existing equipment, this Contractor shall field verify all required equipment ratings and characteristics needed for completing the studies.
- C. Source combination shall include present and future motors and generators indicated in the Contract Documents.
- D. Include fault contribution of existing motors in the study and analysis.
- E. Gather and tabulate the following input data to support coordination study:
 - 1. Product Data for overcurrent protective devices specified in these specifications and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
 - 2. Impedance of the incoming utility service entrance.
 - 3. Electrical Distribution System Diagram: In hard-copy and electronic-copy formats, showing the following:
 - a. Circuit breakers and fuses ratings and types.
 - b. Relays and associated power and current transformer ratings and ratios.
 - c. Transformer kilovolt amperes, primary and secondary voltages, connection type, impedance, X/R ratios, taps measured in per cent, and phase shift.
 - d. Generator short-circuit current contribution data, including short-circuit reactance, rated kilovolt amperes, size, rated voltage, and X/R ratio.
 - e. Cables: Indicate conduit material, sizes of conductors, conductor material insulation, and length.
 - f. Motor horsepower and code letter designation according to NEMA MG 1.
 - g. Low-voltage cable sizes, lengths, number, conductor material and conduit material (magnetic or nonmagnetic).
 - 4. Data sheets to supplement electrical distribution system diagram, cross-referenced with tag numbers on diagram, showing the following:
 - a. Special load considerations, including starting inrush currents and frequent starting and stopping.



- b. Transformer characteristics, including primary protective device, magnetic inrush current, and overload capacity.
- c. Motor full-load current, locked rotor current, service factor, starting time, type of start, and thermal-damage curve.
- d. Generator thermal-damage curve.
- e. Ratings, types, and settings of the utility company's overcurrent protective devices.
- f. Special overcurrent protective device settings or types stipulated by the utility company.
- g. Time-current-characteristic curves of devices.
- h. Manufacturer, frame size, interrupting rating in amperes RMS symmetrical, ampere or current sensor rating, long-time adjustment range, short-time adjustment range, and instantaneous adjustment range for circuit breakers.
- i. Manufacturer and type, ampere-tap adjustment range, time-delay adjustment range, instantaneous attachment adjustment range, and current transformer ratio for overcurrent relays.
- j. Panelboards and switchboards ampacity, and interrupting rating in amperes RMS symmetrical.

3.3 FAULT-CURRENT STUDY

- A. A short-circuit current ratings indicated in the Contract Documents are based on Fault-Current study prepared by the Commissioner during design and are based on available information and anticipated feeder lengths. Calculate the maximum available short-circuit current in amperes RMS symmetrical at circuit-breaker positions of the electrical power distribution system based on proposed feeder routing and actual equipment being proposed for the project. The calculation shall be for a current immediately after initiation and for a three-phase bolted short-circuit at each of the following:
 - 1. Electric Utility's supply termination point.
 - 2. Switchboard buses.
 - 3. Transformers.
 - 4. Distribution panelboards.
 - 5. Branch circuit panelboards.



6. Standby Generators and Automatic Transfer Switches.
 7. Enclosed Fused Switches.
 8. Enclosed Circuit Breakers.
- B. Study electrical distribution system from normal and emergency power sources throughout electrical distribution system for the Project. Include studies of system-switching configurations and alternate operations that could result in maximum fault conditions.
- C. Calculate momentary and interrupting duties on the basis of maximum available fault current.
- D. Calculate short-circuit currents according to IEEE 551.
- E. Calculations to verify interrupting ratings of overcurrent protective devices shall comply with IEEE 241 and IEEE 242.
1. Transformers, as appropriate for transformers included in the project:
 - a. ANSI C57.12.10.
 - b. ANSI C57.12.22.
 - c. ANSI C57.12.40.
 - d. IEEE C57.12.00.
 - e. IEEE C57.96.
 2. Low-Voltage Circuit Breakers: IEEE 1015 and IEEE C37.20.1.
 3. Low-Voltage Fuses: IEEE C37.46.
- F. Study Report:
1. Show calculated X/R ratios and equipment interrupting rating (1/2-cycle) fault currents on electrical distribution system diagram.
- G. Equipment Evaluation Report:
1. For devices and equipment rated for asymmetrical fault current, apply multiplication factors listed in the standards to 1/2-cycle symmetrical fault current.



2. Verify adequacy of phase conductors at maximum three-phase bolted fault currents; verify adequacy of equipment grounding conductors and grounding electrode conductors at maximum ground-fault currents. Ensure that short-circuit withstand ratings are equal to or higher than calculated $\frac{1}{2}$ -cycle symmetrical fault current.
3. Notify the Commissioner, in writing, of any existing circuit protective devices improperly rated for the calculated available fault current.

3.4 COORDINATION STUDY

- A. Provide a coordination study using approved computer software program. Prepare a written report using results of fault-current study. Comply with IEEE 399.
 1. Calculate the maximum and minimum $\frac{1}{2}$ -cycle short circuit currents.
 2. Calculate the maximum and minimum ground-fault currents.
- B. Comply with IEEE 241 and IEEE 242 recommendations for fault currents and time intervals.
- C. Transformer Primary Overcurrent Protective Devices:
 1. Device shall not operate in response to the following:
 - a. Inrush current when first energized.
 - b. Self-cooled, full-load current or forced-air-cooled, full-load current, whichever is specified for that transformer.
 - c. Permissible transformer overloads according to IEEE C57.96 if required by unusual loading or emergency conditions.
 2. Device settings shall protect transformers according to IEEE C57.12.00, for fault currents.
- D. Conductor Protection: Protect cables against damage from fault currents according to ICEA P-32-382, ICEA P-45-482, and conductor melting curves in IEEE 242. Demonstrate that equipment withstands the maximum short circuit current for a time equivalent to the tripping time of the primary relay protection or total clearing time of the fuse. To determine temperatures that damage insulation, use curves from cable manufacturers or from listed standards indicating conductor size and short circuit current.



- E. Coordination-Study Report: Prepare a written report indicating the following results of coordination study:
1. Tabular Format of Settings Selected for Overcurrent Protective Devices:
 - a. Device tag.
 - b. Relay-current transformer ratios; and tap, time-dial, and instantaneous-pickup values.
 - c. Circuit-breaker sensor rating; and long-time, short-time, and instantaneous settings.
 - d. Fuse-current rating and type.
 - e. Ground-fault relay-pickup and time-delay settings.
 2. Coordination Curves: Prepared to determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate that adequate time separation exists between devices installed in series, including power utility company's upstream devices. Prepare separate sets of curves for the switching schemes and for emergency periods where the power source is local generation. Show the following information:
 - a. Device tag.
 - b. Voltage and current ratio for curves.
 - c. Three-phase and single-phase damage points for each transformer.
 - d. No damage, melting, and clearing curves for fuses.
 - e. Cable damage curves.
 - f. Transformer inrush points.
 - g. Maximum fault-current cutoff point.
 - h. Motor starting characteristics, damage points and overload relay.
 - i. Thermal damage curve for motors larger than 100 HP.
 - j. Generator short circuit decrement curve and damage point, and thermal damage curve.
- F. Completed data sheets for setting of overcurrent protective devices.



- G. Complete Schedule of breaker settings to summarize information contained on data sheets. Sample schedule has been included at the end of this section for preferred format.

3.5 ARC FLASH HAZARD ANALYSIS

- A. Comply with NFPA 70E and its Annex D for hazard analysis study.
- B. The flash protection boundary and the incident energy shall be calculated at all significant locations in the electrical distribution system where work could be performed on energized parts, including, but not limited to, the following:
 - 1. Disconnect switches.
 - 2. Electrical switchboards.
 - 3. Emergency system boxes and enclosures.
 - 4. Enclosed circuit breakers.
 - 5. Meter Sockets and assemblies.
 - 6. Motor starter.
 - 7. Panelboards.
 - 8. Power transfer equipment (ATS).
 - 9. Transformers.
 - 10. Emergency Generator.
- C. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short circuit and coordination study model. Ground overcurrent protection relays should not be taken into consideration when determining the clearing time when performing incident energy calculations.
- D. Calculate the arc-flash protection boundary and the corresponding incident energy calculations for multiple system scenarios to be compared and the greatest incident energy to be uniquely reported for each equipment location. Calculations shall be performed to represent the maximum and minimum contributions of fault current magnitude for all normal and emergency operating conditions.
 - 1. The minimum calculation will assume that the utility contribution is at a minimum and will assume a minimum motor contribution (all motors off).



2. The maximum calculation will assume a maximum contribution from the utility and will assume the maximum amount of motors to be operating. Calculations shall take into consideration the parallel operation of synchronous generators with the electric utility, where applicable.
- E. Incident energy calculations shall consider the accumulation of energy over time when performing arc flash calculations on buses with multiple sources. Iterative calculations must take into account the changing current contributions, as the sources are interrupted or decremented with time. Fault contribution from motors and generators to be decremented as follows:
 1. Fault contribution from induction motors should not be considered beyond 3-5 cycles.
 2. Fault contribution from synchronous motors and generators should be decayed to match the actual decrement of each as closely as possible.
- F. For each equipment location with a separately enclosed main device, calculations for incident energy and flash protection boundary shall include both the line and load side of the main breaker.
 1. When performing incident energy calculations on the line side of a main breaker, the line side and load side contributions must be included in the fault calculation.
- G. Mis-coordination should be checked amongst all devices within the branch containing the immediate protective device to compute the incident energy for the corresponding location.
- H. Arc Flash calculation shall be based on actual overcurrent protective device clearing time. Maximum clearing time will be capped at 2 seconds based on IEEE 1584 section B.1.2. Where it is not physically possible to move outside of the flash protection boundary in less than 2 seconds during an arc flash even, a maximum clearing time based on the specific location shall be utilized.
- I. Complete Arc Flash report shall be used for the preparation of Arc Flash Warning labels for electrical equipment.
- J. Provide an 8-hour instructor led Electrical Safety Instructional Course which includes NFPA 70E materials, including the selection of personal protective equipment. The instruction shall be certified and provided by an OSHA authorized Instructor.



3.6 CORRECT DEFICIENCIES, RE-CALCULATE AND REPORT

- A. After the Commissioner's initial review, correct unsatisfactory conditions and recalculate to demonstrate compliance, resubmit overcurrent protective devices, as required, to bring the system into compliance.
- B. Revise and resubmit report multiple times, as necessary, to demonstrate compliance with requirements.

3.7 APPLICATION OF WARNING LABELS

- A. Install arc-flash warning labels under the direct supervision and control of the Arc-Flash Hazard Study Specialist.

3.8 FIELD ADJUSTMENTS

- A. The contractor and equipment vendors shall adjust relay and protective device settings according to the recommended settings provided by the coordination study. This shall be performed prior to equipment being energized.

END OF SECTION



SECTION 26 22 00

LOW-VOLTAGE DISTRIBUTION TRANSFORMERS

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. The following document applies to all required work for the project:
1. The Contract Drawings.
 2. The Specifications.
 3. The General Conditions.
 4. The Addendum.
 5. The Contract (City of New York Standard Construction Contract).

1.2 DESCRIPTION

- A. Provide all low-voltage distribution transformers rated 1000V or less, as specified herein and in accordance with the Contract Documents.
- B. Refer to Electrical Riser Diagram for existing elevator door dimension and weight lifting capacity limitations. The transfer must be delivered through the existing elevator(s). Manufacturer must verify its transformer size and weight and provide field-assembled transformer, if required. Contractor shall assemble the transformer(s) in field under manufacturer's supervision or assemble the transformer in field by the manufacturer.

1.3 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including DDC General Conditions, apply to this Section.

1.4 WORK INCLUDED

- A. Dry Type Transformers.
- B. Vibration Isolation.
- C. Mounting Supports.
- D. Field Assemble of Transformer.



1.5 SUBMITTALS

A. Manufacturer's Data

1. Submit manufacturer's data, including electrical ratings, heat release data, physical dimensions, noise ratings and weights for each type and size dry type transformer as indicated on the Contract Documents.
2. Factory Test Results.
3. Certified vibration isolation and seismic restraint details and product data indicating the number and location of each support and restraint; and the exact number, size and type of each anchor.
4. Field Quality Control test reports, per Part 3 of this Section.
5. Detailed wiring diagrams identifying terminals for tap changing and connecting field-installed wiring.
6. Operation and Service Data.
7. Termination Lugs Quantity and Size

1.6 REFERENCE STANDARDS

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
1. U.L. Standard 506 - Transformers
 2. U.L. Standard 1561 – K-Factor Rated Transformers
 3. ANSI/IEE C57.12.01 – General Requirements for Dry-Type Distribution and Power Transformers.
 4. ANSI/IEEE C57.12.91 – Test Code Dry-Type Distribution and Power Transformers.
 5. ANSI/IEEE C57.110 – Recommended Practice for Establishing Transformer Capability When Supplying Non-sinusoidal Load Currents.
 6. NEMA ST 1 – Specialty Transformers
 7. NEMA ST 20 – Dry-Type Transformers for General Applications
 8. DOE2016 – U.S. Department of Energy, Energy Conservation Program.



9. Distribution Transformers Energy Conservation Standards DOE 10 CFR Part 431, Latest Edition.
10. All dry type transformers shall be of the quiet type, operating at sound levels below NEMA ST 20 standards as follows: Sound levels shall be warranted by the manufacturer.

Size in kVA	Specification*	NEMA ST 20
0-9	35 dB	40 dB
10-50	40 dB	45 dB
51-150	45 dB	50 dB
151-300	50 dB	55 dB
301-500	55 dB	60 dB
501-700	60 dB	62 dB
701-1000	62 dB	64 dB

* The specified sound level is 2 to 5 dB below NEMA ST 20 standard and it shall be applied for specified temperature rise and K-factor equivalent kVA.

1.7 QUALITY ASSURANCE

- A. All equipment and material provided on this Project shall be UL or ETL listed, in accordance with the requirements, and suitable for its intended use on this Project.
- B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.
- C. Source Limitations: Obtain each transformer type through one (1) source from a single manufacturer.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable and marked for intended use.
- E. Comply with IEEE C57.12.91, "Test Code for Dry-Type Distribution and Power Transformers."



1.8 DELIVERY, STORAGE AND HANDLING

- A. Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit, throughout periods when equipment is not energized and when units are not in a space that is continuously under normal environmental controls.
- B. Handle transformers using proper equipment for lifting and handling, use when necessary lifting eye and/or brackets provided for that purpose.

1.9 WARRANTY

- A. Comply with the requirements of DDC general conditions and minimum of five (5) years from the data of acceptance.

PART 2 - PRODUCTS

2.1 DRY TYPE TRANSFORMERS

- A. Transformers shall be 115°C. temperature rise above 40°C. ambient. Transformers shall be capable of carrying a 15% continuous overload without exceeding a 150°C. rise in a 40°C. ambient.
- B. All insulating materials shall exceed NEMA standards and be suitable for 220°C. U.L. component recognized insulation system.
- C. Coils
 - 1. Coil conductors shall be continuous with terminations welded without auxiliary flux material. Coils shall be wound with copper magnet wire, vacuum impregnated with non-hydroscopic, thermosetting varnish. Coils shall be protected with an outer layer of glass tape or similar quality insulation. Provide each layer with end-fillers or tie-downs to ensure maximum mechanical strength. Tap terminations shall be to magnet wire. Primary and secondary magnet wire shall be braced directly to bus studs or lugs. Windings shall be continuous with no splices. One (1) coil per phase in the primary and secondary.
 - 2. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.



D. Core

1. Core shall be manufactured from a high-grade, non-aging 29 gauge silicon steel with high magnetic permeabilities, low hysteresis and eddy current losses. Magnetic flux densities shall be kept well below saturation to allow for a minimum of ten (10) percent over-voltage excitation.
2. Laminations shall be cut with the direction of the grain and free from burrs. All laminations shall be core plated or annealed and firmly butted. The core laminations shall be clamped tightly and compressed to provide quiet operation and to prevent damage during shipment or rough handling.
3. Taps for Transformers 25kVA and Larger: Provide NEMA Standard taps: two (2) 2.5% above and four (4) 2.5% below normal full capacity. For step-up transformers provide two (2) 2.5% above and two (2) 2.5% below normal full capacity.
4. Taps for Transformers 7.5 to 24kVA: One (1) 5% tap above and one (1) 5% tap below normal full capacity.
5. The core and coil assembly shall be grounded to the enclosure by means of a flexible copper grounding strap of adequate size.

E. Enclosures

1. Provide lifting brackets on all sizes.
2. Ventilated openings shall be such as to avoid accidental access to live parts.
3. The entire enclosure shall be degreased, cleaned, phosphatized and painted with one (1) coat of zinc chromate primer and two (2) coats of ANSI 61 gray enamel.
4. NEMA 250, Type 2, ventilated.
5. The following enclosure requirements shall be in accordance with UL Standard 506:
 - a. Ventilation Openings
 - b. Corrosion Resistance
 - c. Cable Bending Space
 - d. Grounding Provisions
 - e. Surface Temperatures



f. Wiring Compartment Temperature Rise Terminations

F. Mounting

1. Ventilated units up to 750 lb: Suitable for wall, floor or ceiling mounting
2. Ventilated units over 750 lb: Suitable for floor mounting only.

G. Vibration Isolation

1. All transformers shall have vibration isolation that isolates the enclosure from the core and the coil assembly. Additional vibration isolators shall be provided between trapeze or universal hangers of suspended transformer and its case and between transformer enclosure and floor for floor mounted units. Use flexible metallic conduit of 24 inch minimum length, with external grounding jumper for final connection to transformer enclosure.
2. Each dry type transformer shall be resiliently suspended on double deflection neoprene in the shear hanger rod isolator assemblies, capable of providing minimum 3/8 inch static deflection.
3. Trapeze mounted assemblies shall be equipped with seismic cables appropriate for building seismic zone.

H. Low Magnetizing Inrush Current

1. Provide low magnetizing inrush current type transformers rated for four (4) times the full load current rating of all step-up transformers.
- I. Provide 120V internal heater to the transformer to avoid condensation as the transformer will not be energized most of the time.

2.2 EFFICIENCY LEVELS

- A. All transformers shall meet DOE 2016 efficiencies as identified in the table below.

Single Phase		Three Phase	
KVA	DOE 2016 Efficiency	KVA	DOE 2016 Efficiency
15	97.70	15	97.89
25	98.00	30	98.23
37.5	98.20	45	98.40



Single Phase		Three Phase	
50	98.30	75	98.60
75	98.50	112.5	98.74
100	98.60	150	98.83
167	98.70	225	98.94
250	98.80	300	99.02
333	98.90	500	99.14
N/A	-	750	99.23
N/A	-	1000	99.28

2.3 SHIELDED ISOLATION (K-RATED) TRANSFORMERS

- A. Transformers indicated on the Contract Documents to be shielded isolation type or K-rated shall be provided with an electrostatic shield consisting of a single turn of copper placed between the primary and secondary windings and grounded to the transformer core.
- B. Shielded isolation type or K-rated transformers indicated on the Contract Documents shall be U.L. listed as suitable for non-sinusoidal current loads with a minimum K factor of K-13. The secondary neutral conductor and neutral pad shall be rated to carry 200% of the nominal phase current.
- C. Core and winding design shall be such as to minimize eddy current losses and to reduce the core flux density well below the saturation point to prevent core overheating caused by harmonic distortion.

2.4 MANUFACTURERS

- A. If it complies with these Specifications, dry-type transformers manufactured by one (1) of the following manufacturer's:
 1. General Electric
 2. Square 'D'
 3. Eaton/Cutler Hammer
 4. Siemens



5. Hammond Power Solutions
6. REX Power Magnetics
7. or Approved Equal

PART 3 - EXECUTION

3.1 GENERAL

- A. Where transformers are to be floor mounted, transformers shall be installed on a 4" high concrete housekeeping pad. Provide $\frac{3}{4}$ " thick neoprene pads between the transformer stand and housekeeping pad. Coordinate size and location of concrete bases with actual transformer provided. Cast anchor-bolt inserts into bases. Contractor to confirm transformer is leveled.
- B. Provide grounding conductor from the transformer secondary to the nearest building ground for each separately derived system. Grounding electrode conductor shall be sized in accordance with NEC Section 250 for the derived phase conductors.
- C. Transformer taps shall be adjusted for rated output voltage under normal operating conditions.
- D. Correct any deficiencies identified by tests and retest until acceptable results are achieved.
- E. Provide engraved nameplates for each transformer. Nameplate for transformer to include the following.
 1. Manufacturer Information.
 2. UL Stamps.
 3. KVA Rating.
 4. Primary and Secondary Voltage.
 5. Tap Voltages and Percentages.
 6. Insulation Class.
 7. Temperature Rise.
 8. Weight.
 9. Impedance.



10. Wiring Configuration.
11. Enclosure Type.
12. Date of Installation.

3.2 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

3.3 FACTORY TESTING

- A. Ratio tests at the rated voltage connection and at all tap locations.
- B. Polarity and phase relation tests on the rated voltage connection.
- C. Applied and induced potential tests.
- D. No load and excitation current at rated voltage on the related voltage connection.

3.4 FIELD QUALITY CONTROL TESTING

- A. Verify Transformer Secondary Voltage.
 1. Ensure proper primary and secondary voltages.
 2. Compile a comprehensive listing of transformers, including ratings, locations and mounting type.
 3. Compare equipment nameplate data with the Contract Documents and specifications.
 4. Inspect physical and mechanical condition.
 5. Verify that resilient mounts are free and that any shipping brackets have been removed.
 6. Verify ground has been installed.
 7. Measure primary and secondary voltages.
 8. Insulation Resistance Tests.
 9. Perform an Infrared Scan of transformer connections.
- B. Submit all test results.



3.5 FIELD ASSEMBLY

- A. Existing lift capacity is 2,500 lbs. Transformer is required to be field assembled if submitted total weight exceeds 2,400 lbs.
- B. Field assembly shall be under the supervision of the manufacturer.

3.6 ADJUSTING

- A. Record transformer secondary voltage at each unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus ten (10) percent and not being lower than nameplate voltage minus three (3) percent at maximum load conditions. Submit recording and tap settings as test results.
- B. Connect buck-boost transformers to provide nameplate voltage of equipment being served, plus or minus five (5) percent, at secondary terminals.
- C. Output Settings Report: Prepare a written report recording output voltages and tap settings.

3.7 CLEANING

- A. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION



SECTION 26 24 16

PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide panelboards in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Panelboards.
B. Circuit Breakers.
C. Fusible Switches.
D. Surge Protective Devices (SPD)

1.4 SUBMITTALS

- A. Shop Drawings
1. Show main devices and lug sizes; branch circuit device sizes and arrangement; bus ampacities; voltage, ampere, withstandability and short circuit rating of the panelboard and overcurrent protective devices; dimensions and construction; gutter and backbox dimensions; nameplate and legend; protective coating; and all pertinent details of panel, enclosure, cover, and method of securing cover and lock.
 2. Include fully detailed and dimensioned plan elevations of each panel at a minimum of 1/4" scale.
 3. Submit plans indicating maximum dimensions for panelboards including clearances between the panelboards and adjacent surfaces and other items to meet the NEC.



B. Product Data

1. Submit manufacturer's catalog data for all circuit breakers and switch assemblies.
2. Submit certification of U.L. compliance to integrated short circuit withstand requirements.
3. Seismic restraint calculations and certificates.
4. Short circuit and coordination study.

1.5 QUALITY ASSURANCE

A. Except as modified by the Contract Documents, comply with the latest applicable provisions and recommendations of the following:

1. Panelboards:
 - a. U.L. Standards #50 and #67.
 - b. Federal Standard W-P-115A Type II, Class 1.
 - c. NEMA Standard PB-1.
 - d. CSA Standard C22.2 No. 29-M.
 - e. NFPA 70
2. Circuit Breakers:
 - a. U.L. Standard #489.
 - b. Federal Standard W-C-375B
 - c. NEMA Standard AB-1.
 - d. CSA Standard C22.2 N. 5-M91.
3. Fusible Switches:
 - a. Federal Standard W-S-865C.
 - b. U.L. Standard 98.
 - c. NEMA KS-1.



4. Ground Fault Circuit Interrupters (GFCI):
 - a. UL 943.
5. Arc Fault Circuit Interrupter (AFCI)
 - a. UL 1699
- B. Testing Agency Qualifications
 1. Member company of NETA and NRTL

PART 2 - PRODUCTS

2.1 PANELBOARDS

- A. Provide panelboards or field-installed panel gutters, utilizing existing panel back boxes, consisting of an assembly of branch circuit switching and protective devices (circuit breakers, switch and fuse units, or combination thereof) mounted inside a dead front enclosure. All panelboards shall be door-in-door construction. Provide the number and size of these branch circuit devices as indicated by the circuiting, on the Contract Drawings, and in the Schedules. Locations of circuit breakers shall be as indicated in the schedules.
- B. Provide the following modifications and additional equipment as shown on the Contract Drawings:
 1. Main circuit breakers (auto if no indication).
 2. Main circuit breakers (non-auto if denoted).
 3. Shunt trip circuit breakers.
 4. Ground fault circuit interrupting (GFCI) circuit breakers.
 5. Split buses.
 6. Integral remote control switches.
 7. Subfeed switches.
 8. Panelboard integral mounted relays and contactors.
 9. Feed-through lugs and/or bus.
 10. Feed-through cabling arrangement.
 11. Double lugs for multiple cables or for future provisions.



12. Oversized gutters.
13. Arc fault circuit interrupting (AFCI) breakers.
14. Combination arc fault circuit interrupting breakers.
15. Extra Capacity Neutral Bus – rated 200% of phase bus.

C. Interiors

1. Provide a rigid removable assembly of copper bus bars and interchangeable bolted branch circuit devices.
2. Material: Hard-drawn copper, 98 percent conductivity.
 - a. Copper bus bars shall have sufficient cross sectional area to provide a current density of 1000A per square inch.
3. Bus bars drilled to permit branch circuit devices of all sizes and number of poles to be interchangeable and installed in any spare space of sufficient size, without disturbing adjacent units; without removing main bus or branch circuit connectors and without machining, drilling, or tapping in the field.
4. Bus shall be arranged in sequence or distributed phasing so that multi-pole circuit breaker can replace any group of single circuit breakers of the same size.
5. Provide neutral bus in each panelboard.
6. Neutral bus shall be 200% rated when supplied from an oversized neutral feeder. Neutral bus shall be capable of terminating one conductor per panelboard pole position minimum.
7. Provide ground bus in each panelboard.

D. Enclosure

1. Enclosure shall be code gauge steel box, galvanized.
2. Provide a bolt-on ground connector to inside of enclosure.
3. Enclosure shall be flush mounted in finished areas and where indicated. Enclosure shall be surface mount elsewhere.
4. Provide stainless steel covers for all panelboards located in kitchens or laundries. Enclosure shall be rated NEMA Type 4X.



5. Gutter Extension and Barrier: Same gauge and finish as panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.

E. Front

1. Doors shall be provided on all lighting and power panels. On switch and fuse panelboards doors over overcurrent devices shall not be provided unless rated for same.
2. Doors shall be heavy code gauge steel as required to maintain panel face flat.
3. Front shall be held closed with trim clamps.
4. Front door frame shall be hinged with captive screws. Circuit breaker section door shall be hinged.
5. Provide typewritten directory for total number of poles. Install behind plastic transparent protective cover on the panel frame.
6. Provide approved lock. All panels shall be keyed alike. Furnish four (4) sets of matching keys to the City of New York.
7. Provided welded angle rest at the bottom of the door to facilitate cover installation.
8. Doors over 48" in height shall have auxiliary fasteners at top and bottom of door in addition to lock and catch.
9. Enclosure shall be factory finished in ANSI 61 gray enamel or two coats of air-drying lacquer over a rust inhibiting primer.

F. Multiple Section Panelboards

1. Each section of multiple section panelboards shall be the same height.
2. Multiple sections shall each contain the same number of poles (e.g., 72 poles equals 2-36 pole panels).
3. When a multi-panel is served from a transformer, the main circuit breaker shall be provided in the first section to adequately protect the transformer secondary.

G. Terminal Lugs

1. Terminal lugs shall be bolted type, labeled for copper conductors.
2. Main lugs shall be located properly at top or bottom, depending where main feeder enters.



3. Lugs shall be rated for 75°C terminations.

H. Electrical Ratings

1. Panelboards shall be rated 208Y/120 volts or 460Y/265 volts, 3 phase, 4 wire, full neutral with ampacities as indicated on the Contract Drawings (unless otherwise noted).
2. Panelboards shall be fully rated for the available short circuit current indicated on the Contract Drawings. Each panelboard as a complete and finished product shall receive a single U.L. approved integrated equipment rating by the manufacturer. The integrated equipment short-circuit rating shall certify that all equipment is capable of withstanding the thermal and magnetic stress of a fault equal to the value specified on the Contract Drawings. Such rating shall be established by actual tests by the manufacturer on similar equipment. This certification shall be permanently affixed to each panelboard.
3. Where indicated, provide panelboards having a "service entrance" Type U.L. label with neutrals factory bonded to frame or enclosure.
4. Provide surge protective devices as indicated on the Contract Documents.

I. Circuit Breaker Devices

1. Circuit breakers shall be plastic molded case bolt on type with completely sealed enclosure and toggle type operating handle. Trip ampere rating and "ON/OFF" indication shall be clearly visible. Plug-in type circuit breakers shall not be permitted.
2. Circuit breakers shall be thermal-magnetic trip-free, trip-indicating, quick-make/quick-break, with inverse time delay characteristics. Single-handle and common tripping multi-pole breakers shall be provided.
3. Provide with silver alloy contacts with auxiliary arc-quenching devices.
4. Panelboard shall be of the type which will accept the field installation of shunt trip devices of 60 amperes or less on the branch devices.
5. Interrupting capacities shall be as indicated on the Contract Drawings. As a minimum, 208Y/120 volt devices shall be not less than 10,000 AIC; 460Y/265 volt devices shall not be less than 14,000 AIC; and 42,000 AIC interrupting capacity for distribution style panels.
6. For lighting circuits provide devices labeled "SWD" for switching purposes.
7. Provide with bolted type terminals U.L. listed for copper 75°C conductors.



8. Provide main breakers in panels served from transformers unless separate transformer secondary protection is provided. Main circuit breakers shall be provided in the first section only when multi-section panelboards are provided.
 9. Each breaker or space unit shall be provided with an individual number.
 10. Circuit breakers serving computer equipment and those serving kitchen equipment beneath cooking hoods shall include a shunt trip coil, when a remote breakglass station or EPO is provided.
 11. Shunt trip breakers shall be supplied with 120 volt coils. Provide 120 volt circuit from nearest 120 volt panel to coil. Where shunt trip breakers are in emergency panels provide emergency 120 volt source for same from nearest 120 volt emergency panel.
 12. Provide handle padlocking device for designated breakers.
 13. For HVAC equipment provide U.L. listed "HACR" type devices.
 14. Provide tie-bars on all single pole circuit breakers serving multi-wire branch circuits in compliance with NEC Article 210.4(B). The disconnecting means shall simultaneously disconnect all ungrounded conductors at the point where the branch circuit originates.
 15. Should fixed in-feeds require more than one (1) branch circuit, all circuit breakers shall be equipped with tie-bars to allow all circuits to be disconnected during service events.
- J. Ground Fault Circuit Interrupters (GFCI)
1. Ground fault circuit interrupter branch circuit breakers shall be provided as indicated on the Contract Drawings. Circuit breakers shall be circuit interrupting which will operate manually for normal switching functions and automatically under overload, short circuit, and 0.005 amp line-to-ground fault conditions. The operating mechanism shall be entirely trip-free so that contact cannot be held closed against an abnormal overcurrent, short circuit, or ground fault condition. The device shall be bolt-on type with insulated case construction and shall be interchangeable with standard single pole breakers utilized in the panelboard.
- K. Switch and Fuse Devices
1. Provide a quick-make/quick-break, horsepower rated, dead-front type. Each switch shall be a self-contained unit, externally operable from the front. Provision for padlocking handle in "OFF" position shall be provided.
 2. Fuse and switch compartment shall be interlocked to prevent access to the fuse compartment until switch is thrown to "OFF" position. Interlock shall be



intentionally releasable by externally applied tool to permit investigating switch and fuses under load.

3. Switch units shall be interchangeable for replacement, without disturbing balance of distribution panelboard's operation.
4. Switches shall be equipped with rejection type clips for U.L. Class R fuses up to 600A, suitable for U.L. Class L fuses above 600A.
5. Switches shall reject fuses other than those specified.
6. Provide spare fuses.

L. Arc-Fault Circuit Interrupters (AFCI)

1. Arc-fault circuit interrupter breakers shall be provided for all dwelling unit branch circuits that supply 120 volt, 20 ampere receptacles in the dwelling unit. Protection shall be provided for the entire branch circuit. The circuit breaker shall be specifically designed to protect electrical branch circuit conductors against the unwanted effects of arcing. The device shall be bolt-on type with insulated case construction and shall be interchangeable with standard single pole breakers utilized in the panelboard.

2.2 MANUFACTURERS

- A. Electrotech
- B. All City Switchboard
- C. Lincoln Electric.
- D. General Electric
- E. Square 'D'
- F. Eaton/Cutler Hammer
- G. Siemens
- H. Or Approved Equal



PART 3 - EXECUTION

3.1 INSTALLATION

- A. All panels shall be mounted at a maximum height of six feet six inches to top unless otherwise noted.
- B. Surface type panels shall be mounted a minimum one inch off the wall on channels.
- C. Feed-through panels shall be connected to a main feeder by insulated parallel gutter taps. Full-size tap shall be provided for two (2) or more panels on a common feeder.
- D. Where flush mounted, the fire integrity of the wall in which it is installed shall be maintained.
- E. Branch circuit wires shall be neatly arranged and shall be tied together in each gutter with nylon pre-manufactured cable ties at four inch intervals.
- F. All knockouts removed and not utilized shall be plugged.
- G. Provide nameplate and fill out as-built typewritten panel directory.
- H. Provide grounding and bonding jumpers per the grounding specification section herein and as indicated on the Contract Drawings.
- I. All branch circuit conductors, within panelboards, shall be labeled with respective circuit number.
- J. Stub 3-1" empty conduits from each panelboard into the ceiling cavity above for future use.
- K. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- L. For new panel gutters installed in existing panel back boxes, provide measurement of all existing back box dimensions and all new gutters to fit in existing back boxes. Modify existing back boxes and provide extension ring, as required.

3.2 TOUCH UP AND CLEANING

- A. All backboxes shall be vacuumed clean of debris after installation and prior to final payment.
- B. Scratch marks, etc., shall be touched up with matching paint.



3.3 OBSERVATIONS

- A. Panel fronts shall be removed when directed by the Commissioner for observation (either by floor, or by group of floors, or all panels on the project as required by the Commissioner) and reinstalled immediately thereafter the observations.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Retain a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

3.5 FIELD QUALITY TESTING

- A. Perform the following field quality tests and visual inspections, in accordance with NETA Acceptance Testing Specifications.
 - 1. Exterior of the equipment.
 - 2. Interior of the cubicle.
 - 3. Interior bus/cable systems.
 - 4. Bus support insulators and spacing.
 - 5. Doors/panels/brackets.
 - 6. Door handles/locking bars/mechanisms.
 - 7. Instruments/relay covers.
 - 8. Control/metering transformers/instruments.
 - 9. Grounding/neutral bar installation correct per application.
 - 10. Wiring/terminal connections.
 - 11. Proper electrical clearances maintained.
 - 12. Complete circuit directories properly installed.
 - 13. Surge protection devices installed properly.
 - 14. Load current readings balanced per Code.



- B. Verify circuit breaker identification, sizing and operation in building distribution panelboards.
 - 1. Compile a comprehensive listing of building distribution panelboards, as well as, their respective directories, feeder sizes and designation from where panels are served from.
 - 2. Compare equipment nameplate data with the Contract Drawings and specifications.
 - 3. Inspect circuit breaker for correct mounting.
 - 4. Inspect case for cracks or other defects.
- C. Verify that wire size is appropriate for breaker size.
 - 1. De-energize each panelboard breaker while observing respective building loads served by the breaker.
 - 2. Re-energize each panelboard breaker verifying equipment is re-energized.
 - 3. Each tested breaker, when placed in the "OFF" position, breaks electrical power to the respective (labeled) building load.
 - 4. Each tested breaker, when placed in the "ON" position, supplies electrical power to the respective (labeled) building load.
 - 5. No visible and/or audible arcing present.
 - 6. There shall be no short circuits.
 - 7. Lugs shall all be pulled tight.
 - 8. Panelboards shall be clean and neat. Panelboard covers shall be reinstalled.
- D. Verify Circuit Loads on Main Distribution Panels.
 - 1. Ensure main distribution panels have the proper breaker feeding each load.
 - 2. Compile a comprehensive listing of building distribution panelboards, as well as, their respective directories.
 - 3. Verify breaker matches breaker load.
 - 4. Check breaker balance phase-to-phase.
 - 5. Check line to ground resistance.
 - 6. Check setting on the breaker for trip to motor loads.



7. Verify settings and trip on larger breakers to match the calculated reports.
 8. Load shall not be higher than 80% of the breaker.
 9. Phases are properly balanced.
 10. No more than 0.005 ohm to ground.
- E. Submit all field quality test results.
- F. Perform the following infrared scan tests and inspections and prepare reports:
1. Initial Infrared Scanning: After substantial completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
 2. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each panelboard 11 months after date of substantial completion.
 - a. Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

3.6 SERVICE MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Keys: Two (2) for each type of panelboard cabinet lock.
 2. Circuit Breakers Including GFCI and Ground Fault Equipment Protection (GFEP) Types: Two (2) for each panelboard.
 3. Fuses for Fused Switches: Equal to 10 percent of the quantity installed for each size and type, but no fewer than three (3) of each size and type.
 4. Fuses for Fused Power-Circuit Devices: equal to ten (10) percent of the quantity installed for each size and type, but no fewer than three (3) of each size and type.

END OF SECTION



SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide wiring devices in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Switches.
B. Receptacles.
C. Wall Plates.
D. Special Receptacles.

1.4 SUBMITTALS

- A. Submit manufacturer's catalog cuts and specifications for all types for each product indicated. Highlight exact model being proposed in the submittal.
B. Submit samples for finish, color and texture as requested by the Commissioner.

1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
1. Switches.
 - a. NEMA Standards WD-1 and WD-6.
 - b. Federal Specification Standard WS-896E.
 - c. U.L. 20.



2. Receptacles:

- a. NEMA Standards WD-1 and WD-6
- b. U.L. Standard 498
- c. Federal Specification WC596-D.
- d. U.L. 943 (GFCI receptacles).

B. Obtain each type of wiring device through a single manufacturer, where available.

1.6 WARRANTY

A. Provide a five (5) year manufacturer's warranty for all components.

PART 2 - PRODUCTS

2.1 SWITCHES

- A. Switches shall be commercial specification grade, flush mounting, quiet-operating AC type, decora rocker type, heat-resistant plastic housing and self grounding metal strap. Provide silver alloy contacts. Switches shall be rated 20A at 120-277V and capable of full capacity on all lamp loads. Switches shall be designed for side or back wiring with up to No. 10 AWG wire. Switches shall be rectangular (decorator) style in all areas.
- B. Provide single-pole, double-pole, 3-way, 4-way, pilot or keyed type switches, as indicated on the Contract Drawings or required.
- C. Switch with Pilot Light: Switches indicated with an illuminated rocker switch in the "OFF" position for visual load monitoring shall be provided as indicated on the Contract Drawings.
- D. Provide 3-position, momentary contact, center "OFF" type switches, which control lighting by way of a low voltage lighting control relays as indicated on the Contract Drawings.
- E. Provide illuminated type switches controlling lighting connected to emergency power – illuminated when switches are in the "OFF" position.
- F. The color of all devices shall be selected by the Commissioner.



G. Manufacturers

1. Switches

- a. Leviton
- b. Hubbell
- c. Bryant
- d. Pass & Seymour/Legrand
- e. Lutron
- f. Or Approved Equal

2.2 RECEPTACLES

- A. Receptacles shall be two-pole, three-wire, grounding, simplex or duplex NEMA 5-20R, rated for 20 amperes at 125 volt electrical alternating current as indicated on the Contract Documents and ANSI standard type, commercial specification grade, with brass contacts that accepts a plug with two (2) parallel blades and one (1) grounding blade. Receptacles shall be equipped with terminals to accept up to No. 10 AWG conductors. Enclosures shall be heat-resistant plastic with nylon face and two (2) grounding screws. Provide break-off terminals for 2-circuit wiring. Provide rectangular decora style.
- B. Ground fault circuit interrupter (GFCI) receptacles shall interrupt ground leakage currents between 4-6 mA having a maximum circuit current of 20 amperes. Employ feed through or non-feed through devices as indicated, or required. Configuration shall be straight blade type NEMA 5-20R. Utilize 2 3/4" deep outlet boxes without any adaptors. Long life LED light shall be provided, within the receptacle. Device shall have a minimum nominal tripping time of 0.025 seconds.
- C. Provide tamper-resistant receptacles in all dwelling units. All such receptacles shall be listed as tamper-resistant type.
- D. Provide RED receptacles when circuited to emergency power, unless otherwise noted.
- E. Provide commercial specification grade twist lock type receptacles as indicated on the Contract Documents.
- F. USB Charger Receptacle: Shall be equipped with two (2) USB style 'A' charging outlets with a 20A simplex tamper resistant receptacle.
- G. Switched duplex receptacles shall be wired so that only the top receptacle is switched. The lower receptacle shall be unswitched.



- H. Surge Protective Device (SPD) Receptacles shall have integral surge suppression in line to ground, line to neutral, and neutral to ground modes.
 - 1. SPD Components: Multiple metal-oxide varistors; with a nominal clamp-level rating of 400 Volts and minimum single transient pulse energy dissipation of 210 Joules.
 - 2. Active SPD Indication: LED, visible in the face of the device to indicate device is active or no longer in service.
- I. The color of all normal devices shall be selected by the Commissioner.
- J. Manufacturers
 - 1. Receptacles:
 - a. Leviton
 - b. Hubbell
 - c. Thomas & Betts
 - d. Pass & Seymour/Legrand
 - e. Or Approved Equal

2.3 WALL PLATES

- A. Provide wall plates for all receptacles, outlets, and switches of 430 stainless steel with satin finish, unless otherwise noted. When two (2) or more switches or devices are shown in one (1) location, provide a common wall plate.
- B. Provide cast aluminum metal plate with stainless steel spring loaded, gasketed, double flap lift cover to provide protection for the receptacle and plug when "IN USE" for all exterior receptacles, those in mechanical rooms, those in garages, and where indicated on the Contract Documents. These covers shall be labeled and listed as "extra duty" type.
- C. Provide lockable type covers where indicated on the Contract Documents.
- D. Provide RED wall plates for all receptacles circuited to emergency power.
- E. Manufacturers
 - 1. By same manufacturer as device utilized.



PART 3 - EXECUTION

3.1 SWITCHES

- A. Install all switches vertically with the "ON" position on top, unless noted or specified otherwise.
- B. Where switches are indicated near doors, corner walls, etc., install not less than two (2) inches and not more than twelve (12) inches from the trim.
- C. Carefully coordinate locations of switches to insure locations are at the strike side of doors.
- D. Furnish and install an engraved legend for each switch that controls motors, equipment systems, etc., not located within the sight of the controlling switch.

3.2 RECEPTACLES

- A. Unless otherwise noted, mount receptacles vertically with U-shaped ground position at the top.
- B. Coordinate device layouts and installation with all other adjacent devices and any wall obstruction prior to any work.

3.3 GROUND FAULT CIRCUIT INTERRUPTERS (G.F.C.I.)

- A. Swab all conduits and outlet boxes clear of moisture.
- B. Do not combine G.F.C.I. protected circuits with other circuits in the same raceway; only one (1) G.F.C.I. circuit per raceway.
- C. Do not substitute G.F.C.I. circuit breakers for G.F.C.I. receptacles.
- D. All G.F.C.I. receptacles shall be installed in a readily accessible location per the NEC.

3.4 DEVICE GROUNDING

- A. Provide a No. 12 AWG grounding conductor from the device grounding terminal to the panelboard ground bus.
- B. Provide a No. 12 AWG grounding conductor from the device grounding terminal to the outlet box.



3.5 INSTALLATION

- A. All devices shall be flush-mounted except as otherwise noted on the Contract Documents.
- B. Locations
 - 1. Comply with layout drawings for general location.
 - 2. Relocate outlets obviously placed in a location or manner not suitable to the room finish.
 - 3. Avoid placing outlets behind open doors.
- C. Ganging of Switches: Provide steel barriers between ganged 265 volt switches of different phases between all ganged dimmers; and between normal and emergency sources.
- D. Fastening: Securely fasten the devices into the outlet boxes and attach appropriate wall plates.
- E. Testing
 - 1. After installing wiring devices and after circuiting has been energized, test for proper polarity, ground continuity, and other requirements indicated on the Contract Documents.
 - 2. Test GFCI operation with local fault simulation according to the manufacturer's instructions.
 - 3. Replace all malfunctioning devices with new and retest as specified above.
- F. All devices shall be provided with identification as indicated in the identification specification section.

3.6 CLEANING

- A. Clean equipment and devices internally and externally using methods and materials recommended by the manufacturer, and restore any damaged finishes.

3.7 SERVICE PARTS

- A. Provide five (5) service devices for each type used on the project.



3.8 SERVICE AND SUPPORT

A. Startup and Programming

1. Provide a factory-instructed field service engineer to visit the site to ensure proper system installation and operation under the following parameters:
 - a. Perform site visits upon completion of the wiring device systems, installation, and;
 - (1) Verify connections and locations of all control devices.
 - (2) Verify systems operation control, zone by zone.
 - (3) Verify proper integration of the manufacturers' interfacing equipment.
 - (4) Obtain sign-off on all system functions.

END OF SECTION



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SECTION 26 28 13

FUSES (600 V AND LESS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide 600 Volt and less fuses in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Fuses and Accessories.
B. Spare Fuse Cabinets.

1.4 SUBMITTALS

- A. Shop Drawings
1. Submit dimensioned drawings of each spare fuse cabinet by type and size.
- B. Product Data
1. Provide complete set of let-through curves for each type of fuse.
 2. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
 3. Submit listing of all types, sizes and quantity of fuses which will be installed including location of each.
 4. Submit listing of all service fuses by types, sizes and quantities, which will be furnished for placement in the respective fuse cabinets.



5. Short circuit current analysis is based upon Bussmann fuse characteristics for let-through currents. If fuses by another manufacturer are proposed, provide appropriate fuse curves and let-through values which correspond to Bussmann values shown on the Contract Documents. Submit comparative chart of fuse listed manufacturers for review prior to installation. All fuses used for this project shall be from the same manufacturer:
 - a. Complete fuse data, including fuse type designation, characteristics, let-through values and fuse cure shall be submitted.
 - b. Cross reference of let-through currents of the fuses to be used compared to the Bussmann fuses indicated on the Contract Documents or specified herein (e.g., design let-through current of feeder point No. _____ on the Contract Documents is _____ amperes. Let-through current for proposed manufacturer fuse is _____ amperes.) —.

1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 1. U.L. Standard #198.
 2. U.L. Standard #977.
 3. NFPA 70, Article 100.
 4. ANSI
- B. All fuses shall be the same type within a piece of equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Mains, Feeders and Branch Circuits
 1. Circuits 601 to 6000 amperes shall be protected by Class L, Bussmann System 300 Low Peak Yellow Time-Delay fuses, type KRP-C (amp) SP with 200,000 RMS symmetrical interrupting current rating.
 2. Circuits 0 to 600 amperes shall be protected by Class RK1, Bussmann System 300 Low Peak Yellow dual element fuses, type LPN-RK (amp) SPI for 250 volt applications and LPS RK (amp) SPI for 600 volt applications, with 200,000 RMS symmetrical interrupting current rating. Provide open fuse indicator.

Fuses (600 V and Less)



3. A minimum 2:1 ratio must be allowable between the ampere rating of the main fuse and that of the feeder fuse, and between the feeder fuse and branch circuit fuse to obtain selective coordination and minimize switch size.
4. Metal end caps of fuses rated 61 through 600 amperes shall be electrically connected to the fuse blades to facilitate voltage testing during OSHA required lock out/tag out procedures.
5. All fuses shall be of the same manufacturer.

B. Motor Protection

1. All the individual motor circuits shall be protected by class RK1, Class J, or Class L time delay type fuses. Motors under 10 HP may utilize Class CC fuses with blown indicators.
2. Fuse sizes for motor protection shall be appropriate for starting current of the motor.

C. Service fuses: Upon completion of the project, provide the City of New York with spare fuses as indicated below:

1. 10 percent (minimum of 3) of each type and rating of installed fuses shall be supplied for service.
2. Service fuse cabinets shall be provided to store the above spares. The cabinet shall be constructed of minimum .080 heavy duty aluminum, with baked ASA61 gray enamel paint. The wall mounted cabinet door shall be equipped with a locking handle and cylinder lock. Mounting holes with key slots 16 inches on center shall be provided.
3. Service fuse cabinets shall be provided as a minimum in the following locations:
 - a. Each main normal and emergency rooms.

D. Labels

1. "Low-Peak Yellow" or equivalent notice labels to alert the end user of the engineered level of protection of the electrical equipment shall be field installed by the Contractor. They shall be obtained from the fuse manufacturer, marked with the proper fuse rating per the specifications and placed in a visible location in the enclosure.



2.2 MANUFACTURERS

- A. Fuses
 - 1. Cooper Bussmann
 - 2. Mersen
 - 3. Littelfuse
 - 4. Or Approved Equal
- B. Service Fuse Cabinet
 - 1. By fuse supplier.

PART 3 - EXECUTION

3.1 GENERAL

- A. Do not install fuses until equipment is ready to be energized. Final tests and inspections shall be made prior to energizing the equipment.
- B. Provide all fuses except as otherwise noted. All fuses shall be new.
- C. Replace any fuses which are not functioning.
- D. Labels: Install appropriate label supplied the by fuse manufacturer within each switch, motor starter, or panelboard door, or at location next to the fuse clips.
- E. Arrange fuses so rating information is readable without removing fuses.
- F. As-built drawings shall indicate actual fuse sizes, ratings and types.
- G. Install spare fuse cabinets.

END OF SECTION



SECTION 26 28 16

DISCONNECT SWITCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide disconnect switches in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Safety Switches (Fused and Non-Fused Types).
B. Manual Control Switches.

1.4 SUBMITTALS

- A. Product Data
1. Submit manufacturers' data for all disconnect switches, including dimensional data, ratings, fuse ratings and types, and cable terminal sizes.
 2. Identify motor or equipment served by each switch; indicate nameplate inscription.

1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest applicable recommendations of the following:
1. U.L. Standards #98.
 2. NEMA Standard KS1.
 3. U.L. 20 and Federal Specification Test Standards for Toggle Switches.



PART 2 - PRODUCTS

2.1 SAFETY SWITCHES

- A. Provide heavy-duty, horsepower rated, single-throw knife switch with quick-make/quick-break mechanism, capable of full load operations. Switches shall meet NEMA and U.S. Government specifications for Class A switches.
- B. Provide with contact arc-quenching devices, such as magnetic blowouts or snuffing plates. Provide self-aligning switchblades with silver alloy contact areas, designed so that arcing upon making and breaking does not occur on final contact surfaces. Provide with high-pressure, spring-loaded contact. Switch parts shall be mounted on high-grade insulating base.
- C. Enclosure: Shall be NEMA 1 with hinged door, and defeatable interlock when switch is in "ON" position, able to be padlocked in "ON" and "OFF" positions. Provide NEMA 3R (rain-tight) enclosure for exterior installations and NEMA 12 in warehouse and mechanical rooms.
- D. Size, fusing and number of poles shall be provided as shown on the Contract Documents or as required. Where fused, the switch shall be provided with U.L. listed rejection feature to reject all but Class R fuses. Provide horsepower rated switch to match motor load if size is not shown. Provide 3 pole plus solid neutral switches on four wire circuits and 3 pole switches on all other circuits, unless otherwise noted.
- E. Lugs shall be U.L. listed for copper conductors and be front removable.
- F. Provide six (6) pole switches for connection to motors with the following starter types:
 - 1. Non-reversing - two step - part winding - star connected.
 - 2. Non-reversing - full voltage - two speed separate winding.
 - 3. Non-reversing - full voltage - two speed single winding.
 - 4. Where otherwise required.
- G. Provide auxiliary contacts for switches where required or where indicated on the Contract Documents.
- H. Viewing Windows – Provide viewing windows for all safety switches to provide blade visibility when the switch door is closed.



2.2 TOGGLE TYPE MANUAL CONTROL SWITCHES

- A. Provide switches which operate at their full rating with fluorescent, tungsten, and resistance loads and at 80% of their rated capacity with motor loads.
- B. Switches shall be heavy duty type and shall have:
 - 1. Arc-resisting bodies.
 - 2. Slow make-and-break mechanisms.
 - 3. Silver alloy contact buttons.
 - 4. Side or back wiring with up to No. 10 AWG solid conductors.

2.3 MANUFACTURERS

- A. Safety Switches
 - 1. Square 'D'
 - 2. Eaton/Cutler Hammer
 - 3. General Electric
 - 4. Siemens
 - 5. Or Approved Equal
- B. Toggle Type Manual Control Switches
 - 1. Square D
 - 2. Eaton/Cutler-Hammer
 - 3. General Electric
 - 4. Siemens
 - 5. Or Approved Equal



PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Provide each motor over ½ HP with a horsepower rated safety-type disconnect switch.
- B. Provide each piece of equipment utilizing multi-phase power with a safety-type disconnect switch.
- C. Provide each piece of equipment utilizing single-phase power but protected at over 30 amperes with a safety-type disconnect switch.
- D. Equipment other than that mentioned above shall utilize toggle type manual control switch properly sized and rated for equipment it disconnects.
- E. Factory installed disconnect switches may be used to satisfy the above requirements.
- F. Disconnect switches serving the fire alarm system shall be painted RED.

3.2 MOUNTING

- A. Provide connections and wiring to and from each disconnect switch.
- B. Disconnect switches shall be mounted on adjacent wall or from the floor with independent supports. Switches shall not be mounted on the equipment housings.
- C. Switch enclosure shall be rigidly mounted and with proper alignment on building structure or steel supports with centerline of operating handle not more than 6 feet above finished floor unless otherwise required. Steel supports fabricated from standard rolled structural steel shapes or framing channel shall be used to provide one-inch separation between enclosure and building wall for vertical flow of air.
- D. Completed installation shall contain no extraneous openings.
- E. All viewing windows shall be cleaned.

3.3 IDENTIFICATION

- A. Provide nameplate identification of all disconnect switches in accordance with these specifications.

3.4 FIELD TESTING

- A. The following field acceptance tests shall be performed and test report submitted:
 - 1. Compile a comprehensive listing of building motor loads, including voltage, phase, HP, FLA, and location.



2. Compare equipment nameplate data with the Contract Drawings and specifications.
3. Command inductive motor loads to start through respective manual or computer controls.
4. With individual motor loads running break power to the load with respective disconnect switch and/or safety stop.
5. Wait until motor loads come to a complete stop.
6. Re-connect power to the motor load with the respective disconnect switch and/or safety stop.
7. Compare fuse size with motor full-load current rating to verify correct sizing.
8. Verify that no visible or audible arcing is present.

END OF SECTION



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SECTION 26 29 13

INSTALLATION OF INDIVIDUAL MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Install individual motor controllers in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Installation of Individual Motor Controllers, including variable frequency drives.

1.4 SUBMITTALS

- A. Submit a motor matrix spreadsheet for each floor of the building. The spreadsheet shall be completed with accurate data for each of the following columns and comply with the requirement in the DDC general conditions.

1. Equipment Designation.
2. Quantity.
3. Location.
4. HP/kW.
5. Voltage.
6. Phase and FLA
7. Conduit.
8. Phase Conductors.
9. Ground Conductors.
10. Starter Size (NEMA)
11. Starter Heater Size.



12. Starter Fuse Size.
 13. Disconnect Switch Size.
 14. Disconnect Switch Fuse Size.
 15. Loose Starter/VFD
 16. Combination Starter/Disconnect Switch.
 17. Integral Control Panel.
 18. Motor Rotation.
 19. Panel Serving the load.
 20. Circuit Breaker or Fuse/Switch serving the load.
- B. The matrix shall include all HVAC, plumbing and fire protection equipment.

PART 2 - PRODUCTS

- 2.1 NOT USED.

PART 3 - EXECUTION

3.1 INSTALLATION OF MOTOR CONTROLLERS

- A. Install individual motor controller on nearby wall, within ten feet of motor to be controlled or adjacent to motor on steel supports fabricated from standard rolled structural steel shapes or framing channel, or as required by the Contract Drawings. Do not mount controllers on the equipment or fan housings.
- B. Perform all necessary field modifications and mounting adjustments to each individual motor controller to provide required operation.
- C. Coordinate installation with remote control devices and remote indicating devices for a complete and functional operation.
- D. Overload Elements: Furnish and install properly rated elements in controllers in accordance with the manufacturer's requirements.
- E. Wiring: Furnish and install incoming and outgoing power circuits, including ground.
- F. Nameplates: Furnish and install equipment identification nameplates on the exterior doors with self-tapping screws.



G. Completed installation shall contain no extraneous openings.

3.2 CONTROLLER DISCONNECT SWITCH

A. Provide fused disconnect switches as noted on the Contract Drawings and where multiple motor controllers are served by a common branch circuit or feeder.

3.3 FIELD VERIFICATIONS

A. Verify proper operation of all motor starters for each individual motor load including:

1. Compile a comprehensive listing of building motor loads.
2. Compare equipment nameplate data with the Contract Drawings and specifications.
3. Inspect physical and mechanical condition.
4. Motor-Running Protection
 - a. Compare overload element rating with motor full-load current rating to verify correct sizing.
 - b. If motor-running protection is provided by fuses, verify correct rating considering motor characteristics and power-factor correction capacitors, if applicable.
 - c. When motor starter is in the "auto" position, command motor starter load to "run" from automatic control point.
 - d. With motor starters in the "auto" position, command motor starter load to "stop" from automatic control point.
 - e. Switch the motor starter into the "hand" position.
 - f. Return motor starter "hand/auto" switch to original position.
 - g. Run/stop lights shall operate and correspond to load conditions.

B. Verify Voltage, Amperage and Phasing for Motors.

1. Compile a comprehensive listing of building motor loads.
2. Compare equipment nameplate data with the Contract Drawings and specifications.
3. Inspect physical and mechanical condition.



4. Inspect for correct anchorage, mounting, grounding, connection and lubrication.
 5. Command motor load or major electrical equipment to run under the expected full load condition.
 6. Verify the absence of unusual mechanical or electrical noise or signs of overheating during initial test run.
 7. Measure the voltage and insulation resistance of each phase to ground and phase to phase.
 8. Measure running amperes and evaluate relative to load conditions and nameplate full-load amperes.
 9. Verify rotation to insure correct shaft direction.
 10. Test the motor overload relay elements by injecting primary current through the overload circuit and monitoring trip time of the overload relay.
 11. Test operation of the overcurrent protective device.
- C. Verify Motor Winding Resistance.
1. Compile a comprehensive listing of building motor loads.
 2. Compare equipment nameplate data with the Contract Drawings and specifications.
 3. Measure the voltage to each motor.
 4. Measure the start load and amps.
- D. Verify Magnetic Starter Heaters
1. Compile a comprehensive listing of building motor loads.
 2. Compare equipment nameplate data with the Contract Drawings and specifications.
 3. Check magnetic starter heater size installed.
 4. Check starters on-auto-off.
- E. Submit all field test results.

END OF SECTION



SECTION 26 29 19

SWITCHBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide service distribution switchboards rated 600V or less in accordance with the Contract Documents.
- B. All switchboards shall be shipped in split sections with the largest piece of section dimension or heaviest piece of component capable of being delivered through the existing elevator(s) in which the existing elevator door width dimension and lift capacity, as shown on Electrical Riser Diagram on the drawing E-502.00.
- C. Assemble all switchboards in field.
- D. All switchboards shall be fit in the space allocated, as shown on the Floor Plans.

1.3 WORK INCLUDED

- A. Switchboards.
- B. Service Switches
- C. Disconnecting and Overcurrent Protective Devices
- D. Surge Protection Devices (SPD)
- E. Utility Metering and C.T. Equipment
- F. Mimic Bus
- G. Short Circuit Analysis and Arc Flash Study
- H. Instrumentation and Control Power
- I. Equipment Split Shipping and Field Assembly



1.4 SUBMITTALS

A. Shop Drawings

1. Include fully detailed and dimensioned plans, sections and elevations of each section of the switchboards. Include information on type and size of structural supports, metal thicknesses, surface finishes, bus cross sections, and provisions for lifting. Drawings shall be a minimum of 1/4" scale.
2. All concrete housekeeping pads must be sized and illustrated.
3. Detail Con Edison Company's metering and C.T. cabinet provisions with indication of approval by the utility company.
4. Include all required code and service clearance space around each piece of equipment.
5. Detail descriptive documentation of any barriers specified for electrical insulation and/or isolation.
6. Conduit entrance locations and requirements must be identified.
7. Indicate shipping splits coordinated with the project delivery path to assure all equipment can be moved into place.
8. Include documentation of NYC Advisory Board Approval.
9. The submittal shall comply with the requirement of DDC general conditions.

B. Product Data

1. Single line diagram of switch, fuse, circuit breakers, bus arrangements, ground fault protection, surge protective devices, fuse cut outs, metering arrangements, etc.
2. Furnish complete schematic wiring diagrams and a full set of equipment wiring diagrams for protective equipment relays, over current protection devices, pilot lights, alarms, controls, etc. Provide narratives for all wiring diagrams submitted.
3. Include full load heat rejection in BTU per hour for total components by switchboard.
4. All fuse and circuit breaker sizes and types must be indicated.
5. All nameplate information must be complete.
6. All mimic bus arrangements must be illustrated.



7. Short circuit and coordination study must be provided at the time of the switchboard submission. The switchboard submission must be coordinated with the study results.
 8. All diagrams shall include system voltage, phase, frequency, bus current ratings and withstanding ratings.
 9. Detail features, characteristics, ratings, and factory settings of the individual overcurrent protection devices and auxiliary components.
 10. Detail enclosure types for each type other than NEMA 250, Type 1.
 11. Include time-current coordination curves for each type and rating of overcurrent protective device included in the switchboards. Submit on translucent log-log graft paper, include selectable ranges for each type of overcurrent protective device.
 12. Submit testing procedures which will be used for field quality testing.
- C. Test Reports
1. Submit test data verification of fault current withstand rating.
 2. Submit certified reports of field quality testing.
 3. Seismic restraint calculations and certificate of compliance.

1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
1. Ground Fault Circuit Protection UL 1053.
 2. QMQB Operators UL E1818.
 3. Bolted Pressure Switches UL 977.
 4. Switchboards NEMA Standards PB-2, PB-2.1, PB-2.2; UL 891 and UL Service Entrance Label.
 5. Meters ANSI Specification C 39.1.
 6. ANSI C37.13.
 7. ANSI C37.51.
 8. NETA



9. Molded Case Circuit Breakers UL 489 and NEMA AB1.
 10. NRTL labeled for service equipment.
- B. Each switchboard as a complete and finished product shall receive a single integrated equipment rating by the manufacturer. The integrated equipment short-circuit rating shall certify that all equipment is capable of withstanding the thermal and magnetic stress of a fault equal to the value calculated by the Contractor/manufacturer's coordination study. Such rating shall be established by actual tests by the manufacturer on similar equipment. This certification shall be permanently affixed to each switchboard. Test data shall be submitted to the Commissioner at the time of submission of Submittal Drawings.
 - C. Only qualified staff shall be allowed to work on the installation of this equipment and all terminations, as defined in NEMA PB2.1 and NFPA 70E.
 - D. Obtain all switchboards, overcurrent protection devices, components, and accessories from a single manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide switchboards of the free standing, totally enclosed dead-front safety type, consisting of an assembly of bolted pressure switches; self-contained switch units; and thermal magnetic molded case chassis mounted feeder circuit breakers of the number, size and arrangement shown on the Contract Documents.
- B. Each switchboard shall be of rear accessible type where all connections are accessible from the rear. Where indicated on the Contract Documents as being positioned such that a rear accessible switchboard would have limited access, provide front accessible equipment where all connections are accessible from the front.
- C. Overcurrent devices shall be provided as individually mounted devices in switchboards of 1,200 amperes or more. Provide group mounted in switchboards rated below 1,200 amperes.
- D. Carefully check the physical space limitations for each switchboard and furnish switchboards to match those conditions. Nothing in these specifications shall preclude the use of a custom designed switchboard (as reviewed by the Commissioner) to meet those limitations.
- E. Switchboard enclosures shall be steel, NEMA 250, Type 1 and fully gasketed.
- F. Provide service entrance label where required.



- G. Provide dedicated switchboard cubicles for switches or circuit breaker taps serving fire pump(s). These cubicles shall be provided with steel barriers and painted red. The fire pump take-off shall be tapped ahead of the main service switch and after the main utility meter. Fire pump switches or breakers shall be in stand-alone sections, independent of the switchboard tap and any other overcurrent device or metering.
- H. Provide High Pressure Contact (HPC) type switches when feeding step-up or step down transformers. Switches must have a closing rating of twelve times (12x) the continuous current rating compared to a standard bolted pressure switch which has six times (6x) the closing rating.
- I. All switchboards and service switches shall be rated for 200,000 AIC bracing, U.O.N.

2.2 CONSTRUCTION

- A. The enclosure shall be formed structural steel, forming a rigid structure. Turned down peripheral edge on front and rear panels.
- B. Completely enclosed on the back, front, and sides with removable panels. All closure plates shall be small enough for easy handling by the operator.
- C. All sections shall be the same height, 90 inches, except as otherwise required due to physical space limitations. All sections shall be the same depth.
- D. The switchboard enclosure shall be painted on all exterior surfaces. The paint finish shall be a medium gray, ANSI 49, applied by the electro-deposition process over an iron phosphate pre-treatment.
- E. Provide steel barriers between each section of the switchboard.
- F. Compartments indicated as "SPACE" or "FUTURE" shall be equipped with mounting brackets, supports, bus connections, and appurtenances at full rating of the overcurrent device compartment.

2.3 PULLBOX OVER SWITCHBOARD

- A. Where required for conduit terminations, provide a pullbox of the same type of construction and finish as the switchboard. Adequate ventilation to maintain temperature in the pullbox within the same limits as the switchboard.
- B. Provide cable supports for horizontal support of cables. Construct supports of 3/4 inch conduit loosely enclosed by strong fiber tubes. Space supports no more than 24 inches horizontally and 6 inches vertically.
- C. Bottom shall be insulating, fire-resistive material with separate holes for cable drops into the switchboard.



- D. Removable covers shall form top, front and sides. Top covers at rear shall be easily removable.

2.4 BUSES

- A. Bus bars shall be arranged throughout A-B-C left to right, top to bottom, and front to rear.
- B. Conductor material shall be copper of 98% conductivity silver plated.
- C. Bus shall be sized at 1,000 amperes per square inch, but in no case less than of sufficient cross section to limit temperature rise to 55°C above an ambient temperature of 40°C.
- D. Horizontal bus shall be full-size, tapered bus is not permitted. Provide bolt holes drilled and tapped for future extension at the end of the bus bars including the neutral and ground buses. The provisions shall include bus bars installed and extended to the extreme side of the section and shall be fabricated in such a fashion that the addition of a future section would require only the installation of standard bolted splice plates.
- E. All bus bars shall be rigidly braced to comply with the integrated equipment rating of the switchboard.
- F. Neutral bus shall be rated 100 percent of the ampacity of the phase buses.
- G. Bus bars shall be extended vertically to the fullest extent to allow the installation of future devices, space permitting.

2.5 FEEDER INSTALLATION AND TERMINATION

- A. Bolted and accessible from the front for front access type.

2.6 BOLTED PRESSURE SWITCHES

- A. Switches 800 amperes and above and all main switches and service switches shall be bolted pressure type.
- B. Manually operated and, where indicated, electrically tripped. Dead front, totally enclosed in a cabinet designed as a complete magnetic circuit. Interlock to prevent access to a closed switch. Interlock capable of intentional bypass by knowledgeable personnel.
- C. Fuse compartment shall be interlocked to prevent access when a switch is in the "CLOSED" position.
- D. Maximum temperature rise at full load - 30°C spot temperature.
- E. Short-Circuit Rating: 200,000 amperes Root Mean Square symmetrical.



- F. Capable of being opened when carrying 750 percent of its rated load. Opening under these conditions requires no major physical effort.
- G. Arc barriers and replaceable arcing contacts shall be provided.
- H. Switch shall be of the charge before closing type.
- I. U.L. listed for continuous operation.
- J. Handle shall be capable of being padlocked in the "OFF" position.
- K. Ground Fault Relay: Comply with UL 1053; self-powered type with mechanical ground-fault indicator, test function, tripping relay with internal memory, and three-phase current transformer/sensor.
 - 1. Configuration: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
 - 2. Internal Memory: Integrates the cumulative value of intermittent arcing ground-fault currents and uses the effect to initiate tripping.
 - 3. No-Trip Relay Test: Permits ground-fault simulation test without tripping switch.
 - 4. Test Control: Simulates ground fault to test relay and switch (or relay only if "NO TRIP" mode is selected).

2.7 SELF-CONTAINED SWITCH UNITS

- A. Switches 600 amperes and below shall be self-contained type, in accordance with NEMA KS1.
- B. Switches shall be quick-make, quick-break, dead-front type. Each switch shall be a self-contained unit, externally operated from the front.
- C. Fuse and switch compartment shall be interlocked to prevent access to the fuse compartment until the switch is thrown to the "OFF" position. Interlock shall be intentionally releasable by an externally applied tool to permit checking of the switch and fuses under load.
- D. Switches shall be equipped with rejection type clips suitable for Class R fuses.
- E. Handle shall be capable of being padlocked in the "OFF" position.



2.8 FEEDER CIRCUIT BREAKERS

- A. Circuit breaker(s) shall be group mounted bolt-on type with mechanical restraint on a common pan or rail assembly.
- B. The interior shall have three (3) flat bus bars stacked and aligned vertically with glass reinforced polyester insulators laminated between phases. The molded polyester insulators shall support and provide phase isolation to the entire length of bus.
- C. Circuit breaker(s) equipped with line terminal jaws shall not require additional external mounting hardware. Circuit breaker(s) shall be held in a mounted position by a self-contained bracket secured to the mounting pan by fasteners. Circuit breaker(s) of different frame sizes shall be capable of being mounted across from each other.
- D. Line-side circuit breaker connections shall be jaw type.
- E. All unused spaces provided, unless otherwise specified, shall be fully equipped for future devices, including all appropriate connectors and mounting hardware.
- F. Thermal magnetic molded case circuit breakers shall:
 - 1. Molded case circuit breakers shall have integral and instantaneous thermal magnetic trip in each pole. Provide adjustable trip setting for circuit breaker frame sizes 250A and larger; adjustable instantaneous trip circuit branches; or magnetic trip element with front-mounted field adjustable trip setting.
 - 2. Circuit breaker(s) shall be standard interrupting. Ampere ratings shall be as shown on the Contract Documents. Manufacturer shall submit one (1) set of published I_p and I^2t let-through curves (as required by UL) to the City of New York.
- G. Electronic trip circuit breakers with RMS sensing; field-replaceable rating plug or field-replaceable electronic trip; and the following field-adjustable settings:
 - 1. Instantaneous trip.
 - 2. Long and short-time pickup levels.
 - 3. Long and short-time time adjustments.
 - 4. Ground-fault pickup level, time delay, and I^2t response.
- H. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
- I. Integrally Fused Circuit Breakers: Thermal-magnetic trip element with integral limiter-style fuse listed for use with circuit breaker; trip activation on fuse opening or on opening of fuse compartment door.



- J. Molded-Case Circuit Breaker (MCCB) Features and Accessories:
1. Standard frame sizes, trip ratings, and number of poles.
 2. Lugs: Suitable for number, size, trip ratings, and conductor material.
 3. Ground-Fault Circuit Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
 4. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.
 5. Communication Capability: Integral communication module with functions and features compatible with power monitoring and control system specified.
 6. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
 7. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
 8. Auxiliary Contacts: Two (2) SPDT switches with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
 9. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in "OFF" position.
- K. Insulated-Case Circuit Breaker (ICCB): 100 percent rated, sealed, insulated-case power circuit breaker with interrupting capacity rating to meet available fault current.
1. Drawout circuit-breaker mounting.
 2. Two-step, stored-energy closing.
 3. Full-function, microprocessor-based trip units with interchangeable rating plug, trip indicators, and the following field-adjustable settings:
 - a. Instantaneous trip.
 - b. Long and short-time time adjustments.
 - c. Ground-fault pickup level, time delay, and I²t response.
 4. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.



5. Remote trip indication and control.
6. Communication Capability: Integral communication module with functions and features compatible with power monitoring and control system specified.
7. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removed only when circuit breaker is in "OFF" position.
8. Control Voltage: 125-V DC.

2.9 GROUNDING

- A. Provide ground bus of at least 33 percent of capacity of the switchboard extending along the full length of the switchboard.

2.10 GROUND FAULT PROTECTION

- A. Ground fault protection (GFP) shall be provided where indicated on the Contract Documents and on all disconnect switches rated 1000 amperes or more as required by the National Electrical Code.
- B. The ground fault protection shall consist of the following:
 1. Current Sensors: Provide zero sequence current sensors for feeder and branch devices and ground return sensors for main service device; inputs compatible to relay. Construct sensor frame so it can be opened to permit removal or installation around conductors without disturbing conductors. Provide test winding in sensor for testing operation of GFP unit, including sensor pick-up, relay, and circuit protection device operation.
 2. Ground-Fault Relay: Provide solid-state ground-fault relay, which requires no external source of electrical power, drawing energy to operate GFP system directly from output of current sensor. Construct with adjustable pick-up current sensitivity for GF currents from 200 to 1200 amperes, with calibrated dial to show pick-up point settings. Provide factory-set time delay of 0.5 seconds and which precludes tampering with setting after installation.
 3. Monitor Panel: Provide monitor panel capable of indicating relay operation, and provide means for testing system with or without interruption of service. Construct so GFP system cannot be left in an inactive or "OFF" state. Provide indicator lamps and TEST and RETEST control switches. The panel shall be installed in the front of the switchboard adjacent to the device being protected.
 4. Shunt-Trip: Each device, switch, or circuit breaker, with ground fault protection, shall be provided with a shunt-trip mechanism which shall automatically "OPEN" the device when signaled by the ground-fault sensor.



- C. Provide a fuse protected central power transformer from the switchboard line side for the ground fault systems. Ground fault and shunt-trip device shall be capable of operation at 55% of the rated voltage.
 - 1. Settings
 - a. The electrical trade shall set each ground fault sensor pick up setting at 25% of the rating of the over-current device with a 6-cycle time delay unless specifically indicated otherwise in the short circuit and coordination study.

2.11 UTILITY METERING

- A. Utility Metering Compartment: Fabricated, barrier compartment and section complying with the Con Edison Company's requirements; hinged sealed door, buses provisioned for mounting the Con Edison Company's current transformers and potential transformers or potential taps as required by Con Edison. If a separate vertical section is required for utility metering, match and align with the entire switchboard. Provide service entrance label and necessary applicable service entrance features.
- B. Utility meters shall not be mounted in or on the switchboard. The new utility meter shall be the Con Edison Smart type with remote reading capability and comply with Con Edison specification.

2.12 METERING

- A. Instrument Transformers: IEEE C57.13, NEMA EI 21.1, and the following:
 - 1. Potential Transformers: IEEE C57.13; 120 V, 60 Hz, secondary; disconnecting type with integral fuse mountings. Burden and accuracy shall be consistent with connected metering and relay devices.
 - 2. Current Transformers: IEEE C57.13; 5 A, 60 Hz, secondary winding and secondary shorting device. Burden and accuracy shall be consistent with connected metering and relay devices.
 - 3. Control-Power Transformers: Dry type, mounted in separate compartments for units larger than 3 kVA.
 - 4. Current Transformers for Neutral and Ground-Fault Current Sensing: Connect secondary wiring to ground overcurrent relays, via shorting terminals, to provide selective tripping of main and tie circuit breaker. Coordinate with feeder circuit-breaker, ground-fault protection.



- B. Multifunction Digital-Metering Monitor: Microprocessor-based unit suitable for four-wire systems and with the following features:
1. Switch-selectable digital display of the following values with maximum accuracy tolerances as indicated:
 - a. Phase Currents, Each Phase: Plus or minus 1 percent.
 - b. Phase-to-Phase Voltages, Three Phase: Plus or minus 1 percent.
 - c. Phase-to-Neutral Voltages, Three Phase: Plus or minus 1 percent.
 - d. Megawatts: Plus or minus 2 percent.
 - e. Megavars: Plus or minus 2 percent.
 - f. Power Factor: Plus or minus 2 percent.
 - g. Frequency: Plus or minus 0.5 percent.
 - h. Accumulated Energy, Megawatt Hours: Plus or minus 2 percent; accumulated values unaffected by power outages up to 72 hours.
 - i. Megawatt Demand: Plus or minus 2 percent; demand interval programmable from 5 to 60 minutes.
 - j. Contact devices to operate remote impulse-totalizing demand meter.
 2. Mounting: Display and control unit flush mounted in the instrument compartment door.
- C. Ammeters, Voltmeters, and Power-Factor Meters: ANSI C39.1.
1. Meters: 4-inch diameter or 6 inches square, flush or semiflush, with antiparallax 250 degree scales and external zero adjustment.
 2. Voltmeters: Cover an expanded-scale range of nominal voltage plus 10 percent.
- D. Instrument Switches: Rotary type with "OFF" position.
1. Voltmeter Switches: Permit reading of all phase-to-phase voltages and, where a neutral is indicated, phase-to-neutral voltages.
 2. Ammeter Switches: Permit reading of current in each phase and maintain current-transformer secondaries in a closed-circuit condition at all times.



- E. Feeder Ammeters: 2-1/2-inch minimum size with 90 or 120 degree scale. Meter and transfer device with "OFF" position, located on overcurrent device door for indicated feeder circuits only.

- F. Watt Hour Meters and Wattmeters:
 - 1. Comply with ANSI C12.1.
 - 2. Three-phase induction type with two stators, each with current and potential coil, rated 5 A, 120 V, 60 Hz.
 - 3. Suitable for connection to three and four wire circuits.
 - 4. Potential indicating lamps.
 - 5. Adjustments for light and full load, phase balance, and power factor.
 - 6. Four-dial clock register.
 - 7. Integral demand indicator.
 - 8. Contact devices to operate remote impulse-totalizing demand meter.
 - 9. Ratchets to prevent reverse rotation.
 - 10. Removable meter with drawout test plug.
 - 11. Semiflush mounted case with matching cover.
 - 12. Appropriate multiplier tag.

- G. Impulse Totalizing Demand Meter:
 - 1. Comply with ANSI C12.1.
 - 2. Suitable for use with switchboard watt-hour meter, including two-circuit totalizing relay.
 - 3. Cyclometer.
 - 4. Four-dial, totalizing kilowatt-hour register.
 - 5. Positive chart drive mechanism.
 - 6. Capillary pen holding a minimum of one month's ink supply.
 - 7. Roll chart with minimum 31-day capacity; appropriate multiplier tag.



8. Capable of indicating and recording 30-minute integrated demand of totalized system.

2.13 ELECTRONIC METERING

- A. Metering shall consist of an independent enclosure, revenue grade digital power meter/analyzer with the following requirements:
 1. Measurements: True RMS 3-phase voltage, current and power, kw kwh, KVAR, harmonics, K-factor, symmetrical components, and sag/swell data.
 2. Communications: ION/Modbus/DNP 3.0 protocols, RS-485 port with built-in modern, one front panel optical port, GPS synchronized meter clock, and remote alarm notification.
 3. Data Logging: Sequence of events and min./max. logging, scheduled event-driven logging of up to 32 parameters concurrently on-board data logging features.
 4. Set Points: Setpoint on any parameter or condition for 1 second.
 5. Outputs: Serial port communications connection.
 6. Security: Multi-user, multilevel security, customizable up to 16 users with multiple levels of access.

2.14 MIMIC BUS

- A. Provide a factory installed mimic bus on the switchboard, accurately depicting phase bus work, take-offs, connections, meters and disconnecting means per the factory record as-built drawings.
- B. Mimic bus shall be ¼ inch thick, heat and impact resistant, beveled bakelite, ½ inch wide, secured to the switchboard enclosure with cadmium plated screws.
- C. Mimic bus on the normal switchboards shall be ivory colored and red colored on the emergency switchboards.
- D. Mimic bus shall be installed prior to energizing the equipment.

2.15 EMERGENCY SWITCHES

- A. Devices or enclosures serving the normal side of fire alarm systems or fire pumps shall have the cover of that device enclosure painted high gloss red and suitably labeled.



2.16 MANUFACTURERS

- A. Switchboards
 - 1. Electrotech
 - 2. Eaton/Cutler Hammer
 - 3. All City Switchboard
 - 4. Lincoln Electric
 - 5. Square D
 - 6. Siemens.
 - 7. General Electric
 - 8. Or Approved Equal

- B. Bolted Pressure Switches and High Pressure Contact Switches
 - 1. Pringel Switch Company
 - 2. Siemens
 - 3. General Electric
 - 4. Or Approved Equal

PART 3 - EXECUTION

- 3.1 Install switchboards when the area is free and clear of dust and debris. Protect switchboards continuously from dust and moisture. Do not utilize switchboards for temporary lighting and power services except where authorized in writing by the City of New York.
- 3.2 Install switchboards on 4 inch high concrete housekeeping pads which shall follow the contour of the switchboards with 4 inch clear all around, per the factory record drawing.
- 3.3 Provide steel channel sills below each switchboard where the switchboard frame is not suitable for use as a floor sill.
- 3.4 Assemble switchboard split sections in field under manufacturer's supervision.



3.5 FEEDER INSTALLATION AND TERMINATION

- A. Group cables paralleling one another and arranged so as to permit easy insertion of a clamp-on ammeter on each cable.
- B. All line and load side conductors emanating from the top or bottom of the switchboards shall be lashed to cable braces provided in the switchboard. Lashing shall be performed as per the manufacturer's recommendations to maintain the integrated equipment rating. Lashing material shall be nonmetallic fire and heat resistant with a tensile strength of 2,000 pounds. In general on service entrance cable, run and bend the cable in a manner so as to rest directly against the cable braces. Make six (6) revolutions around the "A" and "B" phase and the six (6) revolutions around the "B" and "C" phase cables. With the remaining lashing material make four (4) to five (5) revolutions between each of the phase cables tying a knot to the cable braces as the last revolution is complete. All revolutions must be as tight as possible to prevent magnetic stress during short circuits. Load cables in general should be lashed with four (4) revolutions around the cable and the brace, then tied in a knot after the last revolution.

3.6 At the completion of the work, each switchboard shall be field tested by a manufacturer's representative as described below. A report recording each item of the testing shall be certified by the manufacturer and submitted to the Commissioner.

- A. Operation of each disconnecting means under load.
- B. Operation of all metering equipment.
- C. Operation of all alarm devices.
- D. Observation of cable bracing, both incoming and outgoing, certifying that it is in accordance with the manufacturer's recommendations.
- E. Verification of setting of all ground fault protection (GFP) systems. Test each system by checking coordination between ground fault and phase to ground fault of a single pole lighting branch circuit.
- F. Verification of torque for all nuts and bolts on buswork. Tighten connections in accordance with the manufacturer's specifications.
- G. Measure, using a megger, the insulation of each bus section phase-to-phase; and phase-to-ground for one (1) minute each, at a minimum test voltage of 1000 VDC for 460 volt and 500 VDC for 208 volt systems. Minimum acceptable value for insulation resistance is 1 megohms. Coordinate testing with the equipment manufacturer prior to any testing.



3.7 OPERATING AND MAINTENANCE MANUAL

- A. Provide the manufacturer's operating and maintenance manuals for all switchboards. Manuals shall include spare parts data listing, source of replacement parts and supplies and as-built drawings.
- B. Provide the manufacturer's installation and maintenance instructions. Instructions shall be affixed to the cover of the incoming section of each equipment.
- C. Demonstration: Engage a factory-authorized service representative to instruct the City of New York's maintenance personnel to adjust, operate, and maintain switchboards, overcurrent protective devices, instrumentation, and accessories.
- D. Include time current coordination curves for each type and rating of overcurrent protective device.

3.8 AS-BUILT RISER DIAGRAM

- A. Provide an as-built riser diagram of each distribution system mounted in a glass covered-frame. Media shall be high quality presentation type paper. Diagrams shall be located in the respective electrical room. A digital electronic version shall be submitted to the Commissioner and City of New York.

3.9 UTILITY METER

- A. Provide all required wiring and conduit between the Utility company C.T. compartment to the remote meter(s). Coordinate this work with the Utility Company during the application of service process.

3.10 FIELD QUALITY TESTING

- A. Perform field testing in accordance with NETA Acceptance Testing Standards and to include, but not limited to, the following:
 - 1. Perform resistance tests through all bus joints with a low-resistance ohmmeter. Any joints that cannot be directly measured due to permanently installed insulation wrap shall be indirectly measured from closest accessible connection.
 - 2. Perform insulation-resistance tests on each bus section, phase-to-phase and phase-to-ground.
 - 3. Bolt-torque levels shall be in accordance with the manufacturer specifications.
 - 4. Compare bus connection resistances to values of similar connections.



5. Insulation-resistance values for bus, control wiring, and control power transformers shall be in accordance with the manufacturer's published data. Overpotential tests should not proceed until insulation-resistance levels are raised above minimum values.
 6. Apply overpotential test voltages in accordance with the manufacturer's recommendations. The insulation shall withstand the overpotential test voltage applied.
- B. Perform the following infrared scan tests and inspections and prepare reports:
1. Initial Infrared Scanning: After substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switchboard. Remove front and rear panels so joints and connections are accessible to portable scanner.
 - a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switchboard 11 months after date of Substantial Completion.
 2. Instruments and Equipment
 - a. Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
- C. Switchboard will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports; including a certified report that identifies switchboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken and observations after remedial action.

3.11 FIELD SETTINGS

- A. The Contractor shall perform field adjustments of the protective devices as required to place the equipment in final operating condition. The settings shall be in accordance with the final short-circuit study, ground fault protective device evaluation study, and protective device coordination study.
- B. Necessary field settings of devices and adjustments and minor modifications to equipment to accomplish conformance with the final short-circuit and protective device coordination study shall be carried out by the Contractor at no additional cost to the City of New York.



3.12 SITE INVENTORY

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Potential Transformer Fuses: Equal to ten (10) percent of the quantity installed for each size and type, but no fewer than two (2) of each size and type.
 2. Control-Power Fuses: Equal to ten (10) percent of the quantity installed for each size and type, but no fewer than two (2) of each size and type.
 3. Fuses and Fusible Devices: Equal to ten (10) percent of the quantity installed for each size and type, but no fewer than three (3) of each size and type.
 4. Fuses for Fused Switches: Equal to ten (10) percent of the quantity installed for each size and type, but no fewer than three (3) of each size and type.
 5. Fuses for Fused Power-Circuit Devices: Equal to ten (10) percent of the quantity installed for each size and type, but no fewer than three (3) of each size and type.
 6. Indicating Lights: Equal to ten (10) percent of the quantity installed for each size and type, but no fewer than one (1) of each size and type.

3.13 WARRANTY

- A. Provide a five (5)-year warranty from the date of substantial completion for all defects in materials.
- 3.14 Provide a 36 inch wide x 1/4" thick insulation mat in the front and rear of the entire switchboard, rated for a dielectric test voltage of 30,000 volts.

END OF SECTION



**Department of
Design and
Construction**

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SECTION 26 32 13

ENGINE GENERATOR AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide standby engine generator and accessories in accordance with the Contract Documents.
- B. Generator main component shall be shipped in pieces and assembled onsite under the supervision of the manufacturer and final assembly shall be acceptable and certified by the manufacturer.
- C. The generator component shall not be delivered to roof via elevator. Contractor shall use crane to lift the equipment.

1.3 WORK INCLUDED

- A. Engine/Generator.
- B. Exhaust Silencer.
- C. Batteries.
- D. Battery Charger.
- E. Remote Fan Radiator.
- F. Vibration Isolation and Seismic Restraints.
- G. Remote Mounted Double Lined Fuel Day Tank.
- H. Remote Annunciators.
- I. Warranty.
- J. Testing (Field and Factory).



1.4 SUBMITTALS

A. Shop Drawings

1. A complete $\frac{1}{2}$ " = 1'-0" scaled elevation and plan drawings showing the exact generator system layout including all components and accessories being provided or required for operation as specified herein.
2. All seismically restraint concrete housekeeping pads must be sized and illustrated. This must be signed and sealed by a Professional Engineer licensed in the State of New York retained by the Contractor.
3. Indicate any shipping splits and weights.

B. Product Data

1. Engine manufacturer's catalog cut sheets, performance data, detailed drawings, power output curves, and fuel consumption curves which relate to the design criteria specified.
2. Generator manufacturer's catalog cut sheets, detailed drawings and performance data.
3. Complete list of materials and catalog cuts of all components being provided.
4. Complete detailed wiring diagram of the system.
5. Starting battery sizing calculations showing compliance with specifications at ambient conditions.
6. After the engine generator system is accepted, submit a completed permit application for the NYC Air Quality Management District, ready for submission by the City of New York.
7. Name and location of certified testing agency.
8. Weights of all equipment.
9. Engine mechanical data at varying loads up to full load, including heat rejection, exhaust gas flows, combustion air and ventilation air flows, noise data, fuel consumption, etc.
10. General electrical data including temperature and insulation data, cooling requirements, excitation ratings, voltage regulation, efficiencies, waveform distortion, and telephone influence factor.
11. Generator resistances, reactances, and time constraints.



12. Generator current decrement curve.
 13. Generator motor starting capability.
 14. Generator thermal damage curve.
 15. Jacket water heater connection diagram.
 16. Control panel schematics.
 17. Manufacturer's dealer warranty.
 18. Emissions data, complying with all applicable regulations.
 19. All warranty data.
 20. Sound data for mechanical and engine exhaust in octave band frequencies between 31.5 Hz to 8,000 Hz and sound data for manufacturer engine exhaust silencer options, complying with NYC Noise Control Code, Section 24-227 and 24-232.
 21. Vibration Isolation Base Detail must be signed and sealed by a Professional Engineer licensed in the State of New York. This includes detail fabrication, anchorage and attachments to the structure and to supported equipment.
- C. Test Reports
1. Certified factory test report.
 2. Certified field test reports.
- D. Permits
1. Provide all necessary documents required to obtain State and NYC approvals for installing a generator and a petroleum bulk storage tank which includes, but is not limited to:
 - a. As-built drawings, signed and sealed by a Professional Engineer licensed in the State of New York, passing tightness testing for the new fuel oil storage tank with a list of materials used in the installation.
 - b. Site plan on 8-1/2x11 paper which includes property lines, buildings, adjacent streets with names, tanks identified by ID number, storm drains, and non-stationary tank storage areas.



1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and the latest recommendations of the following:
 - 1. Alternator:
 - a. NEMA MG-1-22
 - b. ASTM D396
 - 2. Battery Charger:
 - a. U.L. 1236
 - 3. Engine Generator:
 - a. NYC Air Quality Management District.
 - b. U.L. 2200
 - 4. Control and Status Panels:
 - a. NFPA 110
 - 5. Testing:
 - a. NETA
- B. Equipment suppliers shall have local representation and shall have been actively engaged in the assembly, installation and service of this equipment for emergency power purposes for a period of not less than 3 years in the Job Site area. The engine-generator supplier shall have service facilities within proximity of the project site.
- C. Equipment suppliers shall have full parts backup and a 24 hour per day service availability for this equipment.
- D. The emergency generator shall be adaptable to the emerging technologies that may be required with new regulations. At a minimum, the generator shall comply with EPA off-road diesel engine Tier standards.
- E. The equipment used (750 kW and associated components) is specific to the installation requirements of the building installation space. The manufacturer and the Contractor shall be responsible for any and all costs associated with any equipment modification required to utilize the product to be installed.



1.6 LOCATION CRITERIA

- A. Altitude: 1000 feet above sea level.
- B. Wind Loading: IBC Force: 150 mph.

PART 2 - PRODUCTS

2.1 CRITERIA

- A. The engine generator system and accessories described herein shall be fully capable of operation as specified in the following environmental conditions:
 - 1. Maximum outdoor ambient temperature: 110°F
 - 2. Minimum outdoor ambient temperature: -15°F
 - 3. Altitude: 1000 feet above sea level

2.2 ENGINE

- A. The engine shall be diesel fueled with number 2 diesel oil, 1800 rpm, compression ignition type, four stroke-cycle, water cooled, solid injection, V configuration. It shall be a minimum of 12 cylinders and be 27 liters minimum displacement
- B. The engine shall be EPA Tier Certified and in compliance with the State Emission regulations at the time of installation. Actual engine emissions values must be in compliance with EPA Tier emissions standards per ISO 8178 – D2 Emissions Cycle at specified ekW/bHP rating. Unit shall be Tier rated as required for an Emergency standby system given the generator set HP rating as defined by EPA and/or local regulations.
- C. Fuel consumption of the engine generator shall be substantiated by means of manufacturer's published curves.
- D. The engine shall be equipped with an electronic governor to maintain engine speed within limits specified herein. Governor shall be adjustable from isochronous to five (5) percent droop. Provision shall be made to run the engine at idle speed for test and startup purposes.
- E. Engine safety devices, including high water temperature switch, overspeed sensing switch, low oil pressure switch, and low water temperature switch, shall be mounted on the engine and connected to the engine/generator control panel instruments and alarms as specified herein.



- F. Engine wiring shall be high quality, heat resistant, insulated, stranded copper conductor. Wiring shall be protected with suitable woven loom protection and shall be isolated from high temperature engine parts. Wiring for alternating current power circuits shall be protected by rigid or flexible metallic conduit.
- G. The complete engine block shall be machined from one (1) casting. Designs incorporating multiple blocks bolted together are not acceptable.
- H. The engine shall utilize a gear type positive displacement, full pressure lubricating oil pump and water-cooled lube oil cooler. Pistons shall be spray cooled. Provide oil filters, oil pressure gauge, dipstick, and oil drain.
- I. Fuel filters and serviceable fuel system components shall be located to prevent fuel from spilling onto generator set batteries. Provide duplex primary fuel filter assembly that includes isolation valves to allow for each filter to be changed independently during operation. Filters shall be as per the generator manufacturer, or as required for proper fuel flow.
- J. The engine governor shall be Speed Control type. Speed droop shall be externally adjustable from 0 (isochronous) to 10% from no load to full rated load. Steady state frequency regulation shall be +/-0.25 percent. Speed shall be sensed by a magnetic pickup off the engine flywheel ring gear. A provision for remote speed adjustment shall be included. The governor shall incorporate provisions for limiting fuel during start-up, and include capability for actuator compensation adjustment. Protection from voltage spikes and reverse polarity shall be included. In the event of a DC power loss, the forward acting actuator will move to the minimum fuel position.

2.3 ELECTRIC STARTING SYSTEM

- A. Dual starting motors with solenoid and either Bendix or overrunning clutch drive shall be furnished on the engine. The starting motor shall be of the required voltage and ampere rating.
- B. Provide a system of lead acid batteries sized such that the set may complete four (4) sixty-second complete cranking cycles at firing speed and specified room temperature. Provide a matching metal frame rack and cables of sufficient ampacities. Floor mounted batteries will not be acceptable.
- C. Provide a wall mounted 120 volt AC battery charger to recharge the batteries to full capacity within 8 hours. Battery charger shall have both a high rate and low rate charging system. The battery charger shall be current limiting and shall not require cranking cutout contacts for charger protection when cranking. Accessories shall include: D.C. ammeter, fused input, D.C. voltmeter, high/low DC output voltage relay and input voltage failure relay. Battery charger output shall be rated ten (10) amperes at required voltage.
- D. The entire electric starting system shall be rated for 24 VDC operation.



2.4 ENGINE HEATING SYSTEM

- A. Jacket water heaters, rated for operation on 208 VAC, single phase power shall be provided and shall be sized to insure that the generator set will start within the specified time period and ambient conditions. Heaters shall include thermostats, oil pressure disconnecting device and required connection boxes.
- B. Provide isolation valves that allow for change out of the heater without draining the entire cooling system.
- C. The capacity of the jacket heaters shall be sized by the engine manufacturer to maintain criteria listed above
- D. Include an electric pump circulation device as part of the jacket water heater assembly

2.5 ENGINE COOLING SYSTEM

- A. The engine shall be liquid cooled by means of a remote fan radiator in a weatherproof sound attenuated enclosure. The radiator shall be adequately sized to cool the engine on a continuous basis at the maximum ambient temperature and altitude specified. Radiator shall be suitable for outdoor application and include fan, fan guard, core guard, steel supporting legs, cooling coils, steel frame, filler neck and pressure cap. Fan motor shall be single speed, totally enclosed fan cooled (TEFC) for 3 phase, 60 Hertz, 208 volt operation. Radiators without integral surge space must be supplied with an expansion tank sized properly for the capacity of the cooling system loop, complete with mounting angles, sight glass, fittings and filler neck with pressure cap. Engine coolant shall be a mixture of sixty (60) percent ethylene glycol based antifreeze and forty (40) percent water. Coolant solution shall be provided by the installing contractor. Fan noise shall be shall be rated 55 dBA @ 10 feet per fan.
- B. Provide a plate and frame jacket water heat exchanger. Include all inlet and outlet flexible stainless steel braided fittings along with associated nut, bolt, and gasket kits for all ports. Provide an air to water aftercooler conversion heat exchanger package. It shall be rated design pressure of 100 PSI minimum. Include stand, piping, and all components required to complete the installation of the heat exchanger package to complete the circuit between the engine and the heat exchanger. Provide flexible stainless steel braided fittings on all external ports for the secondary circuit. Include nut bolt and gasket kits for every pipe connection on the engine as well as the heat exchanger ports
- C. The emergency generator shall be provided with fuel oil fluid intercooler. Cooler shall be a self-contained motor driven fan type for mounting in the generator room. Voltage shall be coordinated with the generator set electrical output.
- D. Provide coolant circulation pump sized as per the piping schematic and required flow and pressure ratings for the engine generator set provided.
- E. Provide and install required control wiring for a complete installation.



2.6 AIR INTAKE AND EXHAUST SYSTEM

- A. An air cleaner/silencer shall be furnished as recommended by the engine manufacturer. Air cleaners shall be dry heavy duty type with built-in restriction gauge to monitor.
- B. Engine exhaust outlets shall be coupled to the exhaust silencer(s) by means of an adequately sized section of stainless steel corrugated flexible tubing. Flexible tubing connector(s) shall be flanged at both ends for mating to the engine and exhaust system.
- C. A super critical grade exhaust silencer(s) package shall be provided. Sound levels shall be rated no more than 42 dBA average sound level when measured ten (10) feet from the exhaust outlet. Exhaust silencer(s) shall be sized to limit exhaust back pressure to acceptable values. The exhaust silencer(s) shall be suitable for horizontal mounting and shall be equipped with flanged bottom inlet and flanged end outlet. The exhaust silencer(s) shall be double wall construction and shall have a high temperature anti-corrosion coating applied uniformly on the outside surface.
- D. Silencer configuration shall be pancake type for the first in series, Torpedo type for the second in series, unless otherwise noted.
- E. Silencers shall be from one of the manufacturers listed in this section or approved equal to meet the requirement. Inlet and outlet positions shall be as per the Contract Drawings.

2.7 FUEL SYSTEM

- A. Provide a 275-gallon, "ready supply", double-lined (200% rupture basin) package fuel day tank for remote mounting to provide an immediate fuel supply to the engine fuel pump upon engine start-up. Fuel shall be supplied to the tank by means of a 120 volt electric fuel transfer pump mounted on the day tank. Also, provide a hand pump. Equip tank with an automatic float to control the day tank level with a low-level contact (nearly empty) for remote alarm indication. Fill connection shall be via two (2) flexible metal hoses. A drain cock and valve shall be provided. Rupture basin shall contain a leak detection system for remote monitoring to an alarm panel.
- B. The fuel tank shall be rated for 25 psi labeled and listed to UL 142 construction to comply with NYC Code.
- C. Provide fusible link type safety shutoff valves to fail close.



- D. The fuel system shall be equipped with a fuel filter having replaceable elements which may be easily removed from their housing for replacing without breaking any fuel line connections or disturbing the fuel pumps or any other parts of the engine. All fuel filters shall be conveniently located in one accessible housing, ahead of the injection pumps, so that the fuel will have been thoroughly filtered before it reaches the pumps. No screens or filters requiring cleaning or replacement shall be used in the injection pump or injection assemblies. Filters shall be duplex type and have a valve arrangement so filters can be isolated and changed during operation.
- E. Provide crankcase fumes reclamation system. System shall collect engine crankcase emissions, filter out airborne lube oil, and reintroduce the emissions back into the engine combustion air system.

2.8 ALTERNATOR

- A. Generator shall be rated 480Y/277 volt, three phase, four wire, 60 hertz, 0.8 power factor of a kilowatt capacity as indicated on the Contract Documents.
- B. The alternator shall be a four (4) pole, synchronous brushless type. The alternator shall be dual bearing type coupled directly to the engine flywheel by means of a flexible disc coupling.
- C. The alternator voltage regulator shall be solid state type, three phase true RMS sensing and shall incorporate an under-frequency protective circuit to limit generator excitation at lower than normal operating speeds. The voltage regulator shall be equipped with a voltage adjusting rheostat capable of plus or minus five (5) percent rated voltage adjustment. The voltage regulator shall maintain the voltage within the limits specified.
- D. The alternator insulation system shall be NEMA Class H and shall be a combination of epoxy coating and varnish. The alternator shall be sized and properly derated according to NEMA MG1-22 to yield a maximum temperature rise of 130°C by resistance above an ambient temperature of 40°C at rated altitude, or as required to obtain UL2200 certification per NYC building code.
- E. Excitation shall be provided by a direct connected brushless permanent magnetic rotating exciter. The armature shall be of the three-phase design and connected to a full wave three phase rotating bridge. Diodes used shall be of the silicon type mounted on proper heat sinks with surge protector to prevent voltage spikes during parallel operation.
- F. Exciter field power shall be provided by a separate permanent magnet generator directly connected to the brushless exciter. The PMG shall provide sufficient power to the excitations system to produce 300% short circuit from the main operator armature during a three-phase fault with sufficient duration for protective devices to operate.
- G. The sub transient reactions shall be 15% or less.



2.9 MAIN LINE CIRCUIT BREAKER

- A. Main line circuit breaker which shall operate both manually as an isolation switch and automatically during overload and short circuit conditions. The trip unit for each pole shall have elements providing inverse time delay features during overload conditions and instantaneous magnetic tripping for short circuit protection. Circuit breaker shall be suitable for 100% load. The circuit breaker shall be provided with an auxiliary contact to provide a trouble indication should the breaker be in the "OFF" or tripped position. Breaker sizes shall be as per the one line diagram.
- B. Provide generator mounted breakers for each remote cooling system device sized per the device rating. Provide a breaker for the remote radiator, cooling system auxiliary pump, and fuel oil cooler. All breaker shall be tapped ahead of the main breaker
- C. Provide fire alarm fused disconnect switch and fire pump circuit breaker, as indicated on the Contract Documents.

2.10 CONTROL PANEL

- A. A generator mounted control panel shall be provided with lockable hinged front door for complete control and monitoring of the respective generator set functions. Panel shall be environmentally sealed in a NEMA 1 enclosure and to be located in front of generator at an accessible location.
- B. The following shall be included in the control panel:
 - 1. Automatic start/stop operation.
 - 2. Adjustable cycle cranking.
 - 3. Digital engine monitoring.
 - 4. Shutdown sensors and alarms with horns and reset.
 - 5. Adjustable cool down timer.
 - 6. Emergency stop button.
 - 7. Self-diagnostic capabilities and fault logging.
 - 8. AC digital ammeter, .5% true RMS accuracy, with phase selector.
 - 9. AC digital voltmeter.
 - 10. Frequency digital meter.
 - 11. Elapse time digital meter.



12. Engine water temperature digital readout.
13. Engine oil temperature digital readout.
14. Engine oil pressure digital readout.
15. Voltage adjusting rheostat.
16. All items specified under remote status panels.
17. Provide a fixed nameplate consisting of red bakelite with white, 1-inch lettering, identifying the generator controlled.
18. Engine speed digital readout.
19. Modbus interface to BMCS.

2.11 AUTOMATIC ELECTRIC-SET PROTECTION

- A. Protection System: Provide power for sensors, trips, indicator lights, and alarm by engine cranking batteries. Provide fault sensors to cause emergency engine shutdown when any of the following faults occur:
1. High water temperature sensors set to trip at 205°F \pm 3°F, 96°C \pm 2°C.
 2. Approach to high water temperature sensors set to pre-alarm at 190°F.
 3. Low water temperature sensors set to trip at 80°F.
 4. Overspeed sensors set to trip at 2050 revolutions per minute.
 5. Low lube oil pressure sensors set to trip at the engine manufacturer's recommendation for lowest permissible oil pressure.
 6. Overcrank sensors set to trip after four (4) 15-second attempts to start.
 7. Low water level shut down.

2.12 REMOTE STATUS PANELS

- A. Provide three (3) panels per generator set. One (1) in the engineering or security office, office on ground floor, another in the Fire Command Center, and the remaining shall be furnished as part of the generator control panel. Provide alarm indicators per NFPA No. 110 and as specified herein. When actuated, these alarms shall sound audible alarms and indicate, by means of individual lights at the annunciator panels, which particular malfunction is initiating the alarm. Provide 3/16-inch-high (minimum) labeling to identify the alarm. Provide all required connection wiring for the remote panels.



- B. Provide a horn at each panel with silencing (override) switch to silence alarm. Override switch shall have flashing pilot lamp labeled "Override" to indicate that alarm is silenced. Provide power for alarm system from generator battery system. Alarm annunciators shall indicate the following malfunctions:

	Item	Lens Cap Color
1.	High water temperature**	Red
2.	Low water temperature*	Red
3.	Approach to high water temperature*	Yellow
4.	Approach to low oil pressure*	Yellow
5.	Overspeed*	Red
6.	Cranking failure (after 60 seconds)*	Red
7.	Generator in operation*	Green
8.	High and low battery charge**	Red
9.	Battery charger input failure**	Red
10.	Automatic transfer switch position lights for each automatic transfer switch. Two (2) lamps for each switch.*	Red & Green
11.	Pilot light denoting engine selector switch in "OFF" position*	Red
12.	Start/stop switch (Fire Command Center Only)	--
13.	Test switch (Fire Command Center only)	--
14.	Main circuit breaker tripped open*	Red
15.	Running pilot lights for each fuel oil pump (Fire Command Center only)	Red
16.	Hand/off/automatic switch for each fuel oil pump*	--
17.	Low and high fuel oil (day tank)*	Red
18.	Low fuel oil (main tank)*	Red
20.	Remote shutdown activation (via break glass station at the generator)	Red
21.	Spare	--

* Provide one (1) set of normally closed = normal dry contacts for BMCS interface.

**Provide one (1) set of normally closed = normally dry contacts summary alarm for BMCS interface. If Modbus is available, all alarms shall be monitored through such system.



1. Connection to Data Link: A separate terminal block, factory wired to Form C contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals. Data system connections to terminals for "Electrical Power Monitoring and Control."
2. Provide serial port (RS 232, RS 422, or RS 485) Modbus to communicate with the power monitoring system.

2.13 GENERATOR SET PERFORMANCE

- A. The completed generator set shall meet or exceed the following performance criteria:
 1. Voltage regulation shall be ± 1 percent rated voltage.
 2. Steady state voltage stability ± 0.5 percent rated voltage.
 3. Balanced telephone interference factor (TIF) shall not exceed 50.
 4. Frequency regulation from no load to full load shall be adjustable from isochronous to 5 percent.
 5. Steady state frequency stability shall be ± 0.5 percent.
 6. Maximum recovery time to return to frequency stability, bandwidth shall not exceed 6-8 seconds.
 7. Generator set shall be capable of start-up and accepting rated load within 10 seconds.

2.14 VIBRATION ISOLATION AND SEISMIC RESTRAINTS

- A. Fuel oil and coolant line shall be flexible factory recommended hoses.
- B. Raceway connections to the generator shall be in liquid tight flexible metal conduits.
- C. The generator set, the outdoor radiator set, and associated pumps and heat exchangers should each be provided with spring vibration isolators equal to product, as per the manufacturer listed in this Section, type SLR to minimize structure-borne noise transmitted to adjacent floors. These isolators should be installed between the equipment skids and the support steel on roof. Two-inch deflector is recommended.

2.15 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Generator Circuit Breaker: Insulated-case or power breaker, electronic-trip type; 100 percent rated; complying with UL 489.
 1. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.



2. Trip Settings: Selected to coordinate with generator thermal damage curve.
 3. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
 4. Mounting: Adjacent to or integrated with control and monitoring panel.
- B. Generator Protector: Microprocessor-based unit shall continuously monitor current level in each phase of generator output, integrate generator heating effect over time, and predict when thermal damage of alternator will occur. When signaled by generator protector or other generator-set protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from load circuits. Protector shall perform the following functions:
1. Initiates a generator overload alarm when generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other generator-set malfunction alarms.
 2. Under single or three-phase fault conditions, regulates generator to 300 percent of rated full-load current for up to 10 seconds.
 3. As overcurrent heating effect on the generator approaches the thermal damage point of the unit, protector switches the excitation system off, opens the generator disconnect device, and shuts down the generator set.
 4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.
- C. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground-fault. Integrate ground-fault alarm indication with other generator-set alarm indications.
- 2.16 Provide remote emergency shut-off buttons (breakglass stations) for the generator. Locate in the field and provide all required wiring and conduit.



2.17 MANUFACTURERS

- A. The documents are based upon engine generator physical sizing criteria of one (1) particular manufacturer. The Contractor shall be responsible for modifications necessary in the use of a proposed manufacturer. These modifications are to include all mechanical and electrical work, architectural work and structural work. Generator with dimensions longer than shown on the Contract Document and not fit in the space will be rejected.
- B. The following manufacturers:
1. Prime Mover and Generator:
 - a. Caterpillar
 - b. Cummins/Onan
 - c. Detroit Diesel
 - d. or Approved Equal
 2. Remote Fan Radiator:
 - a. Rocore
 - b. Young
 - c. Kohler
 - d. or Approved Equal
 3. Exhaust Silencer:
 - a. Harco
 - b. GT Exhaust
 - c. Terrance & Pembro
 - d. or Approved Equal
 4. Day Tank:
 - a. Simplex
 - b. Pryco
 - c. Tramont



- d. or Approved Equal
- 5. Vibration Isolators:
 - a. Mason Industries, Inc.
 - b. Kinetic Noise Control
 - c. Amber Booth Company
 - d. Ace Mountings
 - e. or Approved Equal
- 6. Governor:
 - a. Caterpillar
 - b. Woodward
 - c. Basler
 - d. or Approved Equal.
- 7. Batteries:
 - a. Nife
 - b. Exide
 - c. C&D
 - d. Interstate
 - e. or Approved Equal
- 8. Battery Charger:
 - a. Lamarche
 - b. Sens
 - c. Charles
 - d. or Approved Equal



9. Voltage Regulations:
 - a. Caterpillar
 - b. Basler
 - c. or Approved Equal.
10. Circuit Breakers:
 - a. General Electric
 - b. Siemens
 - c. Square D
 - d. Eaton/Cutler Hammer
 - e. or Approved Equal

PART 3 - EXECUTION

3.1 GENERAL

- A. Assemble and install the emergency generator system as shown on the Contract Documents, as indicated in the manufacturer's instructions and as required for a neat workmanlike and fully operational system. Insure that the manufacturer's recommended clearances are maintained.
- B. Provide an empty raceway system capable of supporting the elevator supply wiring. The raceway system shall meet the requirements of the elevator supplier. As a minimum, provide one (1) two-inch empty conduit with pull cord from each elevator shaft to the Fire Command Center.
- C. Provide a minimum of two (2) remote emergency shut off buttons for the generator. Locate in the field and provide all control wiring and conduit.
- D. Provide equipment grounding connections for the generator. Tighten connections to comply with tightening torque levels specified in UL Std 486A.
- E. Existing room door width is 5'6". Generator component pieces shall be verified prior to fabrication to assume the feasibility of moving.



3.2 VIBRATION ISOLATION

- A. Isolate the generator set at the base by means of combination spring type isolators and neoprene pads. Provide isolators of not less than 98% efficiency of a sufficient quantity such that each is loaded to not more than 75% of its rated value. Provide a minimum static deflection of 1".
- B. All fuel oil and coolant lines shall be isolated by means of flexible light tight braided hoses.
- C. All raceway connections to the generator set shall be in flexible metal conduit.
- D. Entire run of engine exhaust piping shall be supported on spring hangers or mounts. Isolators shall be sized for 1" minimum static deflection.

3.3 SEQUENCE OF OPERATION

- A. Engine start contacts shall signal generator to start when the voltage of the normal source drops below 80% on any phase, after a time delay of 1 second to allow for momentary dips. The voltage sensing relay shall be field adjustable while energized.
- B. The automatic transfer switch shall transfer to emergency when 90% of rated voltage and frequency of the emergency source have been reached.
- C. After restoration of normal power of all phases to 90% of rated voltage, an adjustable time delay period shall delay retransfer to allow stabilization of normal power. If the emergency power source should fail during this time delay period, the automatic transfer switch shall bypass the timing relay and transfer to the normal source.
- D. After retransfer to normal, the engine generator shall be allowed to operate at no load for five minutes.
- E. A test on the automatic transfer switch shall simulate normal power failure.
- F. When the generator begins to start (and is cranking) the following shall occur:
 - 1. Fuel oil solenoids shall "OPEN".
 - 2. Air intake motorized dampers shall "OPEN".
 - 3. Air exhaust motorized dampers shall "OPEN".
 - 4. The fuel oil transfer pumps shall be "ON".
 - 5. The coolant pumps shall turn "ON".



G. When the generator is OFF, the following shall occur:

1. Fuel oil solenoid valves shall "CLOSE".
2. Air intake motorized dampers shall "CLOSE".
3. Air exhaust motorized dampers shall "CLOSE".
4. The fuel oil transfer pumps shall be "OFF".

H. Generator Emergency Shutdown

1. Shutdown generator upon receiving signal from breakglass station.
2. Shutdown generator upon activation of generator room foam fire protection system.
3. Shutdown generator upon activation of fuel oil tank room foam fire protection system.
4. Contractor to provide required shutdown wiring and generator manufacture to provide required shutdown relay and wiring terminal at the generator.

3.4 FUEL OIL

A. Upon acceptance of field testing and prior to project closing, the main fuel oil tank and the day tank shall be topped off by the Contractor.

3.5 TESTING

A. Factory Testing

1. Prior to shipment of the engine-generator set from the factory, a certified load test shall be performed and the results shall be submitted to the Commissioner for review before shipment of the unit. The tests shall verify the proper operation of all alarms and shut down circuits.
2. The tests shall also demonstrate compliance with the generator performance criteria as specified herein.
3. Testing shall be performed as follows:
 - a. Verify operation of all shut down and alarm points specified.
 - b. Perform transient response testing to verify performance as specified. Load steps shall be performed as follows:

(1) 0% - 25% - 0%



- (2) 0% - 50% - 0%
 - (3) 0% - 75% - 0%
 - (4) 0% - 100% - 0%
 - (5) 0% - 25% - 75% - 25% - 0%
 - (6) 0% - 50% - 100% - 50% - 0%
- c. All load steps shall be recorded on a chart recorder or light beam oscilloscope.
 - d. In a period of four (4) hours with a loading 25, 50, 75 and 100 percent of rated load. Step loading procedure shall be utilized (i.e., 25 percent first hour, 50 percent second hour, etc.).
 - e. Maintain 100% load for 1 hour.
 - f. Factory testing shall be accomplished using resistive and reactive load banks to match kW and kVA requirements set forth in the Contract Documents.
 - g. The factory testing shall include the "Generator Set Performance" criteria, listed in Section 2 above.

B. Field Testing

- 1. After completion of the installation, the Contractor shall perform a certified load test, in accordance with NFPA 110, of the engine generator and related automatic transfer switches. The generator shall be required to start-up and accept full load within 10 seconds. The unit shall continue to operate for not less than four (4) hours at 100 percent rated load. The test shall also include demonstrating that all alarms, signals, shut down devices, elevator recall, etc., are functioning properly. The Contractor shall be responsible for securing all temporary load-banks, temporary cables, etc., required for the tests.
- 2. The full load test shall utilize all required load banks sufficient to provide a load equal to 100 percent of the generator nameplate rating. Contractor shall secure all such load banks, cabling, hoisting, and terminations needed to perform the full load test.
- 3. This Contractor shall supply all fuel for the testing. Upon acceptance by the Commissioner, the day tank and main fuel oil tank shall be filled to capacity after each testing.



C. Certified Test Reports

1. Field testing shall be performed by the manufacturer's certified factory field service technicians.
2. Test procedures shall be in accordance with NFPA 110.
3. Verify that the installation is in accordance with the manufacturer's instructions.
4. Verify that the equipment has been fully tested and is operational.
5. Perform reactive testing and compile detailed test reports for each piece of equipment and system tested.
6. Perform pull-the-plug test to demonstrate proper operation of the entire emergency electrical system.

D. Miscellaneous – Provide the following:

1. Location of a factory authorized service center.
2. The response time for service calls. There should be a maximum response time of two hours on-site.
3. Recommended preventive service procedures and recommended intervals with one included within the first year.
4. Recommended service parts to minimize downtime.

3.6 CLASSROOM INSTRUCTION

- A. The generator set supplier shall provide a minimum of four (4) hours of classroom instruction on service and operation of the emergency power system. Classes shall be held at the supplier's facility, shall be administered by a full-time instructor and shall be open to up to three (3) representatives of the City of New York service staff.
- B. Instruction shall be videotaped and turned over to the City of New York.

3.7 Provide all necessary wiring and conduit to each remote alarm panel.

3.8 HOUSEKEEPING PADS

- A. Provide a concrete housekeeping pad and/or steel structural framing beneath the generator, as indicated on the Contract Drawings.
- B. Provide a concrete curb around the fuel oil day tank to contain the full capacity of fuel plus 50% in the event of a day tank leak.



- C. Provide a concrete curb under each door of the generator room to prevent migration of spilled liquids out of the room.
- D. Provide a leak detection system for fuel containment and connect to the Building Management System for monitoring. Provide a 120 volt power supply from nearest emergency panel location.

3.9 WARRANTY

- A. The manufacturer's standard warranty shall in no event be for a period of less than five (5) years from date of initial start-up of the system and shall include replacement parts, labor, reasonable travel expense necessary for service at the job site, and expendables (lubricating oil, filters, antifreeze, and other service items made unusable by the defect) used during the course of restoration. Include a temporary generator set at no cost to the City of New York should a warrantable restoration take an extended period of time. Submittals received without written warranties as specified will be rejected in their entirety.

3.10 FIELD REPRESENTATION

- A. Provide services of manufacturer's field representative (factory trained) for a period of 5 working days to supervise start-up, testing and two (2) instructional sessions for operating personnel.
- B. The generator set dealer shall be responsible for coordination between all related generator control wiring, regulator and governor equipment, testing and start-up and all associated systems that affect the coordination of the switchgear with the generator sets. All submittal packages relating to the two systems shall be supplied as a one source package for review by the Commissioner. The one source of responsibility criteria would rest upon the generator supplier to ensure a smooth transition in every step of the installation process, as well as being available for coordination meetings with his associated sub-vendor.
- C. The City of New York reserves the right along with his authorized representatives to visit the factory during the course of fabrication of equipment to observe progress, quality control, schedule of completion, etc. All costs shall be paid by this Contractor.
- D. Provide service of manufacturer's field representative for required period of days for the generator field assembly and certify the work.

3.11 SERVICE PARTS

- A. Deliver one (1) set of filter elements (air, fuel and oil) and one (1) belt for every belt drive to the City of New York at final acceptance.
- B. Deliver one (1) complete set of fuses and one (1) injector.



- C. Deliver two (2) for every six (6) of each indicator lamp type used, but no fewer than two (2).
- D. Deliver two (2) quarts of touch paint – each color on generator and accessories.

3.12 TECHNICAL LITERATURE

- A. Provide the City of New York with three (3) copies of technical literature on all system components consisting of a manual of sequential operations, recommended preventive maintenance, parts list with recommended spares, and all pertinent control manuals and wiring diagrams.

3.13 SERVICE

- A. **Initial Service:** Beginning at Substantial Completion, provide 12 months' full maintenance by instructed employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
- B. The generator set manufacturer and its distributor shall maintain a 24-hour parts and service organization.

END OF SECTION



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SECTION 26 36 23

AUTOMATIC TRANSFER SWITCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide automatic transfer switches in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Automatic Transfer Switches.
- B. Automatic Transfer and Bypass – Isolation Switches.
- C. Interconnecting control wiring, conduit, and programming for the complete requirements of the standby power generation system.

1.4 SUBMITTALS

A. Shop Drawings

1. Detailed drawings which relate to the design criteria specified, including single line diagram.
2. Submission shall be coordinated with the short circuit study submitted with the project switchboard shop drawings for the entire electrical system. Equipment submissions made without this study shall be returned unreviewed.
3. All concrete housekeeping pads shall be sized and illustrated on the submittal.

B. Product Data

1. Manufacturer's catalog cut sheets and performance data.
2. Complete detailed wiring diagram of the system including all remote connections.
3. All nameplate information.



4. All warranty data.
5. Certified factory test report.
6. Complete list of materials and components being furnished, including capacities, weights, operating ratings, and all accessories.

1.5 QUALITY ASSURANCE

- A. Except as modified by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 1. U.L. 1008 – Standard for Transfer Switch Equipment
 2. NFPA 110 – Emergency and Standby Systems
 3. U.L. 508 – Industrial Control Equipment
 4. U.L. 1008 – Transfer Switch Equipment
 5. NFPA 70 – National Electrical Code
 6. IEEE Standard 446 – IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Application
 7. NEMA Standard ICS10-1993 – AC Automatic Transfer Switches
- B. Equipment suppliers shall have local representation and shall have been actively engaged in the assembly, installation and service of this equipment for emergency power purposes for a period of not less than 3 years in the job site area.
- C. Equipment suppliers shall have full parts backup and a 24 hour per day service availability for this equipment.
- D. Equipment supplier shall have factory direct service employees specifically trained for work on automatic transfer switches and all related devices.



PART 2 - PRODUCTS

2.1 GENERAL

- A. Rating: The automatic transfer switches shall be furnished as shown on the Contract Documents and shall be listed under UL-1008. All three phase, four wire transfer switches shall be the four-pole switched neutral type with overlapping neutral contacts to eliminate transients and optimize the integrity of the neutral path. The automatic transfer switches shall be capable of switching all classes of load and shall be rated for continuous duty when installed in a non-ventilated enclosure constructed in accordance with Underwriters' Laboratories, Inc. Standard UL-1008. Rating and configuration of the switches shall be as indicated on the Contract Documents.
- B. Construction and Performance: The automatic transfer switch shall be double throw, actuated by a single or dual electrical operator momentarily energized and connected to the transfer mechanism by a simple over-center type linkage with a total transfer time not to exceed one-sixth of a second. The automatic transfer switch shall be capable of transferring successfully in either direction with 80 percent of rated voltage applied to the switch terminals.
- C. The normal and emergency contacts shall be positively interlocked mechanically and electrically to prevent simultaneous closing. Main contacts shall be mechanically locked in position in both the normal and emergency positions without the use of hooks, latches, magnets, or springs and shall be silver-tungsten alloy protected by arcing contacts, with arc grids on each pole. Interlocked molded case circuit breakers or contactors are not acceptable.
- D. The transfer switch shall be equipped with a maintenance operator that is designed to operate with switch de-energized. The switch shall operate with a slow movement to allow for inspection of the contact travel. The transfer switch shall be equipped with a safe external manual operator designed to prevent injury to operating personnel. The manual operator shall provide the same contact to contact transfer speed as the electrical operator to prevent a flashover from switching the main contacts slowly. The external manual operator shall be safely operated from outside of the transfer switch enclosure while the enclosure door is closed.
- E. Transfer switches shall be mounted in NEMA 250, Type 1 enclosures as indicated on the Contract Documents.
- F. When conducting temperature rise tests to paragraph 17 of UL-1008, the manufacturer shall include post-endurance temperature rise tests to verify the ability of the transfer switch to carry full rated current after completing the overload and endurance tests.
- G. The automatic transfer switches shall have the short circuit withstand and close-in ratings consistent with the available short circuit current as indicated on the Contract Documents and a result of the Contractor's short circuit analysis.



- H. Nameplate: Provide a nameplate of red bakelite with white lettering containing the following information:

ATS # _____ (1/2" lettering)
Serves Panel _____ (1/4" lettering)
Normal Power from Panel _____ CKT _____ (1/4" lettering)
Emergency Power from Panel _____ CKT _____ (1/4" lettering)

2.2 AUTOMATIC TRANSFER BYPASS – ISOLATION SWITCH

- A. A two-way bypass-isolation switch shall provide manual bypass of the load to either the emergency or normal source and permit isolation of the automatic transfer switch from all source and load power conductors. All main contacts shall be manually driven. Electrically-driven contacts are prohibited.
- B. Separate bypass and isolation handles shall provide clear distinction between the two functions. The bypass handle shall provide three operating modes: "Bypass to Normal", "Automatic" and "Bypass to Emergency". Bypass to the selected source shall be affected without any interruption of power to the load (make-before-break contacts). The operating speed of the bypass contacts shall be the same as that of the associated transfer switch and shall be independent of the speed at which the manual bypass handle is operated. In the "Automatic" mode, bypass contacts shall be fully open to prevent subjecting to fault currents.
- C. The isolation handle shall provide three operating modes: "Closed", "Test" and "Open".
1. The "Test" mode shall permit testing of the entire emergency power system, including the automatic transfer switch, without interruption of power to the load.
 2. The "Open" mode shall completely isolate the automatic transfer switch from all source and load power conductors. When in the "Open" mode it shall be possible to completely withdraw the automatic transfer switch for inspection or maintenance without removal of power conductors or the use of tools.
- D. With the isolation switch in the "Test" or "Open" mode, the bypass switch shall function as a manual transfer switch allowing transfer and retransfer of load between the two available sources without the feedback of load-regenerated voltage to the transfer switch.
- E. The bypass/isolation switch shall have the same electrical ratings of ampacity, voltage, short circuit withstand, and temperature rise capability as the associated ATS. The isolating portion of the bypass/isolation shall allow the automatic transfer switch to be disconnected from all sources of power and control without opening the enclosure door. The transfer switch shall have a true draw out configuration which does not require disconnection of any electricity or mechanical devices by maintaining personnel. The automatic transfer switch shall be provided with rollers or casters to



allow it to be removed from its enclosure simply by rolling it out. Positive mechanical interlocks shall be provided to insure that the bypass/isolation functions can be accomplished without the danger of a short circuit.

- F. The isolating portion of the bypass/isolation shall allow the automatic transfer switch to be disconnected from all sources of power and control without opening the enclosure door. The transfer switch shall have a true draw out configuration which does not require disconnection of any electricity or mechanical devices by maintaining personnel. The automatic transfer switch shall be provided with rollers or casters to allow it to be removed from its enclosure simply by rolling it out. Positive mechanical interlocks shall be provided to insure that the bypass/isolation functions can be accomplished without the danger of a short circuit. Overlapping contact bypass/isolation switches, that are dependent upon the position of the automatic transfer switch for proper operation, are not acceptable.

2.3 OPERATION

A. Microprocessor Control Module

1. A microprocessor control module shall be provided to direct the operation of the transfer switch. The control module shall be connected to the transfer switch by an interconnecting wiring harness which shall include a keyed disconnect plug to enable disconnecting for routine maintenance.
2. A full duplex RS422 interface shall be built-in to the control module to enable digital communications with remotely-located annunciators and/or network supervisors.
3. Provide serial port (RS232; RS422; or RS485) to communicate with the power monitoring system.

B. Relays, Contacts and Controls

1. Close differential voltage sensing on all phases of normal system.
 - a. Drop out field adjustable from 75 to 98%. Factory set at 80%.
 - b. Pick up field adjustable from 85 to 100%. Factory set at 90%.
2. Voltage sensing on at least one phase of emergency system.
 - a. Pick up field adjustable from 85% to 100%. Factory set at 90%.
3. Frequency sensing of emergency system.
 - a. Pick up field adjustable from 90 to 100%. Factory set at 95%.



4. Time delay of momentary normal source outages.
 - a. Field adjustable from 0 to 6 seconds. Factory set at 1 second.
5. Time delay on transfer back to normal.
 - a. Field adjustable from 0 to 30 minutes; Factory set at 10 minutes.
 - b. Immediate bypass and transfer to normal source if emergency service fails.
 - c. Shall cause a normally open set of contacts to close 10-15 seconds prior to transfer back to normal for switches serving elevator loads. This signal shall be adjustable from 0-60 seconds and shall be set as required by the elevator vendor.
6. Time delay of transfer to emergency.
 - a. Field adjustable from 0 to 5 minutes. Factory set at 0 minutes.
 - b. Where multiple transfer switches are employed, set the time delay at 5 seconds apart between each switch (i.e. 4 switches total transfer of last switch 20 seconds). Switch priority assignments shall be assigned by the Commissioner.
7. Unloaded engine run cool down time delay.
 - a. Field adjustable from 0 to 60 minutes. Factory set at 5 minutes.
8. Engine start contacts.
 - a. Two (2) sets; one (1) set to close the other set to open upon failure of normal source.
 - b. Signal to start respective generator after time out of transfer to emergency relay as specified in article 6 above.
9. Test switch.
 - a. Momentary type mounted through the enclosure.
 - b. Simulates failure of normal source.
 - c. System to remain in test position until delay on transfer back to normal has timed out.



- d. A test reset switch shall be included and shall bypass the delay on transfer back to normal. It shall not bypass the unloaded engine run cool down delay or the presignal specified in 5c above.
 - e. During test conditions (operation of test switch) a normally open set of contacts shall be caused to close 10-15 seconds prior to transfer to emergency. The signal shall be adjustable from 0-60 seconds and shall be set as required by the elevator vendor.
10. Additional contacts.
- a. Four (4) additional auxiliary contacts, two (2) closed with switch in emergency position, the other closed with switch in normal position.
11. Switch indicating lights.
- a. Mounted on enclosure door.
 - b. Red when the switch is in the emergency position.
 - c. Green when the switch is in the normal position.
 - d. Green to indicate normal source is available.
 - e. Red to indicate emergency source is available.
 - f. Lights shall be paralleled at the remote annunciator panels.
 - g. Amber when the switch is in the bypass-isolation switch position.
12. Service manual shall be supplied inside of the enclosure when shipped.

2.4 MANUFACTURERS

- A. Automatic Switch Co.
- B. Russelectric Co.
- C. Zenith (GE)
- D. or Approved Equal.



PART 3 - EXECUTION

3.1 GENERAL

- A. The automatic transfer switches shall be installed as shown on the Contract Documents, in conjunction with the engine generator system as indicated in the manufacturer's instructions and as required for a neat workmanlike and fully operational system.

3.2 Provide the following in conjunction with each and every automatic transfer switch:

- A. 2#12-3/4"C. from the auxiliary contact (closed when switch is in the emergency position) on each automatic transfer switch to each elevator machine room which is served via an emergency generator. Terminate where required by the elevator vendor.
- B. 2#12-3/4"C. from the auxiliary contact (closed before the switch returns to normal power) on each automatic transfer switch serving elevators to each elevator machine room which is served via that transfer switch. Terminate where required by the elevator vendor.
- C. 2#12-3/4"C from the auxiliary contact (closed before the switch moves to the emergency position) on each automatic transfer switch serving elevators to each elevator machine room which is served via that transfer switch. Terminate as and where required by the elevator vendor.
- D. 2#12-3/4"C. from the engine start contact on each automatic transfer switch to the respective emergency generator control panel.
- E. Wiring as necessary from each automatic transfer switch to the remote annunciator panels and the engine control panel for each automatic transfer switch position indicator lights.

3.3 Provide all necessary wiring and conduit to each remote alarm panel.

3.4 Provide 4" high concrete housekeeping pads for all floor mounted equipment.

3.5 Provide a 24 inch wide isolation mat in the front and rear of all automatic transfer switches.

3.6 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
1. **Manufacturer's Field Service:** Engage a factory-authorized service representative to inspect components, assemblies, and equipment installation, including connections, and to assist in testing, start-up and commissioning.



2. After installing equipment and after electrical circuitry has been energized, test for compliance with requirements.
3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
4. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.
 - a. Check for electrical continuity of circuits and for short circuits.
 - b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
 - c. Verify that manual transfer warnings are properly placed.
 - d. Perform manual transfer operation.
5. After energizing circuits, demonstrate interlocking sequence and operational function for each switch at least three times.
 - a. Simulate power failures of normal source to automatic transfer switches and of emergency source with normal source available.
 - b. Simulate loss of phase-to-ground voltage for each phase of normal source.
 - c. Verify time-delay settings.
 - d. Verify pickup and dropout voltages by data readout or inspection of control settings.
 - e. Test bypass/isolation unit functional modes and related automatic transfer-switch operations.
 - f. Perform contact-resistance test across main contacts and correct values exceeding 500 microhms and values for 1 pole deviating by more than 50 percent from other poles.
 - g. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.



6. Ground-Fault Tests: Coordinate with testing of ground-fault protective devices for power delivery from both sources.
 - a. Verify grounding connections and locations and ratings of sensors.
- B. Testing Agency's Tests and Inspections:
 1. After installing equipment and after electrical circuitry has been energized, test for compliance with requirements.
 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 3. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.
 - a. Check for electrical continuity of circuits and for short circuits.
 - b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
 - c. Verify that manual transfer warnings are properly placed.
 - d. Perform manual transfer operation.
 4. After energizing circuits, demonstrate interlocking sequence and operational function for each switch at least three times.
 - a. Simulate power failures of normal source to automatic transfer switches and of emergency source with normal source available.
 - b. Simulate loss of phase-to-ground voltage for each phase of normal source.
 - c. Verify time-delay settings.
 - d. Verify pickup and dropout voltages by data readout or inspection of control settings.
 - e. Test bypass/isolation unit functional modes and related automatic transfer-switch operations.
 - f. Perform contact-resistance test across main contacts and correct values exceeding 500 microhms and values for 1 pole deviating by more than 50 percent from other poles.



- g. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.
- 5. Ground-Fault Tests: Coordinate with testing of ground-fault protective devices for power delivery from both sources.
 - a. Verify grounding connections and locations and ratings of sensors.
- C. Coordinate tests with tests of generator and run them concurrently.
- D. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.
- E. Remove and replace malfunctioning units and retest as specified above.
- F. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switch. Remove all access panels so joints and connections are accessible to portable scanner.
 - 1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switch 11 months after date of Substantial Completion.
 - 2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - 3. Record of Infrared Scanning: Prepare a certified report that identifies switches checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.7 DEMONSTRATION

- A. Engage a factory-authorized service representative to instruct City of New York's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment.
- B. Coordinate this instruction with that for generator equipment.



3.8 WARRANTY

- A. Provide a manufacturer's standard warranty for a period of two (2) years from final acceptance by the City of New York.

END OF SECTION



SECTION 26 40 00

FIRE ALARM-LIFE SAFETY SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. The following document applies to all required work for the project:
1. The Contract Drawings.
 2. The Specifications.
 3. The General Conditions.
 4. The Addendum.
 5. The Contract) City of New York Standard Construction Contract).

1.2 GENERAL

- A. It is the intent of this section to provide expansion and modification to the existing fire alarm system to accommodate the needs of the building areas associated with the emergency generator installation and electrical system upgrade to provide compliance with presently applicable codes.
- B. Unless otherwise noted or required by NFPA Code or the manufacturer, all fire alarm equipment and devices (pull stations, horn strobes, smoke detectors, etc.) shall match the existing building.
- C. All new fire alarm devices shall be compatible with the existing fire alarm system.

1.3 DESCRIPTION

- A. Provide necessary equipment and/or devices, including expansion of the existing fire alarm system and reprogramming of the existing building fire alarm system to meet the requirements of new work.
- B. Reprogramming of the base building fire alarm system to accept new device tie in shall be made by the original vendor.
- C. Provide the necessary interface, relay, wiring, raceways, etc., for release of security doors by fire alarm system.
- D. Interconnect to the existing fire alarm system to points identified by the building



manager. Coordinate with building fire alarm system manufacturer and perform final tie-in of all devices under the supervision of the building system vendor.

1.4 SMOKE DETECTION

- A. Provide addressable type ionization smoke detectors.
- B. Activation of area smoke detector will initiate the fire alarm following base building sequence of operations.

1.5 QUALITY ASSURANCE

- A. Provide addressable type heat detectors in Generator Room and Fuel Oil Tank Room.
- B. Activation of heat detector (cross zone) shall activate the foam fire protection system.
- C. Secure permits and approvals, prior to installation.
- D. Prior to commencement and after completion of work: Notify Fire Department and the City of New York.
- E. Meeting requirements of:
 - 1. Applicable codes,
 - 2. NFPA National Fire Code. NFPA 70, Articles 300, 400, 685
 - a. 72.
 - b. 90A.
 - 3. Local Code.
 - 4. Local Fire Department.
 - 5. Underwriters Laboratories or Factory Mutual Inc.
- F. Install and connect in accordance with manufacturer's recommendations and instructions.

1.6 SEQUENCE OF OPERATION

- A. Operation of all new devices connected to existing fire alarm system shall match present operation.
- B. Duct smoke detection activation will shut down the corresponding active unit via Fire Alarm System.



1.7 JOB CONDITIONS

- A. Maintain operation of building existing alarm system and devices during construction. Coordinate with building manager for scheduling system shutdown and interconnections.
- B. Test and document existing fire alarm system prior to start of construction.

1.8 SUBMITTALS

- A. Submit letter of approval from the Fire Department of New York City for installation before requesting acceptance of system.
- B. Shop drawings:
 - 1. Provide complete dimensioned shop drawings including mounting and installation details, sequence of operations and wiring diagrams and catalog cutsheets for the following equipment;
 - a. Speaker/strobes.
 - b. Smoke and heat detectors.
 - c. Signal and communication wires.
 - d. Duct detectors, including remote indicator lights or mimic panel.
 - e. Strobe (flashing) light alarms.
 - f. Relays for HVAC units control, fan shutdown and damper closing.
 - g. Foam fire protection system equipment.

1.9 SERVICE PARTS

- A. Supply a list of recommended service parts.

1.10 WARRANTY

- A. Two-year warranty shall begin after system is accepted by the City of New York.
- B. Warranty shall cover all labor and parts.



PART 2 - PRODUCTS

2.1 MATERIALS

- A. Flush and surface mounted combination horn/strobes, area smoke and duct detectors, wiring, addressable manual pull station, etc., are to comply with the existing building standard.
- B. Area smoke detectors shall be photo-electric type.
- C. Strobes shall meet the requirements of the A.D.A.
- D. Speaker/strobe units shall be semi-flush mounted with all necessary trim.
- E. Heat detector, as per foam fire protection system activation requirement for temperature rating.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install new manual pull stations and fire alarm devices to new wall surfaces and in accordance with ADA requirements. Install new combination horn/strobes in accordance with ADA requirements.
- B. Provide connection to fire alarm panel for new devices, relays, strobe panel.
- C. Reprogram the main control board and fire command station to accept the new equipment and devices.
- D. Adjust speaker taps for proper coverage of the area.
- E. New smoke duct detectors to report to the fire alarm control panel. Heat detectors to be connected to the associated foam fire protection system control panel. Provide relays as required. Coordinate with building fire alarm system vendor.
- F. All hard wiring to be in EMT conduit to conform to NEC and New York City Code requirements.

END OF SECTION



SECTION 26 43 13

SURGE PROTECTION DEVICE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION

- A. Provide surge protection devices (SPD) for the protection of all AC electrical circuits and electronic equipment from the effects of lightning induced voltages, external switching transients and internally generated switching transients, in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Surge Protective Devices

1.4 SUBMITTALS

- A. The surge protective device submittals shall include, but shall not be limited to, the following information:
1. Data for each suppressor type indicating ratings, capacities, operating weight, conductor sizes, conductor types, and connection configuration and lead lengths.
 2. Manufacturer's certified test data indicating the ability of the product to meet or exceed requirements of this specification.
 3. Drawings, with dimensions, indicating SPD mounting arrangement and lead length configuration, and mounting arrangement of any optional remote diagnostic equipment and assemblies.
 4. List and detail all protection systems such as fuses, disconnecting means and protective materials.
 5. SPD wiring, bonding, and grounding connections shall be indicated on the wiring diagrams for each system. Include installation details demonstrating mechanical and electrical connections to equipment to be protected.



1.5 QUALITY ASSURANCE

- A. The latest edition of the following standards and publications shall comply to the work of this section:
1. ANSI/IEEE C62.41, Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits
 2. ANSI/IEEE C62.45, Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage AC Power Circuits
 3. Underwriters Laboratories UL 1449
 4. Underwriters Laboratories, UL 1283
 5. National Fire Protection Association, NFPA 70 and 780 - National Electrical Code
 6. National Electrical Manufacturer's Association LS-1, (NEMA LS-1)
 7. ISO 9001:, Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation and Servicing
 8. UL 96A – UL Lightning Protection System Master Label
- B. All surge protective devices for service entrance, distribution, and branch circuit protection within a facility shall be provided by a single manufacturer.
- C. The manufacturer must be regularly engaged in the manufacture of surge suppression products for the specified categories for no less than three (3) years.

1.6 WARRANTY

- A. The SPD and supporting components shall be guaranteed by the manufacturer to be free of defects in material for a period of three (3) years from the date of substantial completion of service and activation of the system to which the suppressor is attached. Any additional diagnostic circuits (LEDs, surge counter, etc.) must meet the same warranty period and conditions listed within these specifications.
- B. An SPD that shows evidence of failure or incorrect operation during the warranty period shall be replaced free of charge. Since "Acts of Nature" or similar statements typically include the threat of lightning to which the SPDs shall be exposed, any such clause limiting warranty responsibility in the general conditions of this specification shall not apply to this section. That is, the warranty is to cover the effects of lightning, single phasing, and all other electrical anomalies. The warranty shall cover the entire device, not just various components, such as modules only.



- C. The installation of SPDs in or on electrical distribution equipment shall in no way compromise or violate equipment listing, labeling, or warranty of the distribution equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE

A. General

1. SPDs installed in switchgear, switchboards, or power panels shall have an integral non-fused disconnect, independently tested to the maximum surge current rating of the device. SPDs installed in lighting panels shall be either direct connected to the main bus or via a dedicated branch breaker. Use of plug-in type suppression modules is not allowed.
2. SPDs installed external to switchgear, switchboards, or power panels shall be fed by a dedicated 30A/3P circuit breaker or disconnect switch. The SPD shall be connected directly to the side of the equipment enclosure.
3. The SPD shall protect all modes and there shall be seven (7) discrete suppression circuits: three (3) modes connected Line to Ground, three (3) modes connected Line to Neutral, and one (1) mode connected Neutral to Ground for a 3-phase, 4-wire, plus ground voltage system. Line to Neutral to Ground is not an acceptable substitute for Line to Ground. Line to Neutral to Line and Line to Ground to Line (in combination) will be acceptable for Line to Line protection.
4. All SPDs must have passed the UL 1449 Fault Current Test with a Rating of 200,000 AIC. Documentation substantiating this claim must be provided.
5. SPDs shall use a separate path to building ground; the equipment safety ground is not to be used as a transient ground path. Ground to ground bar in the main service room. Provide cabling and conduit per manufacturer's requirement.
6. Each metal-oxide varistors (MOV) shall be individually fused with a dual-purpose fuse at the component level (one (1) fuse system for each MOV). The fusing system must be comprised of a portion that will open in the event of a high fault current condition and a portion that will open in the event a limited fault current condition. This feature must be a standard design feature and not an optional feature of the product. The individual component level fusing shall allow a reduction of protection rather than a complete loss of protection. Individually fused modules are not acceptable where there is more than one (1) MOV per module.



- 7. The maximum continuous operating voltage (MCOV) of all components shall not be less than 115% for 460Y/265V systems and 125% for 208Y/120V systems.
- 8. Standard diagnostic features are to include green LEDs (one (1) per phase - normally "ON") indicating power and suppression status, one (1) red LED indicating protection status (normally "OFF") and a form C dry relay contact.
- 9. Extended diagnostics must include an audible alarm and surge counter to be displayed on an LCD display on the front of the suppressor. The surge counter must include a reset option. Products requiring diagnostic test kits will not be acceptable.

2.2 SERVICE ENTRANCE PROTECTION

- A. The SPD for this location shall be as indicated on the Contract Documents.
- B. The service entrance SPD equipment shall meet or exceed the minimum performance criteria as follows:
 - 1. The single-impulse surge-current rating shall be a minimum of 300,000 Amperes per phase (150,000 Amperes per mode).
 - 2. Nominal discharge current rating (In): 20kA.
 - 3. Any SPD mounted on the line side of the service disconnect(s) shall be TYPE 1 rated. SPDs mounted on the secondary side of the service disconnect shall be TYPE 2 or TYPE 1.
 - 4. Minimum Surge Life Rating: 20,000 pulses.
 - 5. The UL 1449 Suppressed Voltage Protection Rating (VPR) for the following configurations shall not exceed the following:

SPD Voltage Configuration	L-G	L-N	N-G	L-L
460Y/265V	1800V	1800V	1800V	2500V
208Y/120V	1200V	1200V	1500V	1500V
460V Delta	2000V	-V	-V	3500V

- C. SPDs shall be of compact design. The mounting position of the SPD shall allow a straight and short lead-length connection between the SPD and the point of connection in the equipment.
- D. Visual indication of proper SPD connection and operation shall be easily viewed on the front panel of the enclosure. The indicator lights shall indicate suppression circuit status, phase status, phase loss, reduced protection level and suppression fault.



- E. Whereas there is no dedicated breaker in the protected electrical distribution equipment, the SPD shall be equipped with an integral disconnect switch.
- F. A set of normally open/normally closed form "C" dry contacts shall be provided for remote monitoring.
- G. The enclosure type shall be NEMA 1 rated for indoor installations and NEMA 4 rated for all outdoor.
- H. SPDs shall have a diagnostics LCD panel display providing information surge/transient event count.
- I. SPDs shall be equipped with an audible alarm with mute, reset and acknowledge features.
- J. The maximum value for the attenuation for the suppressor must exceed a minimum of 36 dB. All measurements for this requirement must be taken using the MIL STD 220A method and with only six (6) inches of lead length extending outside of the normal exit location of leads for the enclosure. Test results taken with leads extending past six (6) inches are not acceptable or compliant. Additional or excessive lead length used in the test setup is not acceptable.

2.3 SECONDARY DISTRIBUTION

A. Secondary Distribution Locations

- 1. Maximum Single Impulse Surge Current Rating: 80kA per mode.
- 2. Normal Discharge Current Rating (In): 20kA.
- 3. Minimum Surge Life Rating: 5,000 impulses.

B. Lighting Panels

- 1. Maximum Single Impulse Surge Current Rating: 60kA per mode (120kA per phase).
- 2. Nominal Discharge Current Rating (In): 20kA.
- 3. Minimum Surge Life Rating: 5,000.

C. Protection modes and UL 1449 VPR for grounded wye circuits with voltages of 460Y/265, 3-phase, 4-wire circuits shall be as follows:

- 1. Line to Neutral: 1200V.
- 2. Line to Ground: 1200V.



3. Neutral to Ground: 1200V.
 4. Line to Line: 2000V.
- D. Protection modes and UL 1449 VPR for grounded wye circuits with voltages of 208Y/120, 3-phase, 4-wire circuits shall be as follows:
1. Line to Neutral: 700V.
 2. Line to Ground: 700V.
 3. Neutral to Ground: 700V.
 4. Line to Line: 1200V.
 5. Line to Line: 1200V.

2.4 MANUFACTURERS

- A. General Electric
- B. Eaton
- C. Liebert
- D. Siemens
- E. Square D
- F. Surge Suppression Inc.
- G. Or Approved Equal

PART 3 - INSTALLATION

3.1 INSTALLATION

- A. Install correct fusing, circuit breaker, or disconnect to comply with the product UL 1449 listing
- B. At Service Entrance or Transfer Switch, a UL listed disconnect switch shall be provided as a means of servicing disconnect if not connected to at least a 30A or 40A breaker.
- C. At distribution or branch, SPD shall have an independent means of servicing disconnect such that the protected panel remains energized. A 30A breaker (or larger) may serve this function.



- D. SPDs shall be installed per manufacturer's installation instructions with lead runs as short and straight as possible avoiding sharp corners. Gently twist conductors together to reduce impedance along the length.
- E. Installer may rearrange breaker locations to ensure short & straightest possible leads to SPDs. The location of field-mounted SPD devices must allow adequate clearances for maintenance.
- F. Use crimped connectors only; use of wire nuts is unacceptable.

3.2 FIELD QUALITY CONTROL

- A. Perform the following inspections below and submit written confirmation of results:
 - 1. Compare equipment nameplate data for compliance with the Contract Documents and Specifications
 - 2. With grounded systems verify that electrical system bonding jumper has been connected between neutral and ground before any SPDs are energized.
 - 3. Verify compliance with Startup Service per below
 - 4. Verify that proper operation indication lights are displayed on the SPD.
- B. An SPD device and installation will be considered defective if it does not pass the above tests and inspections.

3.3 STARTUP SERVICE

- A. Complete any startup checks according to the manufacturer's written instructions
- B. Do not perform insulation resistance tests of the distribution wiring equipment with the SPD connected. Disconnect before conducting insulation resistance tests, and reconnect immediately after the testing is over.
- C. Before energizing, installer shall verify service or separately derived system Neutral to Ground bonding jumpers per the NEC.
- D. Energize only after initial system voltages have stabilized and testing is completed. Warning, voltages are typically unstable during initial start-up of generators and voltage stabilizing transformers and can damage SPDs.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to instruct the City of New York's service personnel to operate and maintain SPDs.



3.5 CLEANING AND ADJUSTMENT

- A. After completion, clean the interior and exterior of dirt, paint, and construction debris.
- B. Touch up paint all scratched or marred surfaces with factory furnished touch-up paint of the same color as the factory applied paint.
- C. Adjust and align equipment interior and trim in accordance with manufacturers' recommendations, and to eliminate gaps between the two.

END OF SECTION



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

March 30, 2018

ADDENDUM No. # 1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

HH112BEES-G

Bellevue Men's Shelter – Electrical Upgrade and Generator

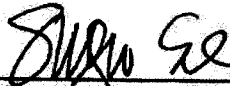
This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

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

1. **Revisions to the Bid Booklet:**
Schedule B: delete page 6 of the Bid Booklet and replace with revised page 6R, included with this Addendum.

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

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1016, by email at CSB_projectinquiries@ddc.nyc.gov or by fax at (718) 391-2627.


Sergio Silveira, RA
Assistant Commissioner
DCAS, Health, Human Services, and
OneNYC Programs

ARK Systems Electric Corp.

Name of Bidder

By: 





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

April 16, 2018

ADDENDUM No. # 2

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

HH112BEES-G

Bellevue Men's Shelter – Electrical Upgrade and Generator

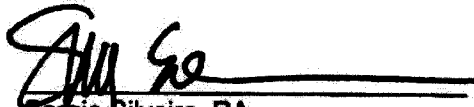
This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

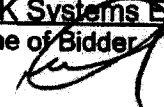
The bidder is advised that the items listed below apply to the project:

1. **Bidders Questions and Responses to Questions:**
See Attachment A.
2. **Revisions to the Bid Booklet:**
See Attachment B.
3. **Revisions to the Drawings:**
See Attachment C.

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

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1016, by email at CSB_projectinquiries@ddc.nyc.gov or by fax at (718) 391-2627.


Sergio Silveira, RA
Assistant Commissioner
DCAS, Health, Human Services, and
OneNYC Programs

ARK Systems Electric Corp.
Name of Bidder
By: 



DDC PROJECT #: HH112BEES-G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	The Fire Alarm Drawings show several new devices to be installed, which will tie into existing system. Please provide the name and contact of existing fire alarm manufacturer and vendor whom maintains the building.	The existing Fire Alarm system is Notifier by Honeywell. The system is maintained by Mutual Central Alarm System, 212-768-9636.
2	The PLA provided in Volume 2 is not signed. Please confirm that the provided PLA has been signed off by all trades.	Yes, the PLA is signed off by all trades.
3	Will it be acceptable to install an approved 2 hour rated wiring system in lieu of MI cable?	Yes, and such fire rated system subject to local inspector's approval.
4	Is the Bid Breakdown a mandatory requirement for the Bid? Can it be completed post bid? If not, will a streamlined version be acceptable?	The Bid Breakdown is a required document (see Volume 1, Page 2). Please fill out to the best of your ability. A streamlined version will be acceptable.
5	Provide location of existing MDP-SEC A & B 1600A as shown on Drawing E500 and EG500.	MDP-Sec A and MDP Sec-B are both shown on Drawing E-3CB same as Switchboard A and Switchboard B on cellar floor. Refer to Attachment C, Revisions to the Drawings, for more information.
6	Can existing conduit be utilized for new conductors if conduit size meets NYC Building Code?	No, Contractor shall provide new conduits.
7	Can an existing back box be re-used to house new wiring and circuits with a custom-made cover? Can an existing back box be utilized as a splice box with a new blank cover?	No existing back boxes shall be re-used to house new wiring and circuits as per design document. For emergency power panel, the existing panels can be re-used as splice box for splicing all branch circuit and re-route to the new panels. For normal power panels in an existing electrical closet the existing panels cannot be re-used as a splice box, contractor is required to remove all existing panels and replace with new.
8	If an electrical shut down is required and the DHS dictate that this must happen off hours, will we be compensated for the half time hours worked?	All work hours and overtime are as pursuant to PLA.
9	Please provide floor plans showing panels to be removed as indicated on Electrical Riser Diagram Demolition Drawing E-500.	All existing panels shown to be removed on riser diagram E-500 are also indicated on floor plans E-3CA.00, E-3CB.00, E-300A, E-300B, E-310A, and E-310 B up to roof.
10	Although this is a prime Electrical contract, many General Contractors also picked up the plan at the pre-bid walkthrough. It was instructed for Bidders to write in the Plumbing and HVAC sub-contractor names in the Bid Booklet Volume 1, page 17. We suggest including the Electrical name and amount along with the other two trades. Please advise.	No, the electrical amount is required on the Bid Form in the Bid Booklet Volume 1, page 13.



11	Please provide us the walk-through sign in sheet.	The sign in sheet can be found on the DDC website along with the Contract Documents.
12	Please specify the suggested hours for transferring the load from old to new system.	This is a Contractor coordination issue and any scheduled shut down shall be coordinated with and notify DDC and DHS in advance.
13	Please confirm that the project has been coordinated with Con Ed.	For Main service shut down and coordination, it is the Contractor's responsibility to coordinate as all works will be performed within the building.



DDC PROJECT #: HH112BEES-G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT B – REVISIONS TO THE BID BOOKLET

Schedule B: delete page 6 of the Bid Booklet and replace with revised page 6R, included with this Addendum.



DDC PROJECT #: HH112BEES-G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT C – REVISIONS TO THE DRAWINGS

The following drawing sheet has been modified:

Drawing E-3CB.00

Updated two existing switchboard tags to match the riser diagram E-500.00





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

April 23, 2018

ADDENDUM No. # 3

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

HH112BEES-G

Bellevue Men's Shelter – Electrical Upgrade and Generator


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

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

1. **Bidders Questions and Responses to Questions:**
See Attachment A.
2. **Revisions to the Bid Booklet:**
See Attachment B.
3. **Revisions to the Addendum to the General Conditions:**
See Attachment C.
4. **Revisions to the Specifications:**
See Attachment D.
5. **Revisions to the Drawings:**
See Attachment E.

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) 391-1016, by email at CSB_projectinquiries@ddc.nyc.gov or by fax at (718) 391-2627.



Sergio Silveira, RA
Assistant Commissioner
DCAS, Health, Human Services, and
OneNYC Programs

ARK Systems Electric Corp.

Name of Bidder

By: 



DDC PROJECT #: HH112BEES-G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Please confirm the correct email address to send RFIs for the Bellevue Men's Shelter Electrical Upgrade.	The correct email address is <u>CSB_ProjectInquiries@ddc.nyc.gov</u> .
2	Who can we speak to about setting up a walkthrough for our subs?	No further walkthroughs will be scheduled.
3	Due to the complexity of this project, we are respectfully requesting a Bid Date Postponement of (4) four weeks from the original bid date.	Bid date shall remain the same, April 27, 2018.
4	Please confirm all Light fixture shown on Drawing EL-30CB are Type XP—Explosion proof.	Confirmed. All five (5) lighting fixtures shown on the fuel oil tank room are explosion type.
5	Are the switches shown on Drawing EL-30CB explosion proof?	Yes, the switches are explosion proof type, as per note #7 on Drawing EL-30CB.
6	Please confirm that there are no light fixtures on Drawing EL-300B.	There are lighting fixtures required on the cellar floor in the area shown on Drawing EL-300B. Refer to updated sheet EL-300B in Attachment E, Revisions to the Drawings, for this information.
7	Please confirm the designation of all the light fixtures shown on Drawing EL-30R. Are they all Type A?	Yes, refer to Legend on Drawing EG-101 for this information: the hexagon designation of letter "A" indicating all fixtures in the space are Type A.
8	Will the Contractor be required to erect a sidewalk shed, or should bidders assume that the existing shed will remain?	Existing Sidewalk Shed shall remain.
9	Detail 1 on Drawing A101 says to provide spray-applied fireproofing on existing concrete beams and ceiling to achieve 2 hr fire rating. What thickness will be required to achieve a 2 hr rating?	Required thickness of sprayed applied fireproofing would be not less than 0.375 inches. Refer to Section 078100 Sprayed Fire-Resistive Materials, included with Attachment D, Revisions to the Specifications, for more information.
10	Is there a specification for spray applied fireproofing?	Yes. Refer to Attachment D, Revisions to the Specifications, for this information.
11	Please confirm that no sound attenuated enclosure is required, and that the remote radiator is 480V and not 208V as specified.	It is confirmed that no sound attenuated enclosure is required for the remote radiator. The specified radiator and power supply to the radiator per current design is 208V. However, a 480V radiator can be used and power for the 480V radiator can be fed from the generator output switchboard directly in lieu of feeding through transformer, ATS and panel. See updated Drawings EG-501 and EG-310R for the 480V power supply, included with Attachment E, Revisions to the Drawings.



12	The company that originally designed the cooling system is recommending a different type of remote radiator package. In place of the 9-fan radiator and VFD, they now make a 5-fan module package with ECM motors, which eliminates the need for a VFD. Is this design option acceptable?	Manufacturer's product submittals will be reviewed during the shop drawings process.
13	Please confirm that fuel tank is a freestanding type and will be approved by NYC DOB, as no return pipe vent line is shown returning to the main tank.	See Drawings M-400 for tank information.
14	The riser diagram shows the generator output switchboard to be provided with fuses, but the specification states that it should be provided with breakers. This is a significant price difference. Please clarify.	Please use circuit breaker following specification in lieu of fused switch shown on the riser diagram. Refer to updated riser diagram on included with Attachment E, Revisions to the Drawings, for clarification: see Drawing EG-501.
15	On Drawing EG-502, Note 1 says to 'See Drawing E-502 of Normal Electrical service upgrade project for continuation.' On Drawing E-502, Note 4 says 'Normal feeder to ATS-B-A, ATS-B-B & ATS-B-C to be provided under emergency generator project. Refer to emergency generator project for further detail.' Please provide the conduit and wire details, and clarify as to which project it belongs (Emergency Generator or Normal Electrical service)?	The correct reference of note #4 shall be referred to drawing EG-501 as the emergency distribution board EDP-B-1 is shown on EG-501.
16	During the main power shut down while tapping the existing end line box, who is responsible for temporary power? If the Contractor, then how much Amp power will be needed? What hours can this shut down be performed? Who will be responsible for the Con Ed Charge? Can an allowance be given for this charge?	The Contractor is responsible for all temporary power. As per note #6 on Drawing E-502, 1600A temporary power connection between the existing switchboard and new switchboard will be needed. Assume that the hours for shut down shall be either after normal hours (as noted in the Addendum to the General Conditions), or on weekends. The electrical contractor is responsible for coordination with Con Edison and pay any fees to be imposed.
17	On Drawing EG-700, the cellar panel EM-CB-1-2 states that it is very old, and to remove and replace it. However, on Drawing EG-501, the riser diagram shows the existing panel to remain. Are we providing new? If yes give the schedule.	Existing panels EM-CB-1-2 to remain. Refer to revised Drawing Sheet EG-700 per Attachment E, Revisions to the Drawings.
18	On Drawing EG-700, the sixth floor panel EM-6B refers to a detail on EG-701 that does not exist. Please clarify.	Refer to revised Drawing Sheet EG-700 per Attachment E, Revisions to the Drawings.
19	In reference to Drawing EG-501, please provide panel EM-R (located in EMR) schedule.	Refer to the Note #7 on the updated Drawing EG-310R, as listed in Attachment E Revisions to the Drawings for details of panel EM-R.
20	Regarding the proprietary allowance for the Fire Alarm, should bidders carry the \$44,000 allowance as shown on page 2a, "Special notice to bidders" in Volume 1? Or, should bidders do a take-off of additional devices to the system, since Fire Alarm Drawings are provided?	All bidders shall price the fire alarm system modification cost as per the Contract Documents: refer to description in Items A-C on page 2a "Special Notice to Bidders" within Volume 1.



21	Drawing EG-100 scope of work note E, states that DDC to provide all asbestos abatement. Please confirm.	This note is deemed deleted: refer to updated EG-100 in Attachment E, Revisions to the Drawings, for clarification. All asbestos abatement work is included within the Contract Documents: see Specification sections 028013, 028213 and H Drawings.
22	The first page of the Addendum to the General Conditions states that the building should be treated as a Landmark Quality Structure and that General Conditions section 013591 Historic Treatment Procedures will apply. However, within "Applicability of Sections" on page 3, 013591 is marked as 'Does Not Apply.' Please clarify.	Section 013591 of the General Conditions, as noted in 'Applicability of Sections' on page 3 of the Addendum to the General Conditions, will apply. Refer to Attachment C, Revisions to the Addendum to the General Conditions, for clarification.
23	On Drawing EG-310R, Demolition note #5 states to relocate (1) 600A panel and (1) 800A panel. However, the note pointing to the temporary location of the DC panels states that these panels are 200A and 600A. Please clarify.	The existing panels (200A and 600A DC) are located at approximately the same location as the final panel locations. Keyed note #13 has been updated on Drawing EG-310R as listed in Attachment E, Revisions to the Drawings.
24	Who is the building specified controls contractor for this project?	There is no central BMS system for the building and no specific control contractor for this project.



DDC PROJECT #: HH112BEES-G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT B – REVISIONS TO THE BID BOOKLET

Include the following line item on page 21-6 of the Bid Breakdown:

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
07 81 00	SPRAYED FIRE RESISTIVE MATERIALS							
	<i>Sprayed Fire Resistive Materials</i>		ls					
	Subtotal							



DDC PROJECT #: HH112BEES-G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT C – REVISIONS TO THE ADDENDUM TO THE GENERAL CONDITIONS

1. Delete page 3 and replace with revised page 3R, included with this Addendum.
2. Revise "Amended Sections/ Sub-Sections," Article 1.14 Building Coordination, page 5:

The following text is deemed deleted:

G. ROOF ACCESS/ HOIST OPERATIONS

1. Contractor shall not have access to building elevators for removal or delivery of any material, equipment, etc. for the duration of the project.
2. Contractor shall only transport personnel in building elevator.
3. Contractor shall be allowed to set hoist operations for duration of project at the locations shown on the contract drawings.



DDC PROJECT #: HH112BEES-G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT D – REVISIONS TO THE SPECIFICATIONS

The following section has been added:

078100 Sprayed Fire-Resistive Materials



DDC PROJECT #: HH112BEES-G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT E – REVISIONS TO THE DRAWINGS

The following drawing sheets have been modified and are included with this Addendum:

EG-100.00:

Deleted note E under scope of work.

Drawing EG-310R:

Updated power supply for the remote radiator from 208V to 480V and updated Keyed note #7.

Drawing EG-501:

Updated the generator output switchboard using circuit breaker to match the specification.

Drawing EL-300B:

Updated to indicate the lighting fixtures which are being turned off on the sheet.

Drawing EG-700:

Updated to indicate the Existing panels EM-6B to remain.





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

April 26, 2018

ADDENDUM No. # 4

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

HH112BEES-G

Bellevue Men's Shelter – Electrical Upgrade and Generator

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

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

1. **The Bid Opening for the contract described below scheduled for April 27, 2017 at 2:00 pm is rescheduled to May 7, at 2:00 pm.**
Contract #1 – Electrical Work
2. **Bidders Questions and Responses to Questions:**
See Attachment A.
3. **Revisions to the Drawings:**
See Attachment B.

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

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1016, by email at CSB_projectinquiries@ddc.nyc.gov or by fax at (718) 391-2627.

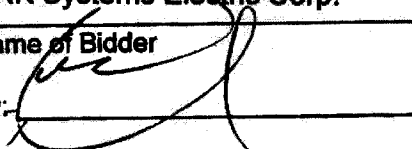


Sergio Silveira, RA
Assistant Commissioner
DCAS, Health, Human Services, and
OneNYC Programs

ARK Systems Electric Corp.

Name of Bidder

By:





DDC PROJECT #: HH112BEES -G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	The location of Electrical Panel PP-1-C3 is unknown. The panel is shown on the new riser diagram, but is not shown on the First Floor Electrical Drawings E-310A or E-310B. Please provide location of Panel PP-1-C3.	Refer to updated Drawing E-310B with Attachment B, Revisions to the Drawings, for this information.
2	In reference to Note B3 on Drawing E-100 Electrical Scope of Work, "Provide new Fire Alarm devices for new Electric Room," as well as Note 7 on Drawing EG-100 Basement Level "Provide New Fire Alarm devices for the fuel oil tank room and tie to existing FA system," please provide the location of the new FA devices with details, riser and the manufacturer name of existing system with contact number.	Locations of all fire alarm devices have been indicated on the floor plan on Drawings FA-3C0B, FA-300B, FA-30R and revised FA-500.00. Manufacturer and vendor information was provided in Addendum #2 (Attachment A, Bidders Questions and DDC Responses #1).
3	Upon review of the Drawings, there are a few instances where panels are shown on the riser and not on the Drawings. There are also a few instances where panels show up twice on a Drawing but in different locations. For example, Drawing E-340A shows Panel PP-4-E2 twice. Please clarify.	Refer to updated Drawings E-340A and E-700 with Attachment B, Revisions to the Drawings, for clarification.
4	Although the height for the concrete walls at the oil tank room is shown, the Structural & Architectural Drawings do not match as to wall thickness. Please clarify.	Refer to Architectural Drawing A-101 for concrete thickness of oil tank room. Also see updated Drawings S-100 and S-120 700 with Attachment B, Revisions to the Drawings, for further information.
5	Riser Diagram E-502 (Normal Distribution Feeder) shows the following panels: SWBD-B-B feeding the existing Panel LTG-J in the basement, Panel LTG-DR Paging on the Basement level, Panel LTG-I and SWBD-B-A feeding existing Panel RM-115 and Panel LTG-G on the First Floor Level. However, the panels are not shown on the Demolition or Electrical Drawings. Please provide us the exact locations for these panels.	The referenced panels indicated on the Riser Diagram was based on the existing switch board switch labels (loads labeled on each switch). For bidding, assume each panel will have 100' horizontal conduit run on average.
6	Please provide information regarding the existing FACP manufacturer. This is a crucial information needed to finalize a competitive price.	Manufacturer and vendor information was provided in Addendum #2 (Attachment A, Bidders Questions and DDC Responses #1).



7	Please let us know the location of ATS-FA, FCO and FA disconnect.	Refer to updated Drawing EG-300B with Attachment B, Revisions to the Drawings, for this information.
8	Per Drawing E-700, several panel locations are not shown. Since there was not enough time during the walk through for finding the locations of these panels, please provide an allowance amount for them.	See response to #5 above for clarification.



DDC PROJECT #: HH112BEES -G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT B – REVISIONS TO THE DRAWINGS

The following Drawing Sheets have been revised and are included with this Addendum:

Drawing EG-300B.00

Updated floor plan location of ATS-FA, FCO and FA disconnect.

Drawing E-310B.00

Indicated panel PP-1-C3 location on floor plan

Drawing E-340A.00

Updated for panel name.

Drawing E-700.00

Updated for the panel schedule.

Drawing FA-500.00

Updated fire alarm device riser diagram.

Drawing S-100.00

Updated structure drawing for concrete wall thickness of oil tank room.

Drawing S-120.00

Updated structure detail.



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

May 1, 2018

ADDENDUM No. # 5

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

HH112BEES-G

Bellevue Men's Shelter – Electrical Upgrade and Generator


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

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

1. **Bidders Questions and Responses to Questions:**
See Attachment A.
2. **Revisions to the Specifications:**
See Attachment B.

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

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1016, by email at CSB_projectinquiries@ddc.nyc.gov or by fax at (718) 391-2627.



Sergio Silveira, RA
Assistant Commissioner
DCAS, Health, Human Services, and
OneNYC Programs

ARK Systems Electric Corp.

Name of Bidder

By: 



DDC PROJECT #: HH112BEES -G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Addendum #2, Question #3 states that it would acceptable to install an approved 2 hour rated wiring system in lieu of MI Cable, subject to local inspector's approval. Please confirm if the Free Air ratings of Mineral Insulated Cable have been used in this design, and, therefore, any associated conduit and cable system that would be used in lieu of MI would need to be upsized to match the free air ratings. In addition, please confirm there is enough space in the shaft to run a conduit/cable system in lieu of MI.	With further review, delete DDC Response to PBQ #3 in Addendum #2 and replace with the following: The contractor shall use 2 -hr rated MI Cables as per design. There is enough space in the shaft to run MI cable.
2	In the DDC General Conditions, Section 013506, "General Electrical Requirements," Article 3.2 states that, unless otherwise noted, Rigid Steel Conduit should be installed. However, Specification Section 260533, "Raceways and Boxes," Article 3.1, states to use EMT. Please advise if EMT is allowable to use on this project, and in what areas or instances. The Drawings are also silent to the conduit type to be used on this project.	Follow the DDC General Conditions Section 013506, "General Electrical Requirements," Article 3.2 and use Rigid Steel Conduit. Refer to updated Section 260533 in Attachment B, Revisions to the Specifications, for clarification.



DDC PROJECT #: HH112BEES -G

PROJECT NAME: Bellevue Men's Shelter – Electrical Upgrade and Generator

ATTACHMENT B – REVISIONS TO THE SPECIFICATIONS

Specification Section 26 05 33 Raceways and Boxes

Delete table in Section 3.1A and replace with the following:

Raceway Types	Applications
Rigid Steel Conduit	Where exposed to mechanical injury, where specifically required; indoors where exposed to moisture; where required by NEC Code. Outdoor locations, sump and ejector pits, elevator pits, loading docks, garage, window washing equipment, and service feeders. Fire pump feeders concrete encased with 2" of concrete when Mineral Insulated (MI) Cable is not used.
PVC Coated Rigid Galvanized Steel Conduit	Where exposed to extreme outdoor and indoor corrosion and or weather conditions: Stub out of Concrete applications. In applications where two (2) UL Listed Layers of Corrosion protection is required and Hot Dipped Galvanized Conduit as Primary Protection is listed PVC Coating is listed as Primary Corrosion is also UL Listed.
Rigid Aluminum Conduit	Outdoor locations.
E.M.T.	Not to be used.
Armor Clad Cable	Lighting and receptacle branch circuits concealed in dry hollow spaces of a building. May not be used in corridors, places of assembly, or where prohibited by NEC Code. Not acceptable in electrical or mechanical rooms; nor passing through any fire rated condition.
Flexible Metal Conduit	Use in dry areas for connections to lighting fixtures in hung ceilings, connections to equipment installed in removable panels of hung ceilings; at all transformer or equipment raceway connections where sound and vibration isolation is required.



Raceway Types	Applications
Liquid-Tight Flexible Metal Conduit	Use in areas subject to moisture where flexible metal conduit is unacceptable, at connections to all motors.
Wireways and Auxiliary Gutters	Where indicated on the Contract Documents and as otherwise specifically required.



FMS ID: HH112BEES-G



Department of
Design and
Construction

**THE CITY OF NEW YORK
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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 ELECTRICAL WORK

Bellevue Men's Shelter - Electrical Upgrade and Generator

**LOCATION: 400 East 30th Street
BOROUGH: New York, 10016
CITY OF NEW YORK**

Contractor

Dated _____, 20____

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____, 20____

