



Department of  
Design and  
Construction

PROJECT ID:

SANDELEC5

**LAW**

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

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

VOLUME 1 OF 3

# BID BOOKLET

FOR FURNISHING ALL LABOR AND MATERIALS  
NECESSARY AND REQUIRED FOR:

## NYPD 100th Precinct Power Recovery and Upgrade

LOCATION:  
BOROUGH:  
CITY OF NEW YORK

9224 Rockaway Beach Blvd  
Rockaway Beach 11693

CONTRACT NO. 1

ELECTRICAL WORK

NYPD

Syska Hennessy



Date:

October 13, 2017

18-018





**Bid Tab-REVISED\***

<b>Description</b>	<b>NYPD 100TH PRECINCT POWER RECOVERY AND UPGRADE - BOROUGH OF QUEENS</b>		
<b>Bid Date</b>	<b>10/26/2018</b>	<b>FMS ID</b>	<b>SANDELEC5</b>
<b>Estimated Cost</b>	<b>\$2,289,544.00</b>	<b>Client Agency</b>	<b>NYPD</b>
<b>Bid Security</b>	<b>Not less than 2% of Total Bid Price</b>	<b>PLA</b>	<b>YES</b>
		<b>PQL</b>	<b>NO</b>
<b>Time Allowed</b>	<b>480 CCD</b>	<b>Federal Funded:</b>	<b>NO</b>
<b>Addendum</b>	<b>3</b>	<b>Contract Manager</b>	<b>Chinwee Summors</b>
<b>PIN</b>	<b>8502017PD0011C</b>	<b>Project Manager</b>	<b>Padilla, Alexandre</b>
<b>E-PIN</b>	<b>85018B0010</b>	<b>Selective Bidding</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

<b>Bid Rank</b>	<b>Vendor</b>	<b>Bid Amount</b>	<b>Security Type</b>
<b>1</b>	<b>WELKIN MECHANICAL, LLC</b>	<b>\$2,778,000.00</b>	<b>Non-Responsive</b>
<b>2</b>	<b>GRYPHON CONSTRUCTION INC.</b>	<b>\$2,784,664.00</b>	<b>Bond</b>
<b>3</b>	<b>M &amp; J ELECTRICAL CONTRACTORS CORP.</b>	<b>\$2,926,000.00</b>	<b>Bond</b>
<b>4</b>	<b>JEMCO ELEC CONTRACTORS</b>	<b>\$2,928,427.64</b>	<b>Bond</b>
<b>5</b>	<b>FRESH MEADOW ELECTRICAL CONTRACTORS , LLC</b>	<b>\$3,292,000.00</b>	<b>Bond</b>
<b>6</b>	<b>AFL CONSTRUCTION CO., INC.</b>	<b>\$3,488,442.00</b>	<b>Bond</b>

**SUBCONTRACTORS**

<b>ELECTRICAL:</b>	<b>RNH Electric Co. INC</b>	<b>\$805,500.00</b>
<b>HVAC:</b>	<b>I.M.P Plumbing &amp; Heating Corp</b>	<b>\$567,000.00</b>

**Recorder: Brenda Barreiro**

**Approver:**

*Lorraine Holley*

**Bid Tab**  
**Pin: 8502017PD0011C**

Page 1 of 1





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

May 09, 2019

**CERTIFIED MAIL - RETURN RECEIPT REQUEST**  
**GRYPHON CONSTRUCTION INC.**  
28 HILLTOP BLVD.  
EAST BRUNSWICK, NJ 08816

RE: FMS ID: SANDELEC5  
E-PIN: 85018B0010001  
DDC PIN: 8502017PD0011C  
NYPD 100TH PRECINCT POWER  
RECOVERY AND UPGRADE - BOROUGH  
OF QUEENS  
**NOTICE OF AWARD**

Dear Contractor:

You are hereby awarded the above referenced contract based upon your bid in the amount of \$2,784,664.00 submitted at the bid opening on October 26, 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, 1<sup>st</sup> Floor, Long Island City, New York (IDCNY Building). A Commissioner of Deeds will be available to witness and notarize your signature. The Agreement must be signed by an officer of the corporation or a partner of the firm.
- (2) Submit to the Contracts Unit 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**

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

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

Sincerely,

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

Lorraine Holley  
Deputy ACCO



**Bid Tab-REVISED\***

<b>Description</b>	<b>NYPD 100TH PRECINCT POWER RECOVERY AND UPGRADE - BOROUGH OF QUEENS</b>		
<b>Bid Date</b>	<b>10/26/2018</b>	<b>FMS ID</b>	<b>SANDELEC5</b>
<b>Estimated Cost</b>	<b>\$2,298,484.72*</b>	<b>Client Agency</b>	<b>NYPD</b>
<b>Bid Security</b>	<b>Not less than 2% of Total Bid Price</b>	<b>PLA</b>	<b>YES</b>
		<b>PQL</b>	<b>NO</b>
<b>Time Allowed</b>	<b>480 CCD</b>	<b>Federal Funded:</b>	<b>NO</b>
<b>Addendum</b>	<b>3</b>	<b>Contract Manager</b>	<b>Chinwee Summors</b>
<b>PIN</b>	<b>8502017PD0011C</b>	<b>Project Manager</b>	<b>Padilla, Alexandre</b>
<b>E-PIN</b>	<b>85018B0010</b>	<b>Selective Bidding</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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<b>HVAC:</b>	<b>I.M.P Plumbing &amp; Heating Corp</b>	<b>\$567,000.00</b>

**Recorder: Brenda Barreiro**

**Approver:**

*Josaine Holley*





## **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.

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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.

- **FEMA:** Please be advised that this Contract is subject to FEMA funding and that the Contractor must comply with the Uniform Federal Contract Provisions Rider and the FEMA Rider contained in Volume 2.



## **SPECIAL NOTICE TO BIDDERS**

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

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

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

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**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](http://www.nyc.gov/passport). Contact MOCS at [passport@mocs.nyc.gov](mailto:passport@mocs.nyc.gov) for additional information and technical support.

## **PRE BID QUESTIONS (PBOs):**

- Please be advised that PBOs 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**

PROJECT ID: 0

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

BID BOOKLET

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

**SPECIAL NOTICE TO BIDDERS**

**BID SUBMISSION REQUIREMENTS**

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

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

- Bid Form, including Affirmation
- Bid Security (if required, see page 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](http://www.nyc.gov/vendex). The bidder may also obtain Vendex forms and instructions by contacting the Agency Chief Contracting Officer or the contact person for this contract.
  - (4) **SPECIAL EXPERIENCE REQUIREMENTS:** The Bidder is advised that Special Experience Requirements may apply to this contract. Such requirements are set forth on pages 3 and 4 of this Bid Booklet.
  - (5) **SPECIAL EXPERIENCE REQUIREMENTS FOR ASBESTOS:** The Bidder is advised that this contract contains strict requirements regarding the prior experience and licensing of the subcontractor who will perform any required asbestos abatement work. These special experience requirements are set forth in the section of the specifications which describes any required asbestos abatement work.



## Special Notice to Bidders – Proprietary Items

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

### CONTRACT NO. 1:

- |                        |  |
|------------------------|--|
| 1. Proprietary Item:   | 4 Ply SBS Compatible Roofing Materials       |
| Specification Section: | 07 51 00 Built-up Bituminous Roofing Repairs |
| Manufacturer:          | Johns Manville                               |
| Allowance Amount:      | \$8,942                                      |

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## SPECIAL EXPERIENCE REQUIREMENTS

Special Experience Requirements apply as indicated below.

Bidder:                      General Construction Work       YES       NO

Areas of Work:            General Construction Work       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 the rejection of the bid as non-responsive.
- The bidder must, within the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work.
- (B) **QUALIFICATION FORM:** For each project submitted to demonstrate compliance with the special experience requirements, the bidder(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.
- Any principal or other employee on whose prior experience the bidder is relying to demonstrate compliance with this special experience requirement must have held the following: (a) a significant management role in the prior entity with which he/she was affiliated, and (b) a significant management role in the entity submitting the bid for a period of six months or from the inception of the bidding entity. If the bidder is relying on the prior experience of a principal or employee, it must submit documentation confirming the position held by such principal or employee in the prior entity, as well as in the bidding entity.
  - The bidder may not rely on the experience of its principals or other employees to demonstrate compliance with any other requirements, including without limitation, financial requirements or requirements for a specified minimum amount of annual gross revenues.
- (D) **JOINT VENTURES:** In the event the bidder is a joint venture, at least one firm in the joint venture must meet the above described experience requirements.
- (E) **SPECIAL EXPERIENCE REQUIREMENTS FOR SPECIFIC AREAS OF WORK:** The special experience requirements set forth below apply to the contractor or subcontractor that will perform specific areas of work. Compliance with such experience requirements will be evaluated after an award of contract. Within two (2) weeks of such award, the contractor will be required to submit the qualifications of the contractor or subcontractor that will perform these specific areas of work. If the bidder intends to perform these specific areas of work with its own forces, it must demonstrate compliance with the special experience requirements. If the bidder intends to subcontract these specific areas of work, its proposed subcontractor(s) must demonstrate compliance with the special experience requirements. Once approved, no substitution will be permitted, unless the qualifications of the proposed replacement have been approved in writing in advance by the City. The bidder is advised to carefully review these special experience requirements prior to submitting its bid, as such experience requirements will be strictly enforced.
- (1) Special experience requirements apply to the contractor or subcontractor that will perform specific areas of work specified in the section(s) set forth below.

### General Construction Work

- Section 071210: Liquid Applied Waterproofing
- Section 071470: Crystalline Waterproofing
- Section 075100: Built-up Bituminous Roofing Repair

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

- a. The contractor or subcontractor performing the work of these sections (except for 075100) must, within the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work. In addition, for section 071470, the contractor or subcontractor must be certified by the manufacturer.
- b. For Section 075100, the contractor or subcontractor performing the work of this section must be a company regularly engaged in performing roofing projects with its own workforce and have successfully completed in a timely fashion at least three (3) roofing projects similar in scope, size and type to the required work within the last three (3) consecutive years prior to the bid opening. At least one of those projects must have been performed within the last twelve (12) months. The three (3) qualifying projects must have utilized the Johns Manville roof system, been installed by the contractor's or subcontractor's company utilizing its own workforce and must have qualified for, and have been issued, the warranty provided by Johns Manville. In addition, the contractor or subcontractor must be a certified or authorized installer for Johns Manville specified herein and shall submit proof of same.

(3) For each project submitted to demonstrate compliance with the special experience requirements for specific areas of work, the contractor or proposed subcontractor will be required to complete the Qualification Form included in the Bid Booklet.

a. 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.

b. For Section 075100, the contractor or subcontractor must specify, for each qualifying project submitted, the type of roofing system utilized and provide proof that the manufacturer's warranty for that project was issued. 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 required to be provided by the contractor or subcontractor on the Qualification Form is actually 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.

Qualification Form

Project ID: SANDELECS

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: GRYPHON CONSTRUCTION INC.

Name of Project: BNYDC BLDG 77, 6 & 7 FLOORS SUBDIVISION.

Location of Project: BROOKLYN NAVY YARD, 63 FLUSHING AVE, BROOKLYN, NY.

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

Name: JOHN COBURN

Title: VP, LEAD ARCHITECT, BNYDC Phone Number: 718-907-5917

Brief description of work completed: SINGLE PRIME PROJECT INVOLVING RENOVATION OF 135,000 SF COMMERCIAL SPACE, INCLUDING MASONRY, ARCHITECTURAL FINISHES, MECHANICAL, ELECTRICAL, PLUMBING, FIRE ALARM & BMS.

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

Amount of Contract: \$7.6 MILLION

Date of Completion: JANUARY 2018

\*\*\*\*\*

Name of Contractor: GRYPHON CONSTRUCTION INC.

Name of Project: NYC DEP VARIOUS JOB ORDERS UNDER JOC-13-EG

Location of Project: VARIOUS NYC WASTE WATER TREATMENT PLANTS

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

Name: DILIP VERGHESE

Title: PRESIDENT Phone Number: 908-347-9010

Brief description of work completed: PROJECTS INCLUDED GENERAL CONSTRUCTION - CARPENTRY, ARCHITECTURAL FINISHES, CONCRETE, SITEWORK, SPECIALITY TRADES SUCH AS CHAIN LINK FENCE, TIDE GATES REPLACEMENT, MEP, SECURITY UPGRADE DOCK FENDER WORK, BAR SCREENS REPAIR, HOPPER SCREW REPAIRS, ROOFING ETC

Was the work performed as a prime or a subcontractor: SUB TO D&K CONSTRUCTION

Amount of Contract: \$4.00 MILLION

Date of Completion: JULY 2017

Qualification Form

Project ID: SANDELEC5

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: GRYPHON CONSTRUCTION INC.

Name of Project: NYC DEP BWT JOB ORDER CONTRACT JOC-14-NG

Location of Project: VARIOUS NYC WASTE WATER TREATMENT PLANT

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

Name: KAVITA SAZAWAL

Title: PROJECT COORDINATOR Phone Number: 646-431-7393

Brief description of work completed: MULTIPLE JOB ORDERS RANGING FROM \$50,000 TO \$2 MILLION UNDER JOC-14-NG CONTRACT - INCLUDED RECONSTRUCTION OF BATHROOM & LOCKER ROOMS, ROOFING, CONCRETE & SITEWORK, MEP, HAND RAILS & ALUMINIUM COVERS, ELECTRICAL UPGRADE OF PUMP STATIONS  
Was the work performed as a prime or a subcontractor: SUB TO D&K CONSTRUCTION

Amount of Contract: \$7.00 MILLION

Date of Completion: JULY 2017.

\*\*\*\*\*

Name of Contractor: GRYPHON CONSTRUCTION INC.

Name of Project: NYC DEP FMC JOB ORDER CONTRACT JOC 13 FMC

Location of Project: 59-17 JUNCTION BLVD., CORONA, NY

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

Name: JASON P. FAIVUS

Title: PROJECT MANAGER Phone Number: 917-960-0192

Brief description of work completed: INTERIOR RENOVATION OF 3<sup>rd</sup> FLOOR AT LEFRAK ADMIN BLDG - RENOVATION OF OFFICE SPACE AT DEP HEADQUARTERS, INCLUDED ARCHITECTURAL FINISHES, ELECTRICAL, MECHANICAL, PLUMBING ETC.  
Was the work performed as a prime or a subcontractor: SUB TO D&K CONSTRUCTION

Amount of Contract: \$1.9 MILLION

Date of Completion: JUNE 2016

Qualification Form

Project ID: SANDELECS

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: GRYPHON CONSTRUCTION INC.

Name of Project: LINCOLN MEDICAL & MENTAL HEALTH CENTER

Location of Project: BRONX, NY

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

Name: LOKESH BOMMEGOWDA

Title: VICE PRESIDENT Phone Number: 732-579-7415

Brief description of work completed: INTERIOR RENOVATION OF 90&100 PSYCHIATRIC UNIT. WORK INCLUDED MASONRY, GLOB, FRAMING, CEILING, ARCHITECTURAL FINISHES, DOORS FRAMES & HARDWARE, FLOOR & WALL TILES, SOLID SURFACE WORK

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

Amount of Contract: \$1.57 MILLION

Date of Completion: NOVEMBER 2013.

\*\*\*\*\*

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: \_\_\_\_\_

## 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.



NOTICE TO ALL PROSPECTIVE CONTRACTORS

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

ARTICLE I. M/WBE PROGRAM

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

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

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

PART A

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

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

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

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

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

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

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

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

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

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

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

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

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

6. MBE and WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the Participation Goals. Such certification must occur prior to the firms' commencement of work. A list of MBE and WBE firms may be obtained from the DSBS website at [www.nyc.gov/buycertified](http://www.nyc.gov/buycertified), by emailing DSBS at [buyer@sbs.nyc.gov](mailto:buyer@sbs.nyc.gov), by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting [www.nyc.gov/getcertified](http://www.nyc.gov/getcertified), emailing [MWBE@sbs.nyc.gov](mailto:MWBE@sbs.nyc.gov), or calling the DSBS certification helpline at (212) 513-6311. 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](mailto:zhangji@ddc.nyc.gov) or via facsimile at (718) 391-1886. Bidders, proposers, or contractors, as applicable, who have submitted requests will receive an Agency response by no later than two (2) calendar days prior to the due date for bids, proposals, or Task Orders; provided, however, that if that date would fall on a weekend or holiday, an Agency response will be provided by close-of-business on the business day before such weekend or holiday date.

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

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

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

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

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

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

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

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

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

#### PART B: MISCELLANEOUS

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

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#### 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 DSBŞ 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 #: 38-3669153

APT E-  
PIN#: 85018B0010

Contract # 1 - Electrical Work

**SCHEDULE B - MWBE Utilization Plan**

**Part I: M/WBE Participation Goals**

Part I to be completed by contracting agency

**Contract Overview**

<b>APT E-Pin #</b>	<u>85018B0010</u>	<b>FMS Project ID#:</b>	<u>SANDELEC5</u>
<b>Project Title/Agency</b>	<u>NYPD 100th Precinct Power Recovery and Upgrade</u>		
<b>PIN #</b>	<u>8502017PD0011C</u>		
<b>Bid/Proposal Response Date:</b>	<u>Tuesday, October 02, 2018</u>		
<b>Contracting Agency</b>	<u>Department of Design and Construction</u>		
<b>Agency Address</b>	<u>30-30 Thomson Avenue</u>	<b>City</b>	<u>Long Island City</u>
		<b>State</b>	<u>NY</u>
		<b>Zip Code</b>	<u>11101</u>
<b>Contact Person</b>	<u>Kristen Carroll</u>	<b>Title</b>	<u>MWBE Outreach &amp; Compliance Analyst</u>
<b>Telephone #</b>	<u>(718) 391-2404</u>	<b>Email</b>	<u>CarrollK2@ddc.nyc.gov</u>

**Project Description (attach additional pages if necessary)**

This Project consists of providing a new generator for the facility, in a room constructed above the garage level floor. New distribution boards and ATS's are being provided for separation and support of standby and life-safety loads in the facility. Additional receptacle loads on the ground floor level that were flooded during Sandy are being replaced and re-circuited. New lighting is being provided for the new garage layout. Additionally, since the generator is indoors, a new ductwork exhaust system is being put in place.

**M/WBE Participation Goals for Services**

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

Prime Contract Industry: Construction

Group	Percentage	
<u>Unspecified*</u>	<u>10</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>
<b>Total Participation Goals</b>	<b>10</b>	<b>%</b>

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.





Tax ID #:

38-3669153

APT E-

PIN#:

85017B0117

**SCHEDULE B - Part II: MWBE Participation Plan**

Part II to be completed by the bidder/proposer:

Please note: For Non-MWBE 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: Bidder/Contractor Information

Tax ID # 38-3669153 FMS Vendor ID # 0002682035  
 Business Name GRYPHON CONSTRUCTION INC. Contact Person MALAVALLI RAVI  
 Address 28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816  
 Telephone # 732-257-1889 Email ravi@gryphonconstructioninc.com

**PRIME CONTRACTOR ADOPTING AGENCY MWBE PARTICIPATION GOALS**

<input checked="" type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and MWBE firms) adopting Agency MWBE Participation Goals.  Calculate the total dollar value of your total bid that you agree will be awarded to MWBE subcontractors for services and/or credited to an MWBE prime contractor or Qualified Joint Venture.  Please review the Notice to Prospective Contractors for more information on how to obtain credit for MWBE participation.	Total Bid/Proposal Value	Agency Total Participation Goals (Line 1, Page 6)		Calculated MWBE Participation Amount
	\$2,784,664	x 10%	=	\$ 278,466.40 Line 2

**PRIME CONTRACTOR OBTAINED PARTIAL WAIVER APPROVAL: ADOPTING MODIFIED MWBE PARTICIPATION GOALS**

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



Tax ID #:

38-8669153

APT E-  
PIN#:

85017B0117

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

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

MBE       WBE

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

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

**Section IV: General Contract Information**

What is the expected percentage of the total contract dollar value that you expect to award in subcontracts for services, regardless of M/WBE status? % 10

Scopes of Subcontract Work

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

I hereby

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

Signature

Date

10/25/18

Print Name

MALAVALLI RAVI

Title

PRESIDENT

SCHEDULE B – PART III – REQUEST FOR WAIVER OF M/WBE PARTICIPATION REQUIREMENT — N/A.

**Contract Overview**

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

Business Name \_\_\_\_\_

Contact Name \_\_\_\_\_ Telephone # \_\_\_\_\_ Email \_\_\_\_\_

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

APRIS 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 Goals 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 subcontract 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 _____

N/A.

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 OFFER TO CONTRACTING OFFICER'S REPORT

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

AGENCY OFFER PROCEDURE REVIEW OFFICER'S REPORT

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

Method Determination

Full Waiver A. Approved

Waiver B. Approved

Partial Waiver A. Approved

Partial Waiver B. Approved

Partial Waiver C. Approved

Partial Waiver D. Approved

Partial Waiver E. Approved

Partial Waiver F. Approved

Partial Waiver G. Approved

Partial Waiver H. Approved

Partial Waiver I. Approved

Partial Waiver J. Approved

Partial Waiver K. Approved

Partial Waiver L. Approved

Partial Waiver M. Approved

Partial Waiver N. Approved

Partial Waiver O. Approved

Partial Waiver P. Approved

Partial Waiver Q. Approved

Partial Waiver R. Approved

Partial Waiver S. Approved

Partial Waiver T. Approved

Partial Waiver U. Approved

Partial Waiver V. Approved

Partial Waiver W. Approved

Partial Waiver X. Approved

Partial Waiver Y. Approved

Partial Waiver Z. Approved

# 2

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

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

PROJECT ID: SANDELEC5

NYPD 100th Precinct Power Recovery and Upgrade  
9224 Rockaway Beach Blvd  
Rockaway Beach 11693

Name of Bidder: GRYPHON CONSTRUCTION INC.

Date of Bid Opening: 10/26/2018

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

Place of Business of Bidder: 28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816

Bidder's Telephone Number: 732-257-1889 Bidder's Fax Number: 732-640-5576

Bidder's Email Address: ravi@gryphonconstructioninc.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 JERSEY

Name and Home Address of President: MALAVALLI RAVI  
28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816

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

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

BID FORM

GRYPHON CONSTRUCTION INC.

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: SANDELECS

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

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

Total Price For Labor

Total Price for Material Sold and Delivered

\$ \_\_\_\_\_ +

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

Total Price for Item A= \$ 2,760,722.00

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

\$15,000.00

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

\$8,942.00

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

\$2,784,664.00

BB 10/26/11

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: GRYPHON CONSTRUCTION INC.

By: MALAVALLI RAVI, PRESIDENT

(Signature of Partner or corporate officer)

[Signature]

Attest:  
(Corporate Seal)

Secretary of Corporate Bidder

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

BID FORM (TO BE NOTARIZED)

\*\*\*\*\*

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF \_\_\_\_\_ ss:

\_\_\_\_\_ being duly sworn says:

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

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

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

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

\*\*\*\*\*

AFFIDAVIT WHERE BIDDERS IS A PARTNERSHIP

STATE OF NEW YORK, COUNTY OF \_\_\_\_\_ ss:

\_\_\_\_\_ being duly sworn says:

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

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

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

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

\*\*\*\*\*

AFFIDAVIT WHERE BIDDERS IS A CORPORATION

STATE OF NEW ~~YORK~~ <sup>JERSEY</sup>, COUNTY OF MIDDLESEX ss:

MALAVALLI RAVI being duly sworn says:

I am the PRESIDENT of the above named corporation whose name is subscribed to and which executed the foregoing bid. I reside at 28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816.

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  
25<sup>th</sup> day of OCTOBER 2018

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

**SUDHIR SUNDAR KITTUR**  
ID # 2380118  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
My Commission Expires Nov. 21, 2018

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: GRYPHON CONSTRUCTION INC.  
Address: 28 HILLTOP BLVD.  
City: EAST BRUNSWICK State: NEW JERSEY Zip Code: 08816

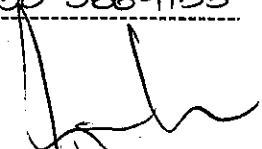
CHECK ONE BOX AND INCLUDE APPROPRIATE NUMBER:

A - Individual or Sole Proprietorship \*  
SOCIAL SECURITY NUMBER

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

C - Corporation  
EMPLOYER IDENTIFICATION NUMBER

38-3669153

By:  MALAVALLI RAVI  
Signature:

Title: PRESIDENT

If a corporation, place seal here

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

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

## BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

### 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: SANDELEC5

**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. **ELECTRICAL CONTRACTOR:**

RNH ELECTRIC CO. INC.

(Print Name)

Agreed amount to be paid Subcontractor: \$805,500.00

Description of Electrical Work:

ELECTRICAL AND FIRE

ALARM WORK AND

GENERATOR

2. **HVAC CONTRACTOR:**

I.M.P. PLUMBING & HEATING CORP.

(Print Name)

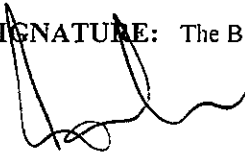
Agreed amount to be paid Subcontractor: \$567,000.00

Description of HVAC Work:

PIPING, DUCTWORK, OIL TANK,

PUMPS, FANS, DAMPERS ETC.

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



(Bidder's Signature)

MALAVALLI RAVI

(Print Name)

28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816

(Address)

PRESIDENT

(Title)

732-257-1889

(Phone #)

732-640-5576

(Fax#)

10/26/2018

(Date)

**BID BOND 1  
FORM OF BID BOND**

**KNOW ALL MEN BY THESE PRESENTS.** That we, \_\_\_\_\_  
Gryphon Construction, Inc., 28 Hilltop Boulevard, East Brunswick, NJ 08816

hereinafter referred to as the "Principal", and \_\_\_\_\_  
Selective Insurance Company of America, 40 Wantage Avenue, Branchville, NJ 07890

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 (10%) of amount bid

(\$ XXXXXXXXXX), 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 \_\_\_\_\_

NYPD 100th Precinct Power Recovery and Upgrade - Borough of Queens, 9224 Rockaway Beach Blvd.,

Rockaway Beach, NY 11693 - Project ID: SandeleC5 / Pin #8502017PD0022C / APT E-Pin# 85018B0010

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

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

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

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

BID BOND 2

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

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

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

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

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the 2nd day of October, 2018.

(Seal)

Gryphon Construction, Inc.

(L.S.)

Principal

By:

MALAVALLI RAVI, PRESIDENT

(Seal)

Selective Insurance Company of America

Surety

By:

Dawn M. Jones, Attorney-in-Fact

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of NEW JERSEY County of MIDDLESEX ss:  
On this 2nd day of OCTOBER, 2018, before me personally came MALAVALLI RAVI to me known, who, being by me duly sworn, did depose and say that he resides at 28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816 that he is the PRESIDENT of Gryphon Construction, Inc. the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

**SUDHIR SUNDAR KITTUR**

ID # 2380118  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
My Commission Expires Nov. 21, 2018

  
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

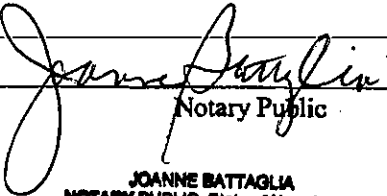
AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES



SURETY ACKNOWLEDGMENT

State of New Jersey }  
County of Monmouth } ss:  
City of Farmingdale }

On this 2nd day of October, in the year of 2018  
before me personally came Dawn M. Jones, Attorney-in-Fact  
to me known, who, being by me duly sworn, did depose and say that (s)he resides in Manahawkin,  
New Jersey, that (s)he is the Attorney-in-fact of Selective Insurance Company of America  
the corporation described in and which executed the attached instrument; that (s)he knows the  
corporation; that the seal affixed to the said instrument is such corporate seal; and that it was so affixed  
by order of the Board of Directors of the said corporation, and that (s)he signed his/her name  
thereto by like order.

  
Notary Public

JOANNE BATTAGLIA  
NOTARY PUBLIC, State of New Jersey  
No. 2434610  
Commission Expires May 30, 2023



Selective Insurance Company of America  
 40 Wantage Avenue  
 Branchville, New Jersey 07890  
 973-948-3000

**STATEMENT OF FINANCIAL CONDITION**

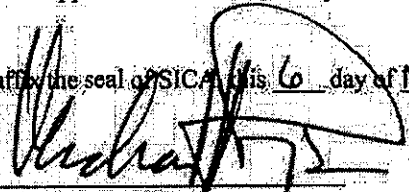
I hereby certify that the following information is contained in the Annual Statement of Selective Insurance Company of America ("SICA") to the New Jersey Department of Banking and Insurance as of December 31, 2017:

<u>ADMITTED ASSETS (in thousands)</u>		<u>LIABILITIES AND SURPLUS (in thousands)</u>	
Bonds	\$1,583,550	Reserve for losses and loss expenses	\$1,013,590
Preferred stocks at convention value	3,960	Reserve for unearned premiums	382,768
Common stocks at convention values	117,189	Provision for unauthorized reinsurance	852
Subsidiary common stock at convention values	0	Commissions payable and contingent commissions	27,889
Short-term investments	92,023	Other accrued expenses	27,120
Mortgage loans on real estate (including collateral loans)	33,443	Other liabilities	<u>373,022</u>
Other invested assets	84,495	Total liabilities	1,825,241
Interest and dividends due or accrued	14,699		
Premiums receivable	359,686	Surplus as regards policyholders	<u>609,666</u>
Other admitted assets	<u>145,862</u>		
Total admitted assets	<u>2,434,907</u>	Total liabilities and surplus as regards policyholders	<u>2,434,907</u>

I further certify that the following is a true and exact excerpt from Article VII, Section 1 of the By-Laws of SICA, which is still valid and existing.

The Chairman of the Board, President, Chief Executive Officer, any Executive Vice President, any Senior Vice President or any Corporate Secretary may, from time to time, appoint attorneys in fact, and agents to act for and on behalf of the Corporation and they may give such appointee such authority, as his/her certificate of authority may prescribe, to sign with the Corporation's name and seal with the Corporation's seal, bonds, recognizances, contracts of indemnity and other writings obligatory in the nature of a bond, recognizance or conditional undertaking, and any of said Officers may, at any time, remove any such appointee and revoke the power and authority given him/her.


IN WITNESS WHEREOF, I hereunto subscribe my name and affix the seal of SICA this 6 day of March, 2018.



Michael H. Lanza  
 SICA Corporate Secretary

STATE OF NEW JERSEY :  
 :ss. Branchville  
 COUNTY OF SUSSEX :

On this 6 day of March 2018, before me, the undersigned officer, personally appeared Michael H. Lanza who acknowledged himself to be the Corporate Secretary of SICA, and that he, as such Corporate Secretary, being authorized so to do, executed the foregoing instrument for the purposes therein contained, by signing the name of the corporation by himself as Corporate Secretary.



Notary Public  
 My Commission Expires:



**State of New York**

**DEPARTMENT OF FINANCIAL SERVICES**

**WHEREAS IT APPEARS THAT**

**Selective Insurance Company of America**

**Home Office Address** Branchville, New Jersey

**Organized under the Laws of** New Jersey

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

**licensed to do within this State the business of**

accident and health, fire, miscellaneous property, water damage, burglary and theft, glass, boiler and machinery, elevator, animal, collision, personal injury liability, property damage liability, workers' compensation and employers' liability, fidelity and surety, credit, motor vehicle and aircraft physical damage, marine and inland marine, marine protection and indemnity, legal services and gap insurance, as specified in paragraph(s) 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 29 and 26(A)(B)(C)(D) of Section 1113(a) of the New York Insurance Law and also such workers' compensation insurance as may be incident to coverages contemplated under paragraphs 20 and 21 of Section 1113(a), including insurances described in the Longshoremen's and Harbor Workers' Compensation Act (Public Law No. 803, 69 Cong. as amended; 33 USC Section 901 et seq. as amended) to the extent permitted by certified copy of its charter document on file in this Department until July 1, 2019.

**In Witness Whereof, I have hereunto set  
my hand and affixed the official seal of this  
Department at the City of Albany, New York, this  
1st day of July, 2018**



Maria T. Vullo  
Superintendent

By

*Kathleen Granderath*

Kathleen Granderath  
Special Deputy Superintendent

## BID BREAKDOWN

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

..... X      YES      ..... NO

### Limitations on Use of Bid Breakdown:

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

### Instructions for Preparing Bid Breakdown:

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

DETAILED BREAKDOWN WILL BE PROVIDED IF GRYPHON IS THE LOW BIDDER



**Department of  
Design and  
Construction**

**CONTRACTOR'S BID BREAKDOWN FORM**

CONTRACT 1 - ELECTRICAL WORK

Project: NYPD 100th Precinct Power Recovery and Upgrade  
 Location: 9224 Rockaway Beach Blvd, New York, NY 11693  
 Bidder: GRYPHON CONSTRUCTION INC.

DDC ID: SANDELEC5  
 Sponsor Agency: NYPD

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	<b>CONTRACT 1 - ELECTRICAL WORK</b>							
<u>01 0000</u>	<b>GENERAL REQUIREMENTS</b>							\$445,960.00
01 0000	Temporary Heat		LS					
	Mobilization		LS					
	<b>Subtotal</b>							
<u>02 0000</u>	<b>EXISTING CONDITIONS</b>							
<u>02 4113</u>	<b>SELECTIVE REMOVALS AND DEMOLITION</b>							\$125,602.00
	Remove existing concrete slab		SF					
	Remove wood framed enclosure		SF					
	Remove existing ceramic tiles		SF					
	Remove existing Double door		EA					
	Remove existing Single door		EA					
	Remove concrete slab in second floor		LOC					
	Remove suspended ceiling		SF					
	Remove radiator & associated piping		LS					
	Remove window, sill & lintel		EA					
	Adjust exterior wall opening to new louver		EA					
	Create opening in exterior wall for new louver, M.O. fuel fill box		EA					
	Misc. demolition		LS					
	<b>Subtotal</b>							
<u>03 0000</u>	<b>CONCRETE</b>							\$143,072.00
<u>03 0050</u>	<b>SELECTIVE REMOVALS AND DEMOLITION</b>							
	Concrete slab		SF					
	Thickening around SOG		CY					
	Concrete fill on metal deck		SF					
	8" concrete curb (16" ht.)		LF					



**Department of  
Design and  
Construction**

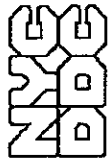
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DDC ID: SANDELEC5  
 Sponsor Agency: NYPD

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
	Stair landing 8" thick		SF					
	PC concrete lintels		LF					
	Generator pad 4" thick		SF					
	3'-6" x 3'-0" concrete grade beam		CY					
	Expandable waterstop		LF					
	Bond beams		LF					
	<b>Subtotal</b>							
<b>04 0000</b>	<b>MASONRY</b>							
<b>04 2000</b>	<b>UNIT MASONRY</b>							
	CMU infill		SF					
	8" CMU wall (3 HR)		SF					
	Brick masonry infill @ exterior wall including backup masonry		SF					
	Cast stone sill		LF					
	<b>Subtotal</b>							
								\$177,804.00
<b>05 0000</b>	<b>METALS</b>							
<b>05 1700</b>	<b>SUPPORT SYSTEM FOR SUSPENDED CEILINGS</b>							
			SF					
	<b>Subtotal</b>							
								\$81,636.00
<b>05 3000</b>	<b>METAL DECK</b>							
	Metal deck at mezzanine floor		SF					
	<b>Subtotal</b>							
<b>05 5000</b>	<b>METAL FABRICATIONS</b>							
	Stairs w/handrail		FLT					
	Guardrail at Mezzanine (36" ht.)		LF					
	4"x4"x1/4"x8" long angles at CMU wall		EA					
	Perimeter C8 channel around stair landing 8"		LF					
	Galvanized steel clip / shelf angle		LF					



**Department of  
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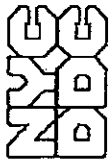
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CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Extruded aluminum sill		LF					
	Concrete filled bollards 6" diameter including foundation		EA					
	Access Platform & Ladder ( for BP1)		EA					
	Subtotal							
06 0000	<b>WOOD, PLASTICS, AND COMPOSITES</b>							
06 1000	ROUGH CARPENTRY		LS					\$10,400.00
	Subtotal							
07 0000	<b>THERMAL AND MOISTURE PROTECTION</b>							
07 1210	LIQUID APPLIED WATERPROOFING		LS					\$37,866.00
	Subtotal							
07 1470	CRYSTALLINE WATERPROOFING (included w/ 071210)							
07 2410	<b>BUILDING SOUND INSULATION</b>							
	Exterior wall polystyrene insulation		SF					
	Acoustic sound attenuation blanket		SF					
	Subtotal							
07 2700	<b>FIRESTOPPING/ SMOKE SEALS</b>							
	Subtotal		LS					
07 5100	<b>BUILT-UP BITUMINOUS ROOFING REPAIR</b>							
	Generator flue roof penetration work		EA					
	Subtotal							





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07 6000	FLASHING AND SHEET METAL Aluminum flashing		LF					
	Subtotal							
07 9000	JOINT SEALERS Fire stopping & Joint Sealing Joint Sealing		LS LS					
	Subtotal							
08 0000	OPENINGS							
08 1100	STEEL DOORS AND FRAMES Door (double) Door (single) S.S Access hatch (watertight) (Door 101)		PR EA EA					\$55,185.00
	Subtotal							
08 7100	FINISH HARDWARE (included w/ 081100)							
08 9000	METAL WALL LOUVERS Exterior louver 41' x 7'-9" Exterior louver (2'x2")		EA EA					
	Subtotal							
09 0000	FINISHES							
09 2423	CEMENT STUCCO Misc. Cutting, Patching & Finishes Clean stucco & paint at walls		LS SF					\$310,697.00
	Subtotal							



**Department of  
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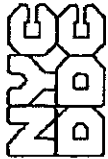
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CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
09 2600	<b>GYPSUM BOARD ASSEMBLIES</b>							
	GWB Shaft wall (2 HR)		SF					
	2 layers 5/8" GWB both sides (2 HR)		SF					
	GWB ceiling		SF					
	GWB soffits		SF					
	<b>Subtotal</b>							
09 8000	<b>FUEL RESISTANT EPOXY COATING</b>							
	Epoxy paint flooring		SF					
	Floor Base		LF					
	<b>Subtotal</b>							
09 9100	<b>PAINTING</b>							
	Sealed concrete flooring		SF					
	Paint GWB wall partitions		SF					
	Paint CMU walls		SF					
	Paint ceilings & soffits		SF					
	<b>Subtotal</b>							
23 0000	<b>HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)</b>							
23 0500	<b>COMMON WORK RESULTS FOR HVAC</b>							\$567,000.00
	Relocate Unit Heaters		EA					
	Remove Steam Radiator		EA					
	Remove Pipe		LF					
	Cap Pipe		EA					
	Remove Window AC		EA					
	Wall / Floor Penetration, Firestopping, Sleeves, Patches etc.		LS					
	<b>Subtotal</b>							



**Department of  
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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
23 0513	COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT (included w/ 233423)							
23 0516	EXPANSION FITTINGS AND LOOPS FOR HVAC PIPING (included w/ 232213)							
23 0519	METERS AND GAGES FOR HVAC PIPING (included w/ 232213)							
23 0523	GENERAL-DUTY VALVES FOR HVAC PIPING (included w/ 232213)							
23 0529	HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT (included w/ 232213)							
23 0548	VIBRATION AND SEISMIC CONTROLS FOR HSAC PIPING AND EQUIPMENT Seismic Restraints		LS					
	Subtotal							
23 0553	VIBRATION AND SEISMIC CONTROLS FOR HSAC PIPING AND EQUIPMENT Tagging & identification Rigging		LS LS					
	Subtotal							
23 0593	TESTING, ADJUSTING, AND BALANCING FOR HVAC Testing, adjusting and balancing Control Points Software update, programming, tie in etc.		LS EA LS					
	Subtotal							



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23 0700	<b>HVAC INSULATION</b>							
	FG Duct Insulation		SF					
	Fire rated duct insulation		SF					
	Steam Pipe Insulation		LF					
	Condensate Pipe Insulation		LF					
	Calcium Silicate Exhaust Insulation 4" Thick		LF					
	<b>Subtotal</b>							
23 1113	<b>FACILITY FUEL-OIL PIPING</b>							
	FO Fill Box with containment tank		EA					
	4" Sch.40 FO Fill Line in 8" Dia 10 G Pipe		LF					
	2 1/2" Sch. 40 Black Steel FOS/R Pipe, fittings, hangers		LF					
	2" Sch. 40 Blk Steel FO Vent Pipe, fittings, hangers		LF					
	2" Sch.40 Black Steel FOS/R Pipe, fittings, hangers		LF					
	2" Sch. 40 Black Steel FO Overfill Pipe, fittings, hangers		LF					
	FO Gauging & Leak Detection System, Alarm system & other valves & controls		LS					
	Fuel Oil		EA					
	FO Piping connections							
	FOP-1&2 FO Pumps		EA					
	AST-1 FO Storage Tank		EA					
	Day Tank piping connection		EA					
	FOP-1&2 FO Pumps 86 GPH 1/3 HP Duplex Set		LS					
	AST-1 FO Storage Tank 1,500 Gallon Single wall		EA					
	DT-1 Day Tank		EA					
	<b>Subtotal</b>							
23 2213	<b>STEAM AND CONDENSATE HEATING PIPING</b>							
	3" Sch. 40 Blk Steel LPS Pipe, fittings, hangers		LF					



**Department of  
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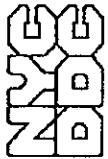
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CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	1 1/2"		LF					
	1"		LF					
	Connection to existing Steam pipe		EA					
	1 1/2" Sch. 80 Black Steel Condensate Pipe, fittings, hangers		LF					
	1"		LF					
	Connection to existing Condensate pipe		EA					
	Subtotal							
<b>23 3113</b>	<b>METAL DUCTS</b>							
	GI Duct		LB					
	Subtotal							
<b>23 3300</b>	<b>AIR DUCT ACCESSORIES</b>							
	Automatic Damper 1,5 Sq. Ft		EA					
	Automatic Damper 1,0 Sq. Ft		EA					
	Motorized Damper 12"x12"		EA					
	Motorized Damper 12"x6"		EA					
	Motorized Damper 14"x34"		EA					
	Motorized Damper 16"x12"		EA					
	FSD 36 Sq. Ft Area		EA					
	FSD 27 Sq. Ft Area		EA					
	FSD 7.5 Sq. Ft Area		EA					
	FSD 12"x06"		EA					
	FSD 10"x06"		EA					
	ST-A Sound Trap 17,550 CFM 48"x60"x60"		EA					
	ST-B Sound Trap 10,000 CFM 54"x30"x30"		EA					
	ST-C Sound Trap 10,000 CFM 54"x30"x30"		EA					
	OAI Louver 2.5 Sq. Ft		EA					
	OAI Louver 27 Sq. Ft Area		EA					



**Department of  
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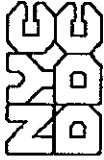
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CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	OAI Louver 1.5 Sq. Ft		EA					
	OAI Louver 1.0 Sq. Ft		EA					
	Exhaust Louver 36 Sq. Ft Area		EA					
	Exhaust Louver 7.5 Sq. Ft Area		EA					
	Exhaust Louver 1 Sq. Ft Area		EA					
	Access Doors		EA					
	<b>Subtotal</b>							
<b>23 3423</b>	<b>HVAC POWER VENTILATORS</b>							
	EX-G-1 Exhaust Fan 200 CFM 1/4 HP		EA					
	EX-R-1 Exhaust Fan 150 CFM 1/3 HP		EA					
	<b>Subtotal</b>							
<b>23 5100</b>	<b>BREECHINGS, CHIMNEYS, AND STACKS</b>							
	12" Exhaust Pipe		LF					
	8" Exhaust Pipe		LF					
	4" Exhaust Pipe		LF					
	6" Vent Pipe		LF					
	<b>Subtotal</b>							
<b>23 8239</b>	<b>UNIT HEATERS</b>							
	EUH-G-1 Electric Unit Heater		EA					
	Test, Check & Start (with visual inspection & repair) procedure for existing 2 Unit heaters		LS					
	<b>Subtotal</b>							
<b>26 0000</b>	<b>ELECTRICAL</b>							
<b>26 0500</b>	<b>COMMON WORK RESULTS FOR ELECTRICAL</b>							\$805,500.00



**Department of  
Design and  
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**CONTRACTOR'S BID BREAKDOWN FORM**

CONTRACT 1 - ELECTRICAL WORK

Project: NYPD 100th Precinct Power Recovery and Upgrade  
 Location: 9224 Rockaway Beach Blvd, New York, NY 11693  
 Bidder: GRYPHON CONSTRUCTION INC.

DDC ID: SANDELEC5  
 Sponsor Agency: NYPD

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
	Misc. - Penetration through slabs, walls w/ cutting, sealing, patching+painting		EA					
	Misc. - Temp Power & Lighting		LS					
	Demo Lighting Fixture W/ ckt back to nearest Jbox		EA					
	Demo Electrical Panel w/ Ckt		EA					
	Demo Wiring Devices w/ Ckt		EA					
	Demo Lighting Control w/ Ckt		EA					
	Disconnect & Remove Electrical Panel		EA					
	Demo Disconnect Switch w/ Wiring		EA					
	Demo EMDP, Gen PNL&MDP, Boiler Panel/ Feeders		EA					
	Demo Mech equipment w/ Feeders		EA					
	Replace Switch - Extend Feeders		EA					
	Replace Occupancy Sensor -Wall Mtd-Extend Feeder		EA					
	Replace UH2 Connection & Extend Feeders		EA					
	Replace Receptacle w/ Wiring		EA					
	Relocate Switch w/ Extend feeders		EA					
	Relocate Receptacle w/ Extend Wiring		EA					
	Misc. - Testing and commissioning		LS					
	Misc. - Shut Down, Start-up, make safe connections		LS					
	<b>Subtotal</b>							
<b>26 0519</b>	<b>LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES</b>							
	Power Feeders - CT to 600A Trough (2sets (3" 4#350 #1/0) - #350		LF					
	Power Feeders - To ATS-SB(2" 4#3/0 #2) - #3/0		LF					
	Power Feeders - To ATS-LS(1-1/2" 4#2 #6) - #2		LF					
	Power Feeders - CT to SBDB (4" 4#500 #1/0) - #500Kcmil		LF					
	Power Feeders - To 200A Trough(2" 4#3/0 #2) - #3/0		LF					
	Power Feeders - To BP-1/CP-1(1-1/2" 4#2 #6) - #2		LF					
	Power Feeders - SBDB to P1(1-1/2" 4#1 #6) - #1		LF					



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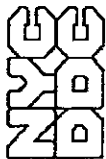
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 Location: 9224 Rockaway Beach Blvd, New York, NY 11693  
 Bidder: GRYPHON CONSTRUCTION INC.

DDC ID: SANDELEC5  
 Sponsor Agency: NYPD

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Power Feeders - SPDB to GP1(2" 4#2/0 #6) - #2/0		LF					
	Power Feeders - ATS-LS to DB-ESB(1-1/2" 4#2 #6) - #2		LF					
	Power Feeders - ATS-SB to DB-ESB(2" 4#3/0 #2) - #3/0		LF					
	Power Feeders - DB-ESB to Roll Up Gen Termination Box(2-1/2" 4#3/0 #2) - #3/0		LF					
	Power Feeders - Gen-Aux Panel to EBD (Trough)(1-1/2" 4#2 #6) - #2		LF					
	Gen To Gen Remote Annunciator panel(3/4" 2#10)-#10		LF					
	For FA Sub PNL, Fuel Pump, Start Signal, Temp Roll Up & ATS(3/4", 2#10)-#10		LF					
	Power Feeders - LIPA Pole to MH(5" Duct bank(2 sets (4#500 #1/0))) - #1/0))) : #500MCM		LF					
	Power Feeders - LIPA Pole to MH(5" RGS(2 sets (4#500 #1/0))) - #500MCM		LF					
	Power Feeders - MH to Bldg.(2 sets(4" 4#500 #2/0)+(2)4")(duct Bank) - #500MCM		LF					
	Power Feeders - To Trans (2 sets(4" 4#500 #2/0)+(2)4")(RGS) - #500MCM		LF					
	Power Feeders - TRANS-S to 800A Switch(2 sets(4" 4#600 #1/0)) - #600		LF					
	Power Feeders - 200A D/S to ATS-LS(2" 4#3/0 #4) - #3/0		LF					
	Power Feeders - 600A D/S to ATS-SB(2sets(3" 4#300 #1/0) - #300		LF					
	Power Feeders - ATS-LS to EDB (2" 4#3/0 #4) - #3/0		LF					
	Power Feeders - ATS-SB to SBDB (2 sets 3" 4#300 #1/0) - #300		LF					
	Power Feeders - DB-ESB to ATS-LS(2" 4#3/0 #4) - #3/0		LF					
	Power Feeders - DB-ESB to ATS-SB(2 Sets 3" 4#300 #1/0) - #300		LF					
	Power Feeders - DB-ESB to Roll Up Gen Termination Box(2 sets(4" 4#500 #2/0) - #500MCM		LF					
	Power Feeders - EDB to GEN1(1-1/2" 4#2 #6) - #2		LF					
	Power Feeders - SBDB to P1/CP1/BP1(1-1/2" 4#1 #6) - #1		LF					





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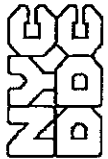
**CONTRACTOR'S BID BREAKDOWN FORM**

CONTRACT 1 - ELECTRICAL WORK

Project: NYPD 100th Precinct Power Recovery and Upgrade  
 Location: 9224 Rockaway Beach Blvd, New York, NY 11693  
 Bidder: **GRYPHON CONSTRUCTION INC.**

DDC ID: SANDELEC5  
 Sponsor Agency: NYPD

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Power Feeders - SBDB to GP1(2" 4#2/0 #6) - #2/0		LF					
	Power Feeders - EDB to EL1(100A)(1-1/4" 4#3 #8) - #3		LF					
	Power Feeders - To EL1 (1-1/2" 4#1 #6) - #1		LF					
	Power Feeders - To Panel EL2,P2, CP2 etc(4#1 #6 In ex Conduit) - #1		LF					
	Lighting Control - 12/2 MC Cables		LF					
	Wiring Device - #6		LF					
	Wiring Device - #10		LF					
	Wiring Device - #12		LF					
	Mech Feeders - UH-1 & UH-2 Connection & Feeders (3/4" 3#12) - #12		LF					
	Mech Feeders - Battery Charger Connection & feeders (3/4" 3#12)- #12		LF					
	Mech Feeders - Jacket Water Heater Connection & feeders (3/4" 2#8 #10)-#8		LF					
	Mech Feeders - For FOP1&FOP2(3/4" 3#10)-#10		LF					
	Mech Feeders - Leak Detector (3/4" 3#12) -#12		LF					
	Mech Feeders - Compressor (1" 3#6 #10)-#6		LF					
	Mech Feeders - Pump relay (3/4" 3#12)-#12		LF					
	Mech Feeders - Gen Duty (3/4" 3#12) -#12		LF					
	Mech Feeders - Garage Door Power (3/4" 3#12)-#12		LF					
	Mech Feeders - Fuel Oil Filtration System(3/4" 3#12)-#12		LF					
	Mech Feeders - Exhaust Fans connection & Feeder(1" 3#6 #10) - #6		LF					
	Lighting - Extend Feeders in New location-#12		LF					
	Gen To Gen Remote Annunciator panel(3/4" 2#10)-#10		LF					
	Motorized Damper(3/4", 2#10)-#10		LF					
	For FA Sub PNL, Fuel Pump, Start Signal, Temp Roll Up & ATS(3/4", 2#10)-#10		LF					
	<b>Subtotal</b>		LF					



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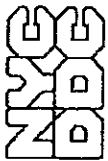
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CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
26 0526	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS							
	Misc. - Grounding		LS					
	Subtotal							
26 0529	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS (included w/ 260533)							
26 0533	RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS							
	Power Feeders-Ex Utility Pole to CT (2 sets of (4#350 #1/0)		LF					
	Power Feeders-CT to 600A Trough (2sets (3" 4#350 #1/0) -3"EMT		LF					
	Power Feeders-To ATS-SB(2" 4#3/0 #2)-2"EMT		LF					
	Power Feeders-To ATS-LS(1-1/2" 4#2 #6)-1-1/2"EMT		LF					
	Power Feeders-CT to SBDB (4" 4#500 #1/0)-4"EMT		LF					
	Power Feeders-To 200A Trough(2" 4#3/0 #2)-2"EMT		LF					
	Power Feeders-To BP-1/CP-1(1-1/2" 4#2 #6)-1-1/2"EMT		LF					
	Power Feeders-SBDB to P1(1-1/2" 4#1 #6)-1-1/2"EMT		LF					
	Power Feeders-SPDB to GP1(2" 4#2/0 #6)-2"EMT		LF					
	Power Feeders-ATS-LS to DB-ESB(1-1/2" 4#2 #6)-1-1/2"EMT		LF					
	Power Feeders-ATS-SB to DB-ESB(2"4#3/0 #2)-2"EMT		LF					
	Power Feeders-DB-ESB to Roll Up Gen Termination Box(2-1/2" 4#3/0 #2) - 2-1/2"EMT		LF					
	Power Feeders-ATS-LS to EDB(1-1/2" 4#2 #6) -1-1/2"EMT		LF					
	Power Feeders-Gen-Aux Panel to EBD (Trough)(1-1/2" 4#2 #6)-1-1/2"EMT		LF					
	Power Feeders-To EL1 (1-1/2" 4#1 #6)-1-1/2"EMT		LF					
	Power Feeders - LIPA Pole to MH(5" RGS(2 sets (4#500 #1/0))) - 5"RGS		LF					
	Power Feeders - To Trans (2 sets(4" 4#500 #2/0)+(2)4")(RGS) - 4"RGS Spare		LF					



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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
	Power Feeders - TRANS-S to 800A Switch(2 sets(4" 4#600 #1/0)) - 4"EMT		LF					
	Power Feeders - 200A D/S to ATS-LS(2" 4#3/0 #4) - 2"EMT		LF					
	Power Feeders - 600A D/S to ATS-SB(2sets(3" 4#300 #1/0) - 3"EMT		LF					
	Power Feeders-600A Trough		EA					
	Power Feeders-200A Trough		EA					
	Power Feeders-100A Trough		EA					
	Power Feeders - ATS-LS to EDB (2" 4#3/0 #4) - 2"EMT		LF					
	Power Feeders - ATS-SB to SBDB (2 sets 3" 4#300 #1/0) - 3"EMT		LF					
	Power Feeders - DB-ESB to ATS-LS(2" 4#3/0 #4) - 2"EMT		LF					
	Power Feeders - DB-ESB to ATS-SB(2 Sets 3" 4#300 #1/0) - 3"EMT		LF					
	4#500 #2/0) - 4"EMT		LF					
	Power Feeders - EDB to GEN1(1-1/2" 4#2 #6) - 1-1/2"EMT		LF					
	Power Feeders - SBDB to P1/CP1/BP1(1-1/2" 4#1 #6) - 1-1/2"EMT		LF					
	Power Feeders -SBDB to GP1(2" 4#2/0 #6) - 2"EMT		LF					
	Power Feeders - EDB to EL1(100A)(1-1/4" 4#3 #8) - 1-1/4"EMT		LF					
	Lighting Control - Junction Box		EA					
	Wiring Device - 3/4"EMT		LF					
	Wiring Device - 1"EMT		LF					
	Fire Alarm System - 3/4" EMT		LF					
	Mech Feeders - UH-1 & UH-2 Connection & Feeders.(3/4" 3#12) - 3/4" EMT		LF					
	Mech Feeders - Battery Charger Connection & feeders (3/4" 3#12) - 3/4" EMT		LF					
	Mech Feeders - Jacket Water Heater Connection & feeders (3/4" 2#8 #10) - 3/4" EMT		LF					
	Mech Feeders - For FOP1&FOP2(3/4" 3#10) - 3/4" EMT		LF					



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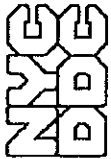
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 Bidder: GRYPHON CONSTRUCTION INC.

DDC ID: SANDELEC5  
 Sponsor Agency: NYPD

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	Mech Feeders - Leak Detector (3/4" 3#12) - 3/4" EMT		LF					
	Mech Feeders - Compressor (1" 3#6 #10) - 1" EMT		LF					
	Mech Feeders - Pump relay (3/4" 3#12) - 3/4" EMT		LF					
	Mech Feeders - Gen Duty (3/4" 3#12) - 3/4" EMT		LF					
	Mech Feeders - Garage Door Power (3/4" 3#12) - 3/4" EMT		LF					
	Mech Feeders - Fuel Oil Filtration System(3/4" 3#12) - 3/4" EMT		LF					
	Mech Feeders - Exhaust Fans connection & Feeder(1" 3#6 #10) - 1" EMT		LF					
	Lighting - Extend Feeders in New location- 3/4" EMT		LF					
	Gen To Gen Remote Annunciator panel(3/4" 2#10)- 3/4" EMT		LF					
	Motorized Damper(3/4" 2#10)- 3/4" EMT		LF					
	Gen Control Panel to Gen Remote Annunciator Panel(3/4", 2#10)- 3/4" EMT		LF					
	For FA Sub PNL, Fuel Pump, Start Signal, Temp Roll Up & ATS(3/4", 2#10)- 3/4" EMT		LF					
	Mech Equipment - Junction Box		EA					
	Mech Equipment - 24"X4"X4 Wiring Trough		EA					
	Wiring Device - Junction Box		EA					
	Lighting - Junction Box		EA					
	<b>Subtotal</b>							
<b>26 0543</b>	<b>UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS</b>							
	Power Equipment: Manhole		EA					
	Power Feeders - MH to Bldg.(2 sets(4" 4#500 #2/0)+(2"4") (duct Bank) - 4"PVC Sch 40 Spare		LF					
	Power Feeders - LIPA Pole to MH(5" Duct bank(2 sets (4#500 #1/0))) : 5"PVC Sch 40		LF					
	Power Feeders - LIPA Pole to MH(5" Duct bank(2 sets (4#500 #1/0))) : Concrete		CY					



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DDC ID: SANDELEC5  
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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
	Power Feeders - LIPA Pole to MH(5" Duct bank(2 sets (4#500 #1/0))) : Excavation & Backfill		CY					
	Power Feeders - MH to Bldg.(2 sets(4" 4#500 #2/0)+(2)4") ( duct Bank) - Concrete		CY					
	Subtotal							
26 0553	IDENTIFICATION FOR ELECTRICAL SYSTEMS		LS					
	Subtotal							
26 0573	OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY		LS					
	Subtotal							
26 2413	SWITCHBOARDS							
	Power Equipment: 800A CT ( Approved By PSEG)		EA					
	Power Equipment: 800A 208/120V DB-ESB		EA					
	Power Equipment: 200A 208/120V 3ph EDP		EA					
	Power Equipment: 600A 208/120V 3PH -SBDP		EA					
	Power Equipment-600A Service Switch w/CT		EA					
	Power Equipment-225A 208/120V 3PH Gen Switchboard-DB-ESB		EA					
	Power Equipment-400A 208/120V SBDB		EA					
	Subtotal							
26 2416	PANELBOARDS							
	Power Equipment: 100A 208/120V 30P-CP1		EA					
	Power Equipment: 100A 208/120V 30P MLO-CP1/P1/BP1/EL1		EA					
	Power Equipment-100A 208/120V 12P(BP1)		EA					
	Power Equipment: 225A 208/120V 42P MLO-GP1		EA					
	Power Equipment-100A 208/120V Panel 42P-Gen-Aux		EA					
	Subtotal							



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DDC ID: SANDELECS  
 Sponsor Agency: NYPD

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 2726	<b>WIRING DEVICES</b>							
	Mech Equipment - Thermal Overload Switch		EA					
	Wiring Device - 50A Receptacle Nema 6-50R		EA					
	Wiring Device - 20A Receptacle Nema L5-20R		EA					
	Wiring Device - Duplex Receptacle		EA					
	Wiring Device - Double Duplex Receptacle		EA					
	Wiring Device - Single Receptacle		EA					
	Wiring Device - Duplex Receptacle-GFI		EA					
	<b>Subtotal</b>							
26 2813	<b>FUSES (included w/ 262816)</b>							
26 2816	<b>ENCLOSED SWITCHES AND CIRCUIT BREAKERS</b>							
	Power Equipment-100A Fused Disconnect Switch		EA					
	Power Equipment: 200A Fused Disconnect Switch		EA					
	Power Equipment-400A Fused Disconnect Switch		EA					
	Power Equipment: 600A Fused Disconnect Switch		EA					
	Power Equipment: 800A Fused Disconnect NEMA 4X		EA					
	<b>Subtotal</b>							
26 2913	<b>ENCLOSED CONTROLLERS</b>							
	Mech Equipment - Pump Relay Box		EA					
	Mech Equipment - Push To Start Switch		EA					
	<b>Subtotal</b>							
26 3213	<b>ENGINE GENERATORS</b>							
	Sound Attn. Encl & Panel		EA					
	NEMA 4X 800A		EA					
	Re-Install Existing Communication Box - Generator Remote Annunciator Panel		EA					



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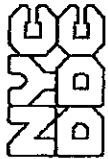
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CONTRACT 1 - ELECTRICAL WORK

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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
	Generator Control Panel		EA					
	EPO		EA					
	Start Signal Communication Parallel Wiring Terminal Box		EA					
	MF-1 Exhaust Muffler 114" Long Low Profile Grade		EA					
	MF-2 Exhaust Muffler 84" Super Critical Grade		EA					
	<b>Subtotal</b>							
<b>26 3600</b>	<b>TRANSFER SWITCHES</b>							
	Power Equipment: 200A 208/120V ATS		EA					
	Power Equipment: 600A 208/120V ATS		EA					
	<b>Subtotal</b>							
<b>26 5100</b>	<b>INTERIOR LIGHTING</b>							
	Lighting Control - Switch		EA					
	Re-Install Ex Lighting Fixture		EA					
	New Ballast in Existing Light		EA					
	Re-Lamp Existing Lighting Fixture		EA					
	<b>Subtotal</b>							
<b>28 0000</b>	<b>ELECTRONIC SAFETY AND SECURITY</b>							
<b>28 3112</b>	<b>ZONED (DC LOOP) FIRE ALARM SYSTEM</b>							
	FA sub-system Panel 25-Point Addressable		EA					
	FDS( Install Only)		EA					
	FSD Connection		EA					
	Smoke Detector		EA					
	Heat Detector		EA					
	Teflon Cables		LF					



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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
	Testing & Programming of FA System		LS					
	Tie into existing system		LS					
	Subtotal							
	<b>TOTAL CONTRACT 1 - ELECTRICAL WORK</b>							<b>\$2,760,722</b>



**ATTACHMENT 1 – BID INFORMATION  
PROJECT ID: SANDELEC5**

**DESCRIPTION AND LOCATION OF WORK:**

NYPD 100th Precinct Power Recovery and Upgrade  
9224 Rockaway Beach Blvd  
Rockaway Beach, NY 11693  
City of New York

**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: October 2, 2018**

**PLACE TO SUBMIT:**

Department of Design and Construction, Contract Section  
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.  
Email PBQ(s) - CSB\_projectinquiries@ddc.nyc.gov

**BID OPENING:**

<b>PLACE OF BID OPENING:</b>	Department of Design and Construction Contract Section 30-30 Thomson Avenue - First Floor Long Island City, NY 11101
<b>DATE AND HOUR:</b>	<b>TUESDAY, OCTOBER 2, 2018 @ 2PM</b>

**NOTE: Bid documents will not be sold after**

**PRE-BID CONFERENCE:**

<b>PLACE</b>	NYPD 100th Precinct 9224 Rockaway Beach Boulevard Rockaway Beach, NY 11693
<b>DATE AND HOUR</b>	<b>TUESDAY, SEPTEMBER 11, 2018</b>
<b>MANDATORY OR OPTIONAL</b>	<b>OPTIONAL</b>

**BID SECURITY:**

Bid Security is required in the amount set forth below; provided, however, bid security is not required if the TOTAL BID PRICE set forth on the Bid Form is less than \$1,000,000.00.

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

**PERFORMANCE AND PAYMENT SECURITY:**

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

**AGENCY CONTACT PERSON:**

Lorraine Holley, 30-30 Thomson Avenue - First Floor, Long Island City, Queens, 11101  
Telephone (718) 391-1016 Fax: (718) 391-2627

## 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: GRYPHON CONSTRUCTION INC.

DDC Project Number: PROJECT ID: SANDELEC5

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

Company has previously worked for DDC     \_\_\_\_\_ YES       X   NO

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

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

### 3. Experience Modification Rate:

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

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

YEAR	INTRASTATE RATE	INTERSTATE RATE
2017	0.98	0.92
2016	0.98	0.92
2015	0.98	0.92

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

4. OSHA Information:

YES  NO

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

YES  NO

Contractor has had an incident requiring OSHA notification within 8 hours (all work-related fatalities) or an incident requiring OSHA notification within 24 hours (all work-related impatient hospitalizations, all amputations and all losses of an eye).

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

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

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

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

Incident Rate = 
$$\frac{\text{Total Number of Incidents} \times 200,000}{\text{Total Number of Hours Worked by Employees}} = 0.$$

YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
<u>2017</u>	<u>3800</u>	<u>0</u>
<u>2016</u>	<u>0</u>	<u>0</u>
<u>2015</u>	<u>0</u>	<u>0</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: 10/25/18

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

Title: PRESIDENT



Nidhi Beedu <nidhi@gryphonconstructioninc.com>

---

**Fwd: Important information regarding your recent service request to The Hartford for policy 76 WBG DZ2492**

---

M. Ravi <ravi@gryphonconstructioninc.com>  
To: Nidhi Beedu <nidhi@gryphonconstructioninc.com>

Mon, Oct 15, 2018 at 6:25 PM

----- Forwarded message -----

From: **Services, Agency (Comm Lines, San Antonio/SCIC)** <Agency.Service@thehartford.com>  
Date: Mon, Oct 15, 2018 at 6:02 PM  
Subject: Important information regarding your recent service request to The Hartford for policy 76 WBG DZ2492  
To: "ravi@gryphonconstructioninc.com" <ravi@gryphonconstructioninc.com>

Dear Malacalli,

Good afternoon! Per our conversation, the EMR for the state of NY for the past 3 years beginning 3/17/2015 is .92. Please feel free to contact us if we can assist further; we are always happy to help. Thank you so much for your call today! I also want to sincerely thank you for your business, on behalf of all of us here at The Hartford. I hope you have a great day.

---

Thank you,

**Stephanie Simiele**  
Customer Relationship Specialist III  
Business Insurance Service Operations

The Hartford Financial Services Group, Inc.  
301 Woods Park Drive I (NHBC / 2<sup>nd</sup> Floor)  
Clinton, NY 13323  
P: 800-442-6194  
F: 866-522-0365  
Email: [agency.services@thehartford.com](mailto:agency.services@thehartford.com)

[www.thehartford.com](http://www.thehartford.com)  
[www.facebook.com/thehartford](https://www.facebook.com/thehartford)  
[www.twitter.com/thehartford](https://www.twitter.com/thehartford)

Register today at [www.thehartford.com/servicecenter](http://www.thehartford.com/servicecenter) and discover the ease of paying your bill, enrolling in AutoPay, requesting certificates of insurance, viewing documents or Going Paperless.

*We care about meeting your service expectations. Did I provide you with a great Hartford Experience? Please feel free to send any feedback on my service to [Derrick.Silliman@thehartford.com](mailto:Derrick.Silliman@thehartford.com)*



# SCHEDULE OF OPERATIONS

This Schedule of Operations forms a part of the policy effective on the inception date of the policy unless another date is indicated below:

**INSURER:** HARTFORD CASUALTY INSURANCE COMPANY

**Company Code:** 3

**Policy Number:** 76 WBG DZ2492      **Schedule Number:** 01-29-01

**Effective Date:** 03/17/18      Effective hour is the same as stated on the Information Page of the policy.

**Named Insured and Location Address of operations covered by this schedule:**

GRYPHON CONSTRUCTION, INC  
28 HILLTOP BLVD  
EAST BRUNSWICK              NJ   08816

NAICS: 238310

**FEIN:** 383669153      **NJ TIN:** 383669153000

**SIC:** 1742

**NO. OF EMPL:** 4

**4. The premium for this policy will be determined by our Manuals of Rules, Classifications, Rates and Rating Plans. All information required below is subject to verification and change by audit.**

Classifications Code Number and Description	Premium Basis Total Estimated Annual Remuneration	Rates Per \$100 of Remuneration	Estimated Annual Premium
5445 WALLBOARD INSTALLATION - WITHIN BUILDINGS & DRIVERS	23,700	11.62	2,754
8810 DRAFTING EMPLOYEES	38,800	.22	85
TOTAL CLASS PREMIUM			2,839
INCREASED LIMITS PART TWO (6199) 1.40 PERCENT			40
TO EQUAL INCREASED LIMITS MINIMUM PREMIUM (9848)			110
TOTAL PREMIUM SUBJECT TO EXPERIENCE MODIFICATION			2,989
NJ - INTRA EXPERIENCE MODIFICATION			.980
PREMIUM ADJUSTED BY APPLICATION OF EXPERIENCE MODIFICATION			2,929
TOTAL ESTIMATED ANNUAL STANDARD PREMIUM			2,929
NJ ESTIMATED 2ND INJURY FUND SURCHARGE 5.150 PERCENT			151
NJ ESTIMATED UNINSURED EMPLOYERS FUND SURCHARGE .120 PERCENT			4
TERRORISM (9740)	62,500	.030	19
CATASTROPHE (9741)	62,500	.010	6
TOTAL ESTIMATED ANNUAL PREMIUM			3,109

Countersigned by \_\_\_\_\_ Authorized Representative

# SCHEDULE OF OPERATIONS



This Schedule of Operations forms a part of the policy effective on the inception date of the policy unless another date is indicated below:

**INSURER:** HARTFORD CASUALTY INSURANCE COMPANY

**Company Code:** 3

**Policy Number:** 76 WBG DZ2492      **Schedule Number:** 01-31-01

**Effective Date:** 03/17/18      Effective hour is the same as stated on the Information Page of the policy.

**Named Insured and Location Address of operations covered by this schedule:**

GRYPHON CONSTRUCTION, INC  
880 47TH ST APT B2  
BROOKLYN NY 11220

NAICS: 238310

FEIN: 383669153

UIN:

SIC: 1742

NO. OF EMPL:

**4. The premium for this policy will be determined by our Manuals of Rules, Classifications, Rates and Rating Plans. All information required below is subject to verification and change by audit.**

Classifications Code Number and Description	Premium Basis Total Estimated Annual Remuneration	Rates Per \$100 of Remuneration	Estimated Annual Premium
8810 CLERICAL OFFICE EMPLOYEES NOC	IF ANY	.21	
NY - MERIT RATING CREDIT (9885)			.920
EXPENSE CONSTANT (0900)			200
NEW YORK STATE ASSESSMENT (0932) 12.10 PERCENT			0
TERRORISM (9740)	0	.060	0
TERRORISM (9740) PER CAPITA 2.9 PERCENT			0
CATASTROPHE (9741)	0	.010	0
CATASTROPHE (9741) PER CAPITA 0.7 PERCENT			0
TOTAL ESTIMATED ANNUAL PREMIUM			200

Countersigned by \_\_\_\_\_ Authorized Representative

## 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
Brooklyn Navy Yard Development Corporation - Bldg 77, 6&7th Fl Renovation	Fixed Price	\$7.6 Million	01/2018	John Coburn VP BNYDC 718-907-5917	Sherrill Moore Beyer Blinder Belle 212-614-1978
NYC DEP Various Job Orders under JOC-13-EG	Job Order Contract	\$4.00 Million	07/2017	Dilip Verghese D&K Construction 908-347-9010	Kavita Sazawal NYC DEP Project Coordinator 646-431-7393
NYC DEP Various Job Orders under JOC-14-NG	Job Order Contract	\$7.00 Million	07/2017	Kavita Sazawal NYC DEP Project Co. 646-431-7393	Kavita Sazawal NYC DEP Project Coordinator 646-431-7393
NYC DEP FMC Renovation of 3rd Floor Lefrak Admin Bldg.	Job Order Contract	\$1.90 Million	06/2016	Jason P. Faivus NYC DEP PM 917-960-0192	Jason P. Faivus NYC DEP PM 917-960-0192

**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
Roosevelt Island Operating Corporation - Youth Center Renovation	Fixed Price	\$1.8 Million	\$1.00 Million	\$1.5 Million	April 2019	Cristina Cordero 929-426-0356	Elizabeth Ackeman DIGroup Architecture 609 240 3436
NYC DEP BWT Various Job Orders under JOC-14-NG-R	Job Order Contract	\$4.00 Million	\$3.20 Million	\$500,000	June 2019	Robert Phan 718-595-4931	Robert Phan 718-595-4931

**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
NYS OGS Creedmore PC Renovation of Shower Rooms	Fixed Price	\$2.9 Million	Jan 2019	Anthony Brunson 914-490-0074	Travis Overton Bernier Carr & Associates Architect (315) 782-8130
DASNY CCNY Wingate Hall Locker Renovation	Fixed Price	\$1.7 Million	November 2018	Vadim Raskin 212-491-6930	Carl Stein Elemental Architecture LLC 212 616 4110

OFFICE OF THE MAYOR  
BUREAU OF LABOR SERVICES  
CONTRACT CERTIFICATE

NIA

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.**

**VENDEX COMPLIANCE**

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

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

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

Name of Bidder: GRYPHON CONSTRUCTION INC.  
Bidder's Address: 28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816  
Bidder's Telephone Number: 732-257-1889  
Bidder's Fax Number: 732-640-5576  
Date of Bid Opening: 10/26/2018  
Project ID: SANDELECS

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

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

Date of Submission: HARDCOPY ON 04/14/17; VIA PASSPORT ON 09/26/18  
(ATTACHED CONFIRMATION)

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

Print Name: MALAVALLI RAVI, PRESIDENT

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

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

Print Name: \_\_\_\_\_

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



## Certificate of No Change Form

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

I, MALAVALLI RAVI, being duly sworn, state that I have read  
*Enter Your Name*

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

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

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

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

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

Name of Submitting Entity: GRYPHON CONSTRUCTION INC.

Vendor's Address: 28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816

Vendor's EIN or TIN: 38-3669153 Requesting Agency: NYC DDC

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

Signature date on the last full vendor questionnaire signed for the submitting vendor: 04/14/17

Signature date on change submission for the submitting vendor: —

# Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.



	Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
1	MALAVALLI RAVI	04/14/17	—
2			
3			
4			
5			
6			

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

## Certification *This section is required.*

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

Certified By:

MALAVALLI RAVI

Name (Print)

PRESIDENT

Title

GRYPHON CONSTRUCTION INC.

Name of Submitting Entity

Signature

10/25/2018

Date

Notarized By:

Notary Public

County License Issued

License Number

Sworn to before me on: 10/25/2018  
Date

**SUDHIR SUNDAR KITTUR**  
ID # 2380118  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
My Commission Expires Nov. 21, 2018



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



## Certificate of No Change Form

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

I, MALAYALLI RAVI, being duly sworn, state that I have read  
*Enter Your Name*

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

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

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

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

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

Name of Submitting Entity: GRYPHON CONSTRUCTION INC.

Vendor's Address: 28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816

Vendor's EIN or TIN: 38-3669153 Requesting Agency: NYC DDC

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

Signature date on the last full vendor questionnaire signed for the submitting vendor: 4/14/17

Signature date on change submission for the submitting vendor: —

# Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.



	Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
1	MALAVALLI RAVI	04/14/17	—
2			
3			
4			
5			
6			

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

## Certification *This section is required.*

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

Certified By:

MALAVALLI RAVI

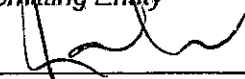
Name (Print)

PRESIDENT

Title

GRYPHON CONSTRUCTION INC.

Name of Submitting Entity



Signature

10/25/2018  
Date

Notarized By:



Notary Public

County License Issued

License Number

Sworn to before me on: 10/25/2018  
Date

**SUDHIR SUNDAR KITTUR**

ID # 2380118  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
My Commission Expires Nov. 21, 2018

**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:

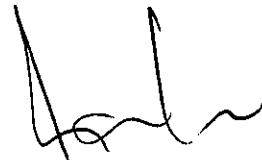
[Please Check One]

**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: MIDDLESEX, New <sup>JERSEY</sup>York  
10/25 | 2018



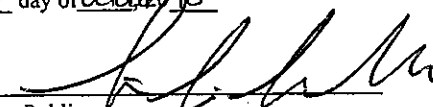
\_\_\_\_\_  
SIGNATURE

MALAVALLI RAVI  
\_\_\_\_\_  
PRINTED NAME

\_\_\_\_\_  
TITLE

PRESIDENT  
\_\_\_\_\_  
TITLE

Sworn to before me this  
25 day of October 2018

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

Dated: 10/25/2018

**SUDHIR SUNDAR KITTUR**  
ID # 2380118  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
My Commission Expires Nov. 21, 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 MWBE goals attached to this project? Yes  No
2. Please check one of the following if your firm would like information on how to certify with the City of New York as a: N/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 MBE Are you DBE certified? Yes  No
3. Please indicate if you would like assistance from SBS in identifying certified MWBEs for contracting opportunities: Yes  No
4. Is this project subject to a project labor agreement? Yes  No
5. Are you a Union contractor? Yes  No  If yes, please list which local(s) you affiliated with \_\_\_\_\_
6. Are you a Veteran owned company? Yes  No

**PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION**

7. 38-3669153 ravi@gryphonconstructioninc.com  
Employer Identification Number or Federal Tax I.D. Email Address
8. GRYPHON CONSTRUCTION INC.  
Company Name
9. 28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816  
Company Address and Zip Code
10. MALAVALLI RAVI 732-257-1889  
Chief Operating Officer Telephone Number
11. SAME 732-257-1889  
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: 4

14. Contract information:

(a) NYC DDC  
Contracting Agency (City Agency)

(b) \$2,784,664.00  
Contract Amount

(c) SANDELECS  
Procurement Identification Number (PIN)

(d) \_\_\_\_\_  
Contract Registration Number (CT#)

(e) OCTOBER 2018  
Projected Commencement Date

(f) MARCH 2019  
Projected Completion Date

(g) Description and location of proposed contract:

NYPD 100TH PRECINCT POWER RECOVERY AND  
UPGRADE, 9224 ROCKAWAY BEACH BLVD., ROCKAWAY  
BEACH 11693

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

If yes, attach a copy of certificate.

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

If yes, attach a copy of certificate.

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

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

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

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

If yes,

(a) Name and address of OFCCP office.

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

(b) Was a Certificate of Equal Employment Compliance issued within the past 36 months?  
Yes \_\_\_ No \_\_\_

If yes, attach a copy of such certificate.

(c) Were any corrective actions required or agreed to? Yes \_\_\_ No \_\_\_

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

(d) Were any deficiencies found? Yes \_\_\_ No \_\_\_

If yes, attach a copy of such findings.

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

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

#### PART II: DOCUMENTS REQUIRED

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

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



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

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

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

MAINTAINED AT GRYPHON OFFICE

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

If yes, is the medical examination given:

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

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

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

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

PLEASE SEE ATTACHED

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

\_\_\_ Minorities and Women

\_\_\_ Individuals with handicaps

\_\_\_ Other. Please specify PLEASE SEE ATTACHED

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

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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).

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SIGNATURE PAGE

I, (print name of authorized official signing) MALAVALLI RAVI 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.

GRYPHON CONSTRUCTION INC.  
 Contractor's Name

MALAVALLI RAVI PRESIDENT  
 Name of person who prepared this Employment Report Title

MALAVALLI RAVI PRESIDENT  
 Name of official authorized to sign on behalf of the contractor Title

732-257-1889  
 Telephone Number

[Signature] 10/25/2018  
 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 to before me this 25<sup>th</sup> day of OCTOBER, 2018

[Signature] 10/25/2018  
 Notary Public Authorized Signature Date

**SUDHIR SUNDAR KITTUR**  
 ID # 2380118  
 NOTARY PUBLIC  
 STATE OF NEW JERSEY  
 My Commission Expires Nov. 21, 2018

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

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

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

SUBCONTRACTOR'S NAME*	OWNERSHIP (ENTER APPROPRIATE CODE LETTERS BELOW)	WORK TO BE PERFORMED BY SUBCONTRACTOR	TRADE PROJECTED FOR USE BY SUBCONTRACTOR	PROJECTED DOLLAR VALUE OF SUBCONTRACT
RNH ELECTRIC CO. INC.	F	ELECTRICAL	ELECTRICIANS	\$ 805,500.00
I.M.P. PLUMBING & HEATING CORP.	W	MECHANICAL	PLUMBER STEAMFITTER	\$ 567,000.00
UNITED PRECISION MANAGEMENT, INC.	A	MASONRY	MASON	\$100,000.00

\*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 — WILL BE PROVIDED IF LOW BIDDER**

**TRADE CLASSIFICATION CODES**

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

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

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

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

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**FORM B: PROJECTED WORKFORCE**

Trade: \_\_\_\_\_

Union Affiliation, if applicable \_\_\_\_\_

Total (Col. #1-10): \_\_\_\_\_

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

Total Female  
(Col. #6 - 10): \_\_\_\_\_

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

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

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**FORM C: CURRENT WORKFORCE -- WILL BE PROVIDED IF LOW BIDDER**

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

Total (Col. #1-10):

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

Total Female  
(Col. #6 - 10):

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

**FORM C: CURRENT WORKFORCE**

Trade: \_\_\_\_\_

Union Affiliation, if applicable \_\_\_\_\_

Total (Col. #1-10): \_\_\_\_\_

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

Total Female  
(Col. #6 - 10): \_\_\_\_\_

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

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

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# GRYPHON CONSTRUCTION INC.

28 Hilltop Boulevard, East Brunswick, NJ 08816.  
TEL: 732 257-1889 / FAX: 732 640-5576  
ravi@gryphonconstructioninc.com

## EQUAL EMPLOYMENT OPPORTUNITY POLICY STATEMENT

Equal Employment and Affirmative Action Policies listed below are applicable to all employees and applicants.

1. It is the company's policy to provide equal opportunity to all employees and applicants for employment without regard to race, sex, color, creed, religion, national origin, citizenship status, age, disability, marital status or sexual orientation in accordance with all applicable laws, directives and regulations of federal, state and city entities. This policy applies to all the terms and conditions of employment including but not limited to hiring, placement, promotion, termination, layoff, recall. Transfer, leave of absence, compensation and training. Advancement to positions of greater responsibility is based on the individual's abilities and demonstrated performance.
2. The company is committed to Equal Employment Opportunity and as part of our Affirmative Action Plan we shall:
  - (a) Recruit, hire, upgrade, train and promote in all job classifications, without regard to race, sex, color, creed, religion, age, national origin, citizenship status, disability, marital status or sexual orientation in accordance with all applicable laws, directive and regulations of federal, state and city entities;
  - (b) Base employment decisions on the principles of Equal Employment Opportunity, and with the intent to further the Company's Affirmative Action commitment;
  - (c) Ensure that all terms and conditions of employment such as compensation, benefits, layoff, return from layoff, company sponsored training, educational tuition assistance, social and recreation programs shall be administered without regard to race, sex, color, creed, religion, national origin, citizenship status, age, disability, marital status or sexual orientation in accordance with all applicable laws, directives and regulations of federal, state and city authorities;
  - (d) Ensure that promotion decisions will be made in accordance with the principles of Equal Opportunity and Affirmative Action by imposing only valid requirements for promotional opportunities;
  - (e) Take action to prevent harassment including sexual harassment or intimidation of all employees, particularly those encompassed by the Company's Affirmative Action efforts.
3. The company will vigorously pursue opportunities to recruit and develop job candidates who have the desire and potential for becoming qualified employees through our Affirmative Action Program.
4. I have the responsibility for the implementation and administration of Affirmative Action Program. I also have the responsibility to develop and administer Affirmative Action Program and ensure that the intent and practice of this policy is carried out.

Malavalli Ravi  
President



## **GRYPHON CONSTRUCTION INC.**

28 Hilltop Boulevard, East Brunswick, NJ 08816.  
TEL: 732 257-1889 / FAX: 732 640-5576  
ravi@gryphonconstructioninc.com

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### **LEAVE POLICY**

1. Gryphon Construction Inc. provides paid medical leave and annual vacation to all its Full time employees.
2. A total of 5 days of paid Medical Leave per year.
3. Up to 3 weeks of Non-Medical Leave per year is permitted upon written notification.
4. Payment for Medical Leave beyond the sanctioned 5 days are evaluated and authorized based on situation and need.



# GRYPHON CONSTRUCTION INC.

28 Hilltop Boulevard, East Brunswick, NJ 08816.  
TEL: 732 257-1889 / FAX: 732 640-5576  
ravi@gryphonconstructioninc.com

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## GREIVANCE REPORTING AND RESOLUTION PROCEDURE

Gryphon Construction Inc. aims to resolve problems and grievances promptly and as close to the source as possible with graduated steps for further discussions and resolution at higher levels of authority as necessary.

### Grievance Reporting Procedure:

- Complaints must be fully described by the person with the grievance in a written form/letter.
  - The person(s) should be given the full details of the allegation(s) against the.
  - The person(s) against whom the grievance/complaint is made should have the opportunity and be given a reasonable time to put their side of the story before resolution is attempted
  - Proceedings should be conducted honestly, fairly and without bias
  - Proceedings should not be unduly delayed.
- 

### Grievance Resolution Procedure:

This is a four step process –

1. The Employee attempts to resolve the complaint as close to the source as possible. This level is quite informal and verbal. If the matter is not resolved, Step 2 shall be followed.
2. The Employee notifies the Supervisor (in writing or otherwise) as to the substance of the grievance and states the remedy sought. Discussion should be held between employee and any other relevant party. This level will usually be informal, but either party may request written statements and agreements. This level should not exceed one week. If the matter is not resolved at this stage, Step 3 shall be followed.
3. The Supervisor must refer the matter to the President of the company. A grievance taken to this level must be in writing from the employee. The Supervisor will forward to the President any additional information thought relevant. The President will provide a written response to the Employee. The President shall also communicate with any other parties involved or deemed relevant. This level should not exceed one week following the next scheduled meeting. If the matter is not resolved at this stage as well, Step 4 shall be adopted.
4. The Employee will be advised of his/her rights to pursue the matter with external authorities if they so wish.



careers  
businesses  
neighborhoods

Gregg Bishop  
Commissioner

218CY422

November 27, 2018

Mr. Malavalli Ravi, President  
Gryphon Construction Inc.  
28 Hilltop Blvd.  
East Brunswick, NJ 08816

**RE: NYC Department of Design and Construction Contract (DDC); Project No. SANDELEC5; Pin No. 8502017PD0011C; NYPD 100<sup>th</sup> Precinct Power Recovery and Upgrade; Borough of Queens; Contract Value: \$2,784,664.00; Certificate of Approval.**

Dear Mr. Ravi:

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

Contingent upon Gryphon Construction Inc.'s ongoing compliance with E.O. 50 and Chapter 56, this approval shall be effective for the three (3) year period commencing on **November 27, 2018** and terminating on **November 26, 2021**. **This determination for a three-year approval only exempts contractors from completing the policy and procedure section of the Employment Report on future contracts within this three-year period.** However, a Construction Employment Report must be submitted for each new project. In addition, Gryphon Construction Inc. must regularly submit the **Monthly Workforce Utilization Table and Monthly Payroll Records as explained during the Pre-Award Conference on November 26, 2018.**

**Page Two**

It is important that Gryphon Construction Inc. as a New York City contractor provide equal employment opportunity for all employees and applicants for employment.

Please direct all correspondence to Ms. Rosalyn Dawson, Project Manager. Should you have any questions regarding this letter, you may call Ms. Dawson at (212) 618-8843 or e-mail her at [rdawson@sbs.nyc.gov](mailto:rdawson@sbs.nyc.gov).

Very truly yours,



Helen Wilson  
Assistant Commissioner  
Division of Labor Services

---

cc: Chinwee Summors (DDC)  
Rosalyn Dawson  
File

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

September 10, 2018

**ADDENDUM No. # 1**

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

**SANDELECS**

**NYPD 100th Precinct Power Recovery and Upgrade**

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

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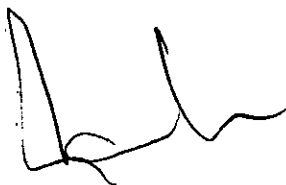
The bidder is advised that the items listed below apply to the project:

1. **Bidders Question and Response to Question:**  
See Attachment A.

---

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

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1016, by email at [CSB\\_projectinquiries@ddc.nyc.gov](mailto:CSB_projectinquiries@ddc.nyc.gov) or by fax at (718) 391-2627.



GRYPHON CONSTRUCTION INC.  
Name of Bidder

By: MALAVALLI RAVI, PRESIDENT



Rebecca Clough  
Assistant Commissioner  
Courts/ Correction / Fire and Police  
Programs

**DDC PROJECT #: SANDELEC5**

**PROJECT NAME: NYPD 100<sup>th</sup> Precinct Power Recovery and Upgrade**

**ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES**

<b>No.</b>	<b>Bidders Questions</b>	<b>DDC Responses</b>
1	Where and when is the Pre-Bid Conference for NYPD 100 <sup>th</sup> Precinct walk-thru?	<b><u>Location:</u></b> NYPD 100 <sup>th</sup> Precinct - 9224 ROCKAWAY BEACH BLVD, ROCKAWAY BEACH, NY 11693. <b><u>Time:</u></b> Tuesday, September 11, 2018 10:00 AM-12:00 PM

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

October 3, 2018

**ADDENDUM No. # 2**

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

**SANDELEC5**

**NYPD 100th Precinct Power Recovery and Upgrade**

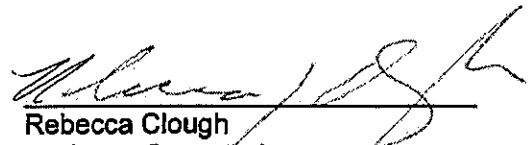
This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

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

1. **Revisions to the Bid Booklet:**  
See Attachment A.

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

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1016, by email at [CSB\\_projectinquiries@ddc.nyc.gov](mailto:CSB_projectinquiries@ddc.nyc.gov) or by fax at (718) 391-2627.



Rebecca Clough  
Assistant Commissioner  
Courts/ Correction / Fire and Police  
Programs

GRYPHON CONSTRUCTION INC.  
Name of Bidder

By: MALAVALLI RAVI, PRESIDENT



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

APT E-  
PIN#: 85018B0010

Contract # 1 - Electrical Work

### SCHEDULE B - M/WBE Utilization Plan

#### Part I: M/WBE Participation Goals

Part I to be completed by contracting agency

#### Contract Overview

APT E-Pin # 85018B0010 FMS Project ID#: SANDELEC5  
 Project Title/Agency NYPD 100th Precinct Power Recovery and Upgrade  
 PIN # 8502017PD0011C  
 Bld/Proposal \_\_\_\_\_  
 Response Date: Tuesday, October 02, 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 Kristen Carroll Title MWBE Outreach & Compliance Analyst  
 Telephone # (718) 391-2404 Email CarrollKr2@ddc.nyc.gov

#### Project Description (attach additional pages if necessary)

This Project consists of providing a new generator for the facility, in a room constructed above the garage level floor. New distribution boards and ATS's are being provided for separation and support of standby and life-safety loads in the facility. Additional receptacle loads on the ground floor level that were flooded during Sandy are being replaced and re-circuited. New lighting is being provided for the new garage layout. Additionally, since the generator is indoors, a new ductwork exhaust system is being put in place.

#### M/WBE Participation Goals for Services

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

Prime Contract Industry: Construction

Group	Percentage	
<u>Unspecified *</u>	<u>10</u>	<u>%</u>
OR		
Black American	<u>Unspecified</u>	<u>%</u>
Hispanic American	<u>Unspecified</u>	<u>%</u>
Asian American	<u>Unspecified</u>	<u>%</u>
Women	<u>Unspecified</u>	<u>%</u>
<b>Total Participation Goals</b>	<b>10</b>	<b>%</b>

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.

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

October 16, 2018

**ADDENDUM No. # 3**

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

**SANDELEC5**

**NYPD 100th Precinct Power Recovery and Upgrade**

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

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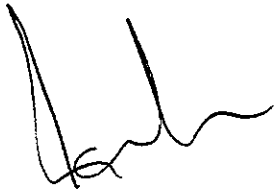
The bidder is advised that the items listed below apply to the project:

1. **The Bid Opening for the contract described below scheduled for October 17, 2018, at 2PM is rescheduled to October 26, 2018, 2PM**
2. **Bidders Questions and Responses to Questions**  
See Attachment A.
3. **Revisions to the Specifications**  
See Attachment B.
4. **Revisions to the Drawings:**  
See Attachment C.

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

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1016, by email at [CSB\\_projectinquiries@ddc.nyc.gov](mailto:CSB_projectinquiries@ddc.nyc.gov) or by fax at (718) 391-2627.



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Rebecca Clough  
Assistant Commissioner  
Courts/ Correction / Fire and Police  
Programs

GRYPHON CONSTRUCTION INC.  
Name of Bidder

By: MALAVALLI RAVI, PRESIDENT

**DDC PROJECT #: SANDELEC5**

**PROJECT NAME: NYPD 100<sup>th</sup> Precinct Power Recovery and Upgrade**

**ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES**

No.	Bidders Questions	DDC Responses
1.	Electrical specification 26 32 13 Article 2.4 calls for a free standing 72-hour day tank. However, it also states a generator enclosure in this portion of the Specification. Please clarify. The drawings also show a fuel room next to the generator set, it appears that there will not be sufficient space at Generator room for a fuel tank. If it is required, the drawings also call for a tank suitable for 150 PSI, which according to our vendor is not standard practice, and the manufacturers does not provide it. Please clarify.	Refer to sectional view on revised drawing A-101 and A-301 indicating the oil tank room and generator room above for spacing. Refer to drawing M-101, Note 3, for day tank sizing and type. Refer to drawing M-503 detail 21 for piping and tank details. Refer to schedule on M-601 for main tank sizing.
2.	When performing, the exterior work do we need to install sidewalk bridge/scaffolding? Please clarify.	Yes, scaffolding and sidewalk bridge is required. Refer to selective removals and demolition specification 02 41 13 Article 2.04-B
3.	When working on the new service line to the building, are we closing the sidewalk for the public and creating temporary sidewalk on the street. If yes, can you please provide the re-routing plans and barricade details requirements.	Yes. We will require the temporary closing of sidewalk as well as providing a temporary street and sidewalk access. The means and methods is left to the contractor's discretion. As part of the site safety plan program, the contractor is required to submit plans detailing the closure and access to street. Contractor to obtain and submit the appropriate permits.
4.	Please provide the concrete floor slab thickness in the garage that is going to be demolished.	Areas of concrete slab removal is assumed to be 12" thick. Refer to drawing DM-101 Legend for concrete floor thickness and removals.
5.	Are there existing utility lines underneath the floor slab or in the surrounding area?	Condition below and surrounding areas of slab is unknown. Refer to demolition notes on DM-101 and demolition location
6.	Will the NYPD facility provide space for dumpsters during the work period?	No, if a dumpster is required, contractor to obtain DOT permit for sidewalk and/or street location. Contractor to coordinate with DDC for proposed dumpster location.
7.	Will the Gym area equipment be cleared out before construction? If so, who will remove the equipment (i.e. NYPD facility or Contractor)? Please clarify.	NYPD facility management will relocate the gym equipment prior to start of construction.
8.	Can we get the bid breakdown in excel or editable format?	The bid breakdown is not available in excel format.
9.	Is there Building Management system (BMS) work involved? If so, can you provide contact details of the building's BMS vendor that we need to work with.	No, there is no BMS work in this contract. There is no centralized BMS in the building.

10.	Is the Temp heating required just for our work area or should we setup temp heating for the entire building?	Yes, temporary heating is required for the areas of proposed construction. If in case, the building's heating system is affected by the construction, contractor to provide heating to the entire building. Refer to specification 23 05 00 Article 1.9 – A.1 Common Work Results for HVAC.
11.	The 3-hour rated submersible vault door is not made by any of the manufacturers listed in the specification. Can you please let us know the exact model number and manufacturer used as the design criterion?	Refer to revised specification 08 11 00 Article 2.7-C for flood door manufacturer and refer to revised specification 08 11 00 Article 2.08-C for fire rated sliding doors manufacturer.
12.	Drawings do not indicate new ceiling on 2 <sup>nd</sup> floor after demolition. Please confirm that new ceiling is not needed on the 2 <sup>nd</sup> floor.	No new ceilings in rooms 201 & 202. Refer to room finish schedule on drawing A-601
13.	During the walk-through, the second floor was covered with a rubber mat. Can you please clarify existing floor finish underneath the rubber mat and what is the flooring scope of work on the second floor?	Existing concrete floor to be ground and sealed. Refer to room finish schedule on drawing A-601
14.	In the specification section 23 11 13 paragraph 2.7 B.16 calls for a Rupture Basin for the Shop Built Main Storage Tank, please confirm if a rupture basin is required? We are installing a storage tank in a concrete containment area. Additionally, please confirm storage tank can fit into the shop built area in one piece.	Rupture Basin is not required. Contractor to coordinate and phase the installation of the tank within the room.
15.	Drawings E-101, note 21 requires us to install HLX Cable by Southwire. Our supplier found out from Southwire that there is a minimum order of 3000' which is a lot more than needed. Is there another manufacturer or insulation type that can be used?	Contractor to provide Marine Grade wiring resilient to salt water. Acceptable manufacturers are: Southwire, General Cable (CCW) and Belden (Marine Tuff) manufacturers or approved equal. These manufacturers have similar acceptable products. Contractor to provide letter of certification from manufacturer ensuring the Marine cable is salt water resilient.

**DDC PROJECT #: SANDELEC5**

**PROJECT NAME: NYPD 100<sup>th</sup> Precinct Power Recovery and Upgrade**

**ATTACHMENT B – REVISIONS TO THE SPECIFICATIONS:**

Revised specifications:

Section 08 11 00	STEEL DOORS AND FRAMES
Section 26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

Page numbers revised with "R"

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**SECTION 08 11 00  
STEEL DOORS AND FRAMES**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide galvanized steel and stainless-steel doors and frames as indicated on Drawings and specified herein.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Underwriters' Laboratories, Inc. (UL)
2. American Society for Testing and Materials (ASTM)
3. National Fire Protection Association (NFPA)
4. Steel Door Institute (SDI)
5. Hollow Metal Manufacturers Association (HMMA)
6. Warnock Hersey Inc.

**1.04 SUBMITTALS**

- A. Refer to DDC General Conditions
- B. Product Data
1. Manufacturer's catalog sheets, specifications, and installation instructions.
- C. Shop Drawings:
1. All shop drawing shall be Site specific for the Project. Show details of each frame type, elevation, construction and installation for each door type, conditions at openings, location for each door type, location, and installation requirements



- for finish hardware (including cutouts and reinforcements), details of connections, and anchorage and accessory items.
2. Include a schedule of doors and frames using the same reference numbers for details and openings as those on the Contract Drawings.
  3. For water tight access door to Fuel tank room, submit shop drawings signed and sealed by a Professional Engineer licensed by the State of New York, including dimensional plans, elevations, sections, details for all mountings/connections, and parts list.
  4. For water tight access door to Fuel tank room, submit calculations signed and sealed by Professional Engineer licensed by the State of New York, verifying the watertight door's ability to withstand the pressure loading. The door manufacturer shall determine the pressure loading on the door, based on information provided in drawings and verified in the field.
  5. For Top hung sliding 3-hour fire rated door in Fuel Tank Room, submit shop drawings showing fabrication and installation including plans, elevations, sections, details of components, hardware, operating mechanism, and attachments to the other units of Work.

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**D. Samples**

1. Frames: Corner sample of each type, 18" x 18" with mortises and reinforcements, shop painted.
2. Doors: Corner sample of each type showing construction, 18" x 18", with mortises and reinforcements, shop painted.

**E. Certificates**

1. Include approval data and acceptance by a New York City Building Department approved testing agency for all fire-rated assemblies.
2. Provide certification for oversized assemblies as described in Quality Assurance.
3. Provide certification for watertight door assemblies and certified test/calculation data.

**F. Warranties**

1. Provide manufacturer/installer warranty.

**1.05 QUALITY ASSURANCE**

- A. Provide doors and frames complying with ANSI/SDI A250.8 and as herein specified.
- B. Uniformity and single source responsibility:



- a. Provide steel doors and frames from a single source manufacturer who specializes in this type of work.
- C. **Field Measurements:** Verify existing openings by field measurements before fabrication and indicate measurement on shop drawings.
- D. **Pre-Submittal Conference:** Before the steel door and frame submittals are written, the contractor, the steel door and frame distributor, the steel door and frame shop drawing preparer, and the steel door and frame designer shall attend a conference to discuss the contract requirements for the steel door and frame submittal package, including but not limited to, quality assurance items to be submitted, the cover sheet, index, page numbering, scheduling formatting, product nomenclature, installation notes, and product data sheet.
- F **Fire Rated Assemblies**
1. Wherever fire resistance classification is shown or scheduled for steel doors including oversized assemblies and frames, provide fire rated units that have been tested as fire door assemblies and comply with National Fire Protection Association (NFPA) Standard No. 80, are tested in accordance with NFPA 252 or UL 10B/UL 10C and UL 1784 as required by the NYC Building Code and comply with these Specifications. Identify each door and frame with metal UL, or Warnock Hersey Inc. labels indicating applicable fire class of the unit. Rivet or weld labels on the hinge edge of door and jamb rabbet of frame.
    - a. See Door Schedule in the Drawings for Label Requirements (Class) for respective openings.
- G. **Regulatory Requirements**
1. Notwithstanding the requirements for fire-rated assemblies noted above, all fire-rated doors and frames shall be approved for use in the City of New York.
  2. Provide evidence of acceptance by an approved testing agency. Provide permanent labels on doors and frames as required by the New York City Building Code. Labels shall be applied at the factory or where fabrication and assembly are performed.

#### **1.06 WARRANTY**

- A. Submit warranty signed by manufacturer, 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.
- B. Installer's guarantee: 1 year from date of substantial completion.





**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Store doors and frames on raised platforms in vertical position with blocking between units to allow air circulation.
- B. During delivery, storage and handling, protect doors and frames from water damage.
- C. Provide delivery, storage and handling in such manner to prevent damage to products.

**1.08 FIELD EXAMINATION**

- A. At the Site, before door installation, in order to determine if the product furnished comply with the specification, the Commissioner reserves the right to select at random one or more doors and frames for full examination.
  - 1. If the examination finds that the doors examined do not comply with requirements of the Specifications, all doors shall be removed from the Site and new doors shall be provided. Costs of examination and replacement of rejected doors shall be borne by Contractor.

**1.09 GAGE STANDARDS**

- A. Gages specified are based on U.S Standard Gauge for hot rolled and cold rolled steel sheets.
- B. The allowable tolerances for steel sheet thicknesses shall be in accordance with HMMA Standards.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURERS**

- A. General Fireproof Door Corp., Bronx, NY 10474
- B. Acme & Dorf Door Co., New City, NY 10956
- C. Ceco Door Products Div., Brentwood, TN 37027
- D. Or approved equal

**2.02 MATERIALS**

- A. Hot-Rolled Steel Sheets and Strip
  - 1. Commercial quality carbon steel, pickled and oiled, complying with ASTM A1011 and ASTM A568.



- B. Cold-Rolled Steel Sheets
  - 1. Commercial Quality carbon steel complying with ASTM A366 A1008 and ASTM A568.
- C. Galvannealed Steel Sheets
  - 1. Carbon steel sheets of commercial quality complying with ASTM A653 Doors and frames shall have A60 zinc-iron coating, mill phosphatized, complying with ASTM A653
- D. Stainless Steel Sheets
  - 1. Commercial quality stainless steel sheets, AISI Type 316, complying with ASTM A167, exposed finish No. 4 polish
- E. Anchors and Supports
  - 1. Fabricate of gages indicated on and of not less than 16 gage sheet steel, unless otherwise indicated, on the drawings
    - a. Galvanized Units: Galvanized anchors and supports used with galvanized frames, complying with ASTM A153, Class B.
    - b. Stainless Steel Units: Stainless steel used with stainless steel frames complying with ASTM A167.
- F. Anchorage Devices, Bolts, and other Fasteners
  - 1. Manufacturer's standard units unless otherwise indicated on the Drawings.
    - a. Galvanized or Galvannealed Units: Galvanized items used with galvanized frames complying with ASTM A153, Class C or D as applicable.
    - b. Stainless Steel Units: Stainless steel.

### 2.03 FABRICATION

- A. Fabricate hollow metal work accurately and assemble neatly to ensure work smooth and free from dents, tool marks, visible waves, warp, buckles and conspicuous joints.
- B. Align lines straight and true with arises and angles as sharp as practicable. Miter corners in true alignment and join similar abutting profiles accurately.
- C. Assemble all joints to form imperceptible intersections when finished.
- D. Form each member, such as jamb and head, from a single piece of metal, unless otherwise shown or approved.



- E. Fasten all members together to provide rigid construction in assembled work. Weld all connections except those for removable members such as glazing beads.
- F. Weld, dress smooth and flush joints on exposed faces.
- G. Clearances
  - 1. Not applicable for watertight door.
  - 2. Fabricate doors for their respective frames within the following clearances:
    - a. Jams and Head: 3/32" to 1/8".
    - b. Meeting Edges of Pairs: 1/8" to 3/16".
    - c. Bottom (no threshold or carpet): 3/8", maximum.
    - d. Bottom (at threshold or carpet): 1/4", maximum.
- H. Work showing defects or blemishes will be rejected, and rejected work shall be replaced with satisfactory work.

## 2.04 DOORS

### A. General

- 1. Provide steel and stainless-steel doors of types and styles indicated on drawings or schedules. Comply with ANSI/SDI A250.8 requirements unless more restrictive requirements are specified herein. Also, doors shall have been pretested by the manufacturer to conform to ASTM F476, Door Impact Test, Grade 40, Table X5.1.
- 2. Design and Thickness: Flush design doors, seamless vertical edges, hollow construction, 1-3/4" thick unless specifically noted otherwise.
- 3. Reinforce inside of doors with continuous formed steel sections not less than 20 gage, spaced 6 inches on center. Spot weld at not more than 5 inches on center to both face sheets.
- 4. Sound Deadening (ASTM E90): Minimum Sound Transmission Class (STC) of 30.
- 5. Door Edges: Bevel lock stile edge of single acting hinged doors 1/8" in 2". Double acting doors shall have rounded edges, approximately 2 1/4" radius. Meeting stiles of pairs of single acting doors shall be "V" beveled or rounded as detailed on the Drawings or required.

### B. Doors

- 1. Fabricate doors with two (2) outer stretcher-leveled, galvanized steel sheets or stainless-steel sheets of 14 gage unless indicated otherwise on the Drawings. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces and stile edges. On mortise face of door, vertical joints shall be



continuously welded and ground smooth and steel doors shall be coated with zinc-rich primer.

2. Provide reinforcement for surface sheet, edge, hardware, stops, and other provisions, of size and gage as specified or detailed on Drawings.
3. Provide 14 GA bottom channel and top channel and closure, as detailed on Drawings.

## **2.05 FRAMES**

### **A. General**

1. Provide steel or stainless-steel frames for doors and other openings where shown, of size and profile as indicated on Drawings.
2. Construction: Full-welded unit construction, with corners mitered and continuously welded full depth and width of frame, unless otherwise indicated. Knock-down type frames will not be accepted.
  - a. Fixed Stops: Integral 5/8" stop unless otherwise indicated. Construct jambs and heads from one piece of metal each; rabbeted and flanged as required for the various types of openings, and neatly mitered or interlocked and welded together. Provide channel, angle and bent plate reinforcing as indicated on approved Shop Drawings or otherwise required. Provide reinforcing in the heads of frames where shown or required.
3. Frame Material
  - a. Frames: 12 gage Galvannealed steel sheet or 12 gage stainless steel sheet unless indicated otherwise on Drawings.
4. Provide frames for masonry openings with adjustable Underwriter's type masonry anchors to suit conditions of installation, using not less than three (3) at each jamb, in addition to floor anchors.
5. Provide frames with calking stops, filler pieces and trim where indicated on Drawings or required; integrally formed as part of the frame wherever possible. Applied calking stops, filler pieces, and other members as indicated, shall be neatly attached by spot welding. All welds at galvannealed frames shall be painted with zinc-rich primer.
6. At butts, cut back jamb the thickness of one leaf of butt.
7. Drill and tap reinforcement to template.
8. Provide reinforcement for hardware as indicated on Drawings and as required for proper hardware installation. Refer to Section 08 71 00 - Finish Hardware.



**2.06 SHOP PAINTING**

- A. All doors shall be delivered to the site with a full shop coat. Doors not fully shop coated shall not be accepted. Galvanized or galvanized steel doors shall be painted with following paint system:

1. Primer  
Epoxy Primer

**Manufacturer's Product**

- a. Carboline Carboguard 888  
b. PPG PMC, Amercoat 385  
c. SW Macropoxy 646  
d. Or approved equal

2. Top Coat  
Aliphatic Polyurethane gloss

**Manufacturer's product**

- a. Carboline Carbothane 134HG  
b. PPG PMC Amercoat 450 H  
c. SW Acrolon 218 HS B65-600  
d. DFT  
e. Or approved equal

- B. Units shall pass the following tests:

1. Salt Spray Test complying with ASTM B117 for 120 continuous hours.  
2. Water fog Test Complying with ASTM D1735 for 240 continuous hours

**2.07 WATERTIGHT STAINLESS-STEEL ACCESS DOOR ASSEMBLY FOR FUEL TANK ROOM**

- A. Watertight door and frame assembly and hardware shall be designed and provided by a manufacturer specializing in watertight doors and capable of immersion in salt water. Thickness of door and door frame shall be as required by the door manufacturer, but not less than specified here in before.
- B. The door manufacturer shall submit certified test or certified calculation data attesting that the door will perform meet the requirements in Paragraph above.
- C. The door shall be as manufactured by:
1. Walz & Kreener Inc., Oxford, CT. Ph: (203) 267 5712  
2. Presray Corporation, Wassaic, NY. Ph.: (845) 373 6700  
3. PS Doors, Grand Forks, ND Ph.: (877) 446 1519  
4. Or approved equal

**2.08 TOP HUNG SLIDING FIRE RATED DOOR FOR FUEL TANK ROOM**

- A. Top hung sliding door assembly in stainless steel, shall provide 3-hour fire rating to the opening, and installed on the inner face of the wall.



- B. The door assembly shall be from the manufacturer standard product, modified in size and detailing to fit into size of opening and project conditions, without affecting the 3-hour fire rating of the assembly.
- C. The door assembly shall be as manufactured by:
  - 1. Door Engineering Corporation, Kasota, MN. Ph: (800) 959 1352
  - 2. Chase Doors, Cincinnati, OH. Ph: (800) 543 4455
  - 3. Habersham Metal Products Company, Cornelia, GA. Ph. (706) 778 2212
  - 4. Or approved equal

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Refer to DDC General Conditions
- B. Verification of Conditions
  - 1. Examine substrate and conditions, under which the frames are to be installed, for defects which will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

#### **3.02 INSTALLATION**

- A. Install steel doors, frames, and accessories in accordance with the Drawing Details, approved Shop Drawings, and the manufacturer's printed instructions, except as otherwise indicated.
- B. Frame Installations
  - 1. Place frames accurately in position; plumb, align, and brace securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreader bars, leaving surfaces smooth and undamaged.
    - a. At in-place masonry construction, place frames and secure in place with anchorage devices. Set anchorage devices opposite each anchor location, in accordance with details on approved Shop Drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.
      - 1. Anchor frames as detailed on the Drawings.
    - b. Place fire rated frames in accordance with NFPA Standard No. 80.
    - c. Provide necessary field splices in frames as detailed on approved Shop Drawings, welded, and finished to match factory fabrication.
    - d. Extend jambs to structural floor slab and securely anchor in place.
- C. Door Installation
  - 1. Install doors accurately in their respective frames within the clearance specified in Part 2.



2. Place fire rated doors with clearances as specified in NFPA standard No. 80.
- D. Drill and tap doors and frames to receive surface applied hardware.
- E. Stainless steel door assembly shall be installed in strict accordance with the door manufacturer's shop drawings and recommendations

**3.03 ADJUSTING**

- A. Coat Touch-up
  1. If damage during installation, apply touch-up of original painting system.
- B. Final Adjustments
  1. Check and adjust operating finish hardware items prior to final inspection. Leave work in complete and proper operating condition.

**3.04 CLEANING**

- A. Clean doors, frames, and accessories, leaving free of dirt and other foreign material after completion of installation.
- 

**END OF SECTION 08 11 00**



**Department of  
Design and  
Construction**

SANDELECS  
09/05/2017

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**SECTION 26 05 19**  
**LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES**

**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. Building wires and cables rated 600 V and less.
  2. Connectors, splices, and terminations rated 600 V and less.
  3. Sleeves and sleeve seals for cables.

B. Related Sections include the following:

1. Division 26 Section "Hangers and Supports for Electrical Systems."
2. Division 26 Section "Identification for Electrical Systems."
3. Division 7 Section "Joint Sealants."
4. Division 7 Section "Firestopping/Smoke seals."

**1.3 DEFINITIONS**

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.
- B. NBR: Acrylonitrile-butadiene rubber.

**1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For testing agency.
- C. Field quality-control test reports.

**1.5 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing



Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency and marked for intended use.
- C. Comply with NFPA 70.

## 1.6 COORDINATION

- A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

## PART 2 - PRODUCTS

### 2.1 CONDUCTORS AND CABLES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Alcad Stabiloy (Aluminum Conductor); Alcan Products Corporation; Alcan Cable Division.
  2. American Insulated Wire Corp.; a Leviton Company.
  3. Carol.
  4. General Cable Corporation (CCW).
  5. Belden (Marine Tuff) Manufacturer.
  6. Pirelli Group.
  7. Okonite Company, The.
  8. Rome Wire Company.
  9. Southwire Wire and Cable Company.
  10. Southwest Wire and Cable.
  11. Triangle copper conductors: Comply with NEMA WC70.
  12. Or approved equal.
- B. Copper Conductors: Comply with NEMA WC 70.
- C. Conductor Insulation: Comply with NEMA WC 70 for Types THW, THHN-THWN, XHHW, UF, USE and SO.
- D. Multiconductor Cable: Comply with NEMA WC 70 for armored cable, Type AC; metal-clad cable, Type MC; mineral-insulated, metal-sheathed cable, Type MI; nonmetallic-sheathed cable, Type NM; Type SO and Type USE with ground wire.



## 2.2 CONNECTORS AND SPLICES

A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.
6. Or approved equal.

B. **Description:** Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

C. **Connectors**

1. Subject to compliance with requirements of this Section, provide connectors of the following types:
  - a. Solderless, uninsulated, high conductivity, corrosion resistant, compression connectors conforming to UL 467 and IEEE 837;
  - b. Insulated, indenter type compression butt connectors;
  - c. Insulated, integral self-locking flexible shell, expandable spring connectors;
  - d. Uninsulated, indenter type compression pigtail connectors;
  - e. Welded type connectors.

D. **Terminals**

1. Subject to compliance with requirements of this Section, provide terminals of the following types:
  - a. Solderless, uninsulated, high conductivity, corrosion resistant, compression terminals conforming to UL 467 and IEEE 837;
  - b. Insulated, compression terminals;
  - c. Solderless, high conductivity, corrosion resistant, hex screw type, bolted terminals;
  - d. Welded type terminals.

E. **Shrinkable Tubing**

1. Subject to compliance with requirements of this Section, provide shrinkable tubing of the following types:
  - a. Either irradiated modified polyvinyl chloride or irradiated modified polyolefin heat shrinkable tubing;
  - b. Cold shrinkable tubing

F. **Tapes and Sealers**

1. **Vinyl Tapes**
  - a. Flame-retardant, cold and weather-resistant, 3/4 inch or 1 1/2 inches wide, as required, and conforming to UL 510 and ASTM D 3005.
    - 1) For interior, dry locations, provide 7 mils, conforming to ASTM D 3005 (Type I).
    - 2) For exterior or damp and wet locations, provide 8.5 mils, conforming to ASTM D 3005 (type II).
2. **Rubber Tapes**



- a. Ethylene-propylene, rubber-based, 30-mil splicing tape, rated for 130 degrees C operation; 3/4 inch and wider (1, 1 1/2, 2 inches) as shown on the Drawings or approved by the Commissioner, conforming to ASTM D 1373 and Federal Specification HH-I-553 (Grade A).
  3. Insulating Putty
    - a. Rubber-based, 125-mil elastic filler putty; 1 1/2 inches wide.
  4. Silicone Rubber Tapes
    - a. Inorganic silicone rubber, 12-mil, 130 degrees C rated, anti-tracking, self-fusing tape; 1 inch wide.
  5. Sealer
    - a. Liquid applied, fast-drying sealant.
- G. Resin Filled Splices
1. Epoxy Molded Type
    - a. Two-piece, snap-together molded bodies, sized for wire or cable, with two-part low viscosity polyurethane insulating and sealing compound, rated for 600 volts, using crimp-type wire connector.
  2. Re-Enterable Type
    - a. Transparent, molded bodies clamped with stainless steel strain-relief bar and shield continuity connectors, sized for wire or cable, with loosely woven polyester spacer web and jelly-like urethane formulation for permanent re-entry capability.
- H. Arcproofing Materials
1. Fire resistant tapes.
  2. Glass cloth binding tapes.

## 2.3 SLEEVES FOR CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.
- D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping/Smoke-seals."

## 2.4 SLEEVE SEALS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Advance Products & Systems, Inc.
  2. Calpico, Inc.
  3. Metraflex Co.



4. Pipeline Seal and Insulator, Inc.
  5. Or approved equal.
- B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.
1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
  2. Pressure Plates: Stainless steel. Include two for each sealing element.
  3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

### **PART 3 - EXECUTION**

#### **3.1 CONDUCTOR MATERIAL APPLICATIONS**

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- C. Minimum size No. 12 AWG up to 100 feet at 120V; lengths exceeding 100 feet, use No. 10. For 277V, over 220 feet, use No. 10 minimum.

#### **3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS**

- A. Service Entrance: USE-2 or as required by LIPA.
- B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-THWN, single conductors in raceway.
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- E. Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW, single conductors in raceway.



- H. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- I. Class 2 Control Circuits: Type THHN-THWN, in raceway.

### **3.3 INSTALLATION OF CONDUCTORS AND CABLES**

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 26 Section "Hangers and Supports for Electrical Systems."
- F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."
- G. Not more than three lighting or convenience outlet circuits in one conduit unless otherwise indicated.
- H. Pull no thermoplastic wires at temperatures lower than 32°F.
- I. Individual raceways for two pole ungrounded circuits.

### **3.4 CONNECTIONS**

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Terminations, splices and taps:
  - 1. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation rating than unspliced conductor.
  - 2. Copper conductors No. 10 and smaller: Compression type or twist-on spring loaded connectors and clear nylon insulated covering.
  - 3. Copper conductors No. 8 and larger: Mechanical bolted pressure or hydraulic compression type using manufacturers recommended tooling.
  - 4. Cable lugs and connectors: Compression type of same metal as conductor to match cables with marking indicating size and type.
  - 5. For copper lug connection to bus bars provide anti-seize compound.
  - 6. Aluminum conductors:



- a. Hydraulic compression AL-CU type with factory pre-filled joint compound, meeting UL 486 requirements and also meeting 500 cycle heating and current tests. Two bolt type for No. 4 and larger cables.
  - b. Joint compound non-flowing in minus 60°F to 500°F temperature range with zinc particles, Thomas & Betts No. 21059 or equal.
  - c. Bus bar connections: Tin plated lugs and compression type washers ("Belleville").
  - d. Use oxide inhibitor in each splice and tap.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

### **3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS**

- A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping/Smoke-seals."
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls. Comply with requirements in Division 26 Section "Common Work Results Electrical".
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Rectangular Sleeve Minimum Metal Thickness:
  - 1. For sleeve rectangle perimeter less than 50 inches and no side greater than 16 inches, thickness shall be 0.052 inch.
  - 2. For sleeve rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches, thickness shall be 0.138 inch.
- E. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- F. Cut sleeves to length for mounting flush with both wall surfaces.
- G. Extend sleeves installed in floors 2 inches above finished floor level.
- H. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
- I. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
- J. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."
- K. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Firestopping/Smoke-seals."



- L. **Roof-Penetration Sleeves:** Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work. Obtain written approval from contractor for actual materials being used and methods of installation.
- M. **Aboveground Exterior-Wall Penetrations:** Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- N. **Underground Exterior-Wall Penetrations:** Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between cable and sleeve for installing mechanical sleeve seals.

### **3.6 SLEEVE-SEAL INSTALLATION**

- A. Install to seal underground exterior-wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

### **3.7 FIRESTOPPING**

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Firestopping/Smoke seals."

### **3.8 FIELD QUALITY CONTROL**

- A. **Testing Agency:** Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Perform tests and inspections and prepare test reports.
- C. **Tests and Inspections:**
  - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors, and conductors feeding equipment on emergency circuits for compliance with requirements.
    - a. At minimum, the test for insulation resistance (Megger) L-G and L-L shall be performed by at 1000 VDC for a minimum of 1 minute with a measurement at 30 seconds and 1 minute. Investigate and report any values below 50 megohms and a ratio of 1min/30sec measurement of less than 1.25.
  - 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.





3. **Infrared Scanning:** After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Perform scans when the facility is operational and at highest peak of electrical load as possible. Remove box and equipment covers so splices are accessible to portable scanner.
    - a. **Follow-up Infrared Scanning:** Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
    - b. **Instrument:** Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
    - c. **Record of Infrared Scanning:** Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
  
  - D. **Test Reports:** Prepare a written report to record the following:
    1. Test procedures used.
    2. Test results that comply with requirements.
    3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
  
  - E. Remove and replace malfunctioning units and retest as specified above.
- 

**END OF SECTION 26 05 19**



**Department of  
Design and  
Construction**

SANDELEC5  
09/05/2017

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**DDC PROJECT #: SANDELEC5**

**PROJECT NAME: NYPD 100<sup>th</sup> Precinct Power Recovery and Upgrade**

**ATTACHMENT C – REVISIONS TO THE DRAWINGS**

Drawings included with this addendum:

A-101.00	FIRST FLOOR PLANS
A-301.00	SECTIONS & ELEVATORS
A-601.00	SCHEDULES, DOOR AND LOUVER ELEVATIONS WALL TYPES

Addendum 3 marked in REVISIONS box.

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FMS ID: SANDELEC5



Department of  
Design and  
Construction

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

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

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

**CONTRACT NO. 1              ELECTRICAL WORK**

# **NYPD 100th Precinct Power Recovery and Upgrade**

**LOCATION:                      9224 Rockaway Beach Blvd  
BOROUGH:                    Rockaway Beach 11693  
CITY OF NEW YORK**

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Contractor \_\_\_\_\_

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

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Entered in the Comptroller's Office

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

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





Department of Design and Construction

PROJECT ID: SANDELEC5

THE CITY OF NEW YORK  
DEPARTMENT OF DESIGN AND CONSTRUCTION  
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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

NYPD 100th Precinct Power Recovery  
and Upgrade

LOCATION: 9224 Rockaway Beach Blvd  
BOROUGH: Rockaway Beach 11693  
CITY OF NEW YORK

CONTRACT NO. 1 ELECTRICAL WORK

NYPD

Syska Hennessy

Date: October 13, 2017









Department of  
Design and  
Construction

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**VOLUME 2 OF 3**

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





## **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](http://www.nyc.gov/getcertified), by emailing DSBS at [MWBE@sbs.nyc.gov](mailto:MWBE@sbs.nyc.gov), by calling the DSBS certification hotline at (212) 513-6311, or by visiting or writing DSBS at 110 William St., 7<sup>th</sup> 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, 9<sup>th</sup> 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 14<sup>th</sup> 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 35<sup>th</sup> Avenue  
Long Island City, NY 11106  
Phone: (718) 392-5077  
Fax: (718) 392-5087  
Business Manager: Alex Castaldi

**DERRICKMEN & RIGGERS LOCAL 197**

35-53 24<sup>th</sup> Street

Long Island City, NY 11101

Phone: (718) 361-6534

Fax: (718) 361-6584

Business Manager: William Hayes

[Billhayes197@yahoo.com](mailto:Billhayes197@yahoo.com)

**DRYWALL TAPERS 1974**

265 West 14<sup>th</sup> 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

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**ELEVATOR CONSTRUCTORS NO. 1**

47-24 27<sup>th</sup> Avenue

Long Island City, NY 11101

Phone: (718) 767-7004

Fax: (718) 767-6730

Business Manager: Lenny Legotte

[llegotte@localoneiuec.com](mailto: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 11<sup>th</sup> 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 44<sup>th</sup> Street  
New York, NY 10036  
Phone: (212) 245-7040  
Fax: (212) 245-7886  
Business Manager: Kuba Brown  
[kubabrown@local94.com](mailto:kubabrown@local94.com)

**GLAZIERS NO. 1087**

45 West 14<sup>th</sup> 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 24<sup>th</sup> Street  
Long Island City, NY 11101  
Phone: (718) 784-3456  
Fax: (718) 784-8357  
Business Manager: Matty Aracich  
[matty@insulatorslocal12.com](mailto:matty@insulatorslocal12.com)

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

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

**IRON WORKERS DISTRICT COUNCIL**

22 West 46<sup>th</sup> Street  
New York, NY 10036  
Phone: (212) 302-1868  
Business Manager: James Mahoney  
[jmahoney@iwintl.org](mailto: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 97<sup>th</sup> 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 8<sup>th</sup> Avenue

New York, NY 10018

Phone: (212) 465-7900

Fax: (212- 465-7903

Business Manager: Michael Prohaska

**LABORERS NO. 731**

34-11 35<sup>th</sup> 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 8<sup>th</sup> 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 33<sup>rd</sup> Street 2<sup>nd</sup> 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 42<sup>nd</sup> Street  
New York, NY 10036  
Phone: (212) 594-1662  
Fax: (212) 564-2748  
Business Manager: Pete Myers

**PAINTERS DISTRICT  
COUNCIL NO. 9**

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

**PAINTERS STRUCTURAL STEEL  
NO. 806**

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



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

136-25 37<sup>th</sup> 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**

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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 43<sup>rd</sup> 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 44<sup>th</sup> 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 48<sup>th</sup> 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 44<sup>th</sup> 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

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

**ARTICLE 1 - PREAMBLE**

WHEREAS, the City of New York desires to provide for the cost efficient, safe, quality, and timely completion of certain rehabilitation and renovation work ("Program Work," as defined in Article 3) 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;

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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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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."

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**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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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

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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.

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**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:

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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



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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,

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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

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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.

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**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.

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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.

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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 (2<sup>nd</sup>), fourth (4<sup>th</sup>), sixth (6<sup>th</sup>), and eighth (8<sup>th</sup>) employee, who have applied to the Local for Program Work and who meet the following qualifications:

- (1) possess any license required by New York State law for the Program Work to be performed;
- (2) have worked a total of at least 1000 hours in the Construction field during the prior 3 years; and
- (3) were on the Contractor's active payroll for at least 60 out of the 180 work days prior to the contract award.

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

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

**SECTION 3. NON-DISCRIMINATION IN REFERRALS**

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

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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

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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 journeymen 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.



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**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.

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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.

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**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.

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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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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**

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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



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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](http://www.nyc.gov/ppb), §4-06(e), and in consideration of the unions' waiver of their rights to withhold labor from a contractor or subcontractor delinquent in the payment of fringe benefits contributions ("Delinquent Contractor"); the Agency agrees that where any such union and/or fringe benefit fund shall notify the Agency, the General Contractor, and the Delinquent Contractor in writing with back-up documentation that the Delinquent Contractor has failed to make fringe benefit contributions to it as provided herein and the Delinquent Contractor shall fail, within ten (10) calendar days after receipt of such notice, to furnish either proof of such payment or notice that the amount claimed by the union and/or fringe benefit fund is in dispute, the Agency shall withhold from amounts then or thereafter becoming due and payable to the General Contractor an amount equal to that portion of such payment due to the General Contractor that relates solely to the work performed by

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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

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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

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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.

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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.

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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

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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.

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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

Memorial Day

Labor Day

Independence Day

President's Day

Veteran's Day

Thanksgiving 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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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

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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**

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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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**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	IESI 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

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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

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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
<del>The Plasterers of Local No. 1 New York of the International Union of Bricklayers and Allied Craft Workers</del>	<del>Independent</del>





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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 NYPD 100TH PRECINCT POWER and located at BOROUGH OF QUEENS (hereinafter PROJECT), for and RECOVERY AND UPGRADE 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:  
Scope includes General Construction - Masonry, Sitework, Architectural etc.; Asbestos Abatement, Electrical and Mechanical Upgrade.  
Crafts: Carpenters, Mason, Laborer, Electrician, Plumbers







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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.*

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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.





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

**INFORMATION FOR BIDDERS**

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**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, 9<sup>th</sup> Floor, New York, New York 10007. In addition, the bidder must submit a Confirmation of Vendex Compliance to the agency. A form for this confirmation is set forth in the Bid Booklet.

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



25. Complaints About the Bid Process

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

26. Bid, Performance and Payment Security

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

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

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

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

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

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

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

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

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

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

27. Failure to Execute Contract

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

28. Bidder Responsibilities and Qualifications

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

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

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

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

29. Employment Report

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

30. Labor Law Requirements

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

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

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

31. Insurance

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

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

32. Lump Sum Contracts

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

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

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

33. Unit Price Contracts

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

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

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

34. Excise Tax

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

35. Licenses and Permits

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

36. Multiple Prime Contractors

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

37. Locally Based Enterprise Requirements (LBE)

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

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

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

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

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

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

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

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

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

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

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

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

38. Bid Submission Requirements

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

39. Comptroller's Certificate

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

40. Procurement Policy Board Rules

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

41. DDC Safety Requirements

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

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

June 2015

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**THE DDC SAFETY REQUIREMENTS INCLUDE THE FOLLOWING SECTIONS:**

- I. POLICY ON SITE SAFETY**
- II. PURPOSE**

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- 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

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.

- 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:

- 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

- 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.

- 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.

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- 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:

- 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.



# NOTICE TO BIDDERS

The City of New York has issued a new Standard Construction Contract. The new Contract, which is incorporated in this bid, is different from the 2013 version previously used by the City. Some of the significant changes are listed below. In addition, this March 2017 version incorporates the Insurance Rider (Articles 22.1.1(c) and 22.3.3), the Paid Sick Leave Law Contract Rider (Article 35.5), and the Hiring and Employment Rider: HireNYC and Reporting Requirements (Article 35.6). This notice is only a partial listing. Please refer to the Contract itself for a full understanding of the changes and the actual text of the changes that were made. The text of the revised Standard Construction Contract is the controlling document if there are any discrepancies between this notice and the Standard Construction Contract.

Significant changes include the following:

- **ARTICLE 11 - DAMAGES CAUSED BY DELAYS:** Article 11 no longer provides for agencies to make determinations on claims for damages for delay or make payments for those claims through a change order. Instead claims will be submitted to the Comptroller in accordance with the standards in the Contract. The revised Article 11 also sets forth additional detail of what delay costs are compensable and how they are to be calculated.
- **ARTICLE 12 - COORDINATION WITH OTHER CONTRACTORS:** The March 2017 version revises Article 12.3 concerning the Engineer's failure to issue directions to an Other Contractor.
- **ARTICLE 14 - COMPLETION AND FINAL ACCEPTANCE OF THE WORK:** The March 2017 version clarifies Article 14.2.2 concerning the dates to complete punch list work.
- **ARTICLE 30 - NOTICE AND DOCUMENTATION OF COSTS AND DAMAGES; PRODUCTION OF FINANCIAL RECORDS:** The March 2017 version clarifies the relationship between the requirements in Article 30.1 concerning when the contractor must submit notice and documentation of claims for delay damages, extra work, and other claims and the requirements that are set forth in Articles 11 and 27.
- **ARTICLE 56 - CLAIMS AND ACTIONS THEREON:** The March 2017 version revises Article 56.2.2 concerning the time to commence an action arising out of the Commissioner's exercise of his/her right to complete punch list or unsatisfactory work.
- **ARTICLE 78 - EXAMINATION AND VIEWING OF SITE, CONSIDERATION OF OTHER SOURCES OF INFORMATION AND CHANGED SITE CONDITIONS:** The March 2017 version adds a new Article 78 requiring pre-bid viewing of the site and allowing the contractor to obtain a change order for extra work due to changed subsurface conditions.

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**CITY OF NEW YORK**  
**STANDARD CONSTRUCTION CONTRACT**

**March 2017**

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**CITY OF NEW YORK**  
**STANDARD CONSTRUCTION CONTRACT**

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**WITNESSETH:**

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

**CHAPTER I: THE CONTRACT AND DEFINITIONS**

**ARTICLE 1. THE CONTRACT**

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

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

1.1.2 The Contract Drawings and Specifications;

1.1.3 The General Conditions and Special Conditions, if any;

1.1.4 The **Contract**;

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

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

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

**ARTICLE 2. DEFINITIONS**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## **CHAPTER II: THE WORK AND ITS PERFORMANCE**

### **ARTICLE 3. CHARACTER OF THE WORK**

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

### **ARTICLE 4. MEANS AND METHODS OF CONSTRUCTION**

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

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

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

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

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

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

## ARTICLE 5. COMPLIANCE WITH LAWS

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

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

5.3 Noise Control Code provisions.

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

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

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

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

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

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

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

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

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

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

#### 5.4.2 Ultra Low Sulfur Diesel Fuel

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

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

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

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

5.4.2(d) **Contractors** may check on determinations and approvals issued by the DEP Commissioner pursuant to Section 24-163.3 of the Administrative Code, if any, at [www.dep.nyc.gov](http://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).

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

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

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

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

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

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

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

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

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

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

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

## **ARTICLE 6. INSPECTION**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

### CHAPTER III: TIME PROVISIONS

#### ARTICLE 8. COMMENCEMENT AND PROSECUTION OF THE WORK

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

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

#### ARTICLE 9. PROGRESS SCHEDULES

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

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

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

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

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

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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**.

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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).
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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](http://www.nyc.gov/pip).<sup>1</sup> 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

<sup>1</sup> 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](http://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](mailto: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:

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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.

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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.

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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.

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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.

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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.<sup>2</sup> 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").

<sup>2</sup> 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](http://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 PSL. 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 PSL 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.

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35.5.3 Exemptions and Exceptions. Notwithstanding the above, the PSL 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 PSL 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 PSL 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 PSLL. In addition, an employer may not interfere with any investigation, proceeding, or hearing pursuant to the PSLL.

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 PSLL. Such notice must be in English and the primary language spoken by an employee, provided that DCA has made available a translation into such language. Downloadable notices are available on DCA's website at <http://www.nyc.gov/html/dca/html/law/PaidSickLeave.shtml>.

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 PSLL 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 PSLL.

35.5.7 Enforcement and Penalties.

35.5.7(a) Upon receiving a complaint alleging a violation of the PSLL, 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 PSLL 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 PSLL 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 PSLL 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](http://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](http://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.

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## **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.**

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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](http://www.nyc.gov/buycertified), by emailing DSBS at [buyer@sbs.nyc.gov](mailto:buyer@sbs.nyc.gov), by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting [www.nyc.gov/getcertified](http://www.nyc.gov/getcertified), emailing [MWBE@sbs.nyc.gov](mailto:MWBE@sbs.nyc.gov), or calling the DSBS certification helpline at (212) 513-6311. 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](mailto: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 Gullis*  
Commissioner

COMMISSIONER OF THE CITY OF NEW YORK  
OFFICE OF THE COMPTROLLER  
100 WALL STREET  
NEW YORK, NY 10038  
QUALIFIED TO SIGN CONTRACTS  
EXPIRES NOV. 23, 2017

CONTRACTOR: GRYPHON CONSTRUCTION INC

By: *[Signature]*  
(Member of Firm or Officer of Corporation)

Title: PRESIDENT

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

*[Signature]*  
Secretary

(Seal)

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:

On this 21<sup>st</sup> day of MAY, 2019, before me personally came MALAVALLI RAVI to me known who, being by me duly sworn did depose and say that he resides at 28 HILLTOP BLVD. EAST BRUNSWICK, NJ 08816 that he is the PRESIDENT of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

**BRENDA A. BARREIRO**  
Notary Public, State of New York  
No. 01BA6351073  
Qualified in Kings County  
Commission Expires Nov. 28, 2020

Brenda A Barreiro  
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 22<sup>nd</sup> day of May, 2019, before me personally came Lorraine Grillo to me known, and known to be the Deputy Commissioner of the Department of Design and Construction of The City of New York, the person described as such in and who as such executed the foregoing instrument and acknowledged to me that he executed the same as Deputy Commissioner for the purposes therein mentioned.

  
Notary Public or Commissioner of Deeds

**BRENDA A. BARREIRO**  
Notary Public, State of New York  
No. 01BA6351073  
Qualified in Kings 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

Two Million, Seven hundred eighty-four thousand,  
six hundred sixty-four dollars

City of New York  
Department of Design and Construction  
Office of the Commissioner  
100 Nassau Street, 10th Floor  
New York, NY 10038

Dollars (\$ 2,784,664.00 )

is chargeable to the fund of the Department of Design and Construction entitled Code

\_\_\_\_\_

\_\_\_\_\_

Department of Design and Construction

I hereby certify that the specifications contained herein comply with the terms and conditions of the BUDGET.

*Lorraine Gallo*  
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)

Bond No. B1215902

**PERFORMANCE BOND #1**

**KNOW ALL PERSONS BY THESE PRESENTS:**

That we, Gryphon Construction, Inc.

28 Hilltop Boulevard

East Brunswick, NJ 08816

hereinafter referred to as the "Principal,"  
and, Selective Insurance Company of America

40 Wantage Avenue

Branchville, NJ 07890

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

Two Million Seven Hundred Eighty Four Thousand Six Hundred Sixty Four and 00/100

(\$ 2,784,664.00) 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: SANDELEC5 - E:PIN: 85018B0010001 - DDC PIN: 8502017PD0011C

NYPD 100th Precinct Power Recovery and Upgrade, Borough of Queens

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**

10th day of May 20 19  
(Seal) \_\_\_\_\_  
Gryphon Construction, Inc. \_\_\_\_\_ (L.S.)  
Principal

(Seal) By: MALAVALLI RAVI PRESIDENT \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety  
Selective Insurance Company of America  
By: Dawn M. Jones, Attorney-in-Fact \_\_\_\_\_  
Surety

(Seal) By: \_\_\_\_\_  
Surety

(Seal) By: \_\_\_\_\_  
Surety

(Seal) By: \_\_\_\_\_  
Surety

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

Bond Premium Rate 100,000/25.00 400,000/15.00 2,000,000/10.00 284,664/7.50

Bond Premium Cost \$30,635.00

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

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

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

**Performance Bond #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 4)

**ACKNOWLEDGMENT OF PRINCIPAL IF A CORPORATION**

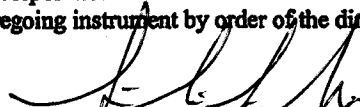
State of NEW JERSEY County of MIDDLESEX ss:

On this 10<sup>th</sup> day of MAY, 20 19 before me personally came MALAVALLI RAVI,

to me known, who, being by me duly sworn did depose and say that he/she resides at 28 HILLTOP BLVD,

EAST BRUNSWICK, NJ 08816; that he/she is the PRESIDENT

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.

**SUPRIK SUNDAR KIRITIA**  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
MY COMMISSION EXPIRES NOV 21 2023  
ID# 2380118

**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.

**ACKNOWLEDGMENT OF PRINCIPAL**  
(Individual or Partnership)

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_ } ss:

On this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, before me personally appeared the above named \_\_\_\_\_

to me known and known to me to be the same described in and who executed the above instrument and dully acknowledged the execution of the same.

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

**(Corporation)**

STATE OF NEW JERSEY  
COUNTY OF MIDDLESEX } ss:

On this 10<sup>th</sup> day of MAY, 2019, before me personally appeared MALAVALLI RAVI

to me known, who, being by me duly sworn, did depose and say that he/she resides in 28 HILLTOP BLVD., EAST BRUNSWICK, NJ 08816 that he/she is the PRESIDENT of GRYPHON CONSTRUCTION INC. the corporation described in and which executed the foregoing instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was affixed by order of the Board of Directors of said corporation and that he/she signed his/her name thereto by like order.

**SUDHIR SUNDAR KITTUR**  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
MY COMMISSION EXPIRES NOV 21 2023  
ID# 2380118

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

**ACKNOWLEDGMENT OF SURETY**

STATE OF New Jersey  
COUNTY OF Monmouth } ss:

On this 10th day of May, 2019, before me personally appeared Dawn M. Jones to me known, who, being by me

duly sworn, did depose and say that he/she resides in Manahawkin, NJ that he/she is the Attorney-in-Fact of the Selective Insurance Company of America

the corporation described in and which executed the foregoing instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation and that he/she signed his/her name thereto by like order; and deponent further says that he/she is acquainted with Dawn M. Jones and knows him/her to be the Attorney-in-Fact subscribed to the within instrument is in the genuine handwriting of the said Dawn M. Jones and was subscribed thereto by like order of the Board of Directors in the presence of deponent

\_\_\_\_\_  
Notary Public Monmouth County

**JOANNE BATTAGLIA**  
NOTARY PUBLIC, State of New Jersey  
No. 2434610  
Commission Expires May 30, 2023





Selective Insurance Company of America  
 40 Wantage Avenue  
 Branchville, New Jersey 07890 BondNo.B 1215902  
 973-948-3000

**POWER OF ATTORNEY**

**SELECTIVE INSURANCE COMPANY OF AMERICA**, a New Jersey corporation having its principal office at 40 Wantage Avenue, in Branchville, State of New Jersey ("SICA"), pursuant to Article VII, Section 1 of its By-Laws, which state in pertinent part:

The Chairman of the Board, President, Chief Executive Officer, any Executive Vice President, any Senior Vice President or any Corporate Secretary may, from time to time, appoint attorneys in fact, and agents to act for and on behalf of the Corporation and they may give such appointee such authority, as his/her certificate of authority may prescribe, to sign with the Corporation's name and seal with the Corporation's seal, bonds, recognizances, contracts of indemnity and other writings obligatory in the nature of a bond, recognizance or conditional undertaking, and any of said Officers may, at any time, remove any such appointee and revoke the power and authority given him/her.

does hereby appoint **Dawn M Jones**

, its true and lawful attorney(s)-in-fact, full authority to execute on SICA's behalf fidelity and surety bonds or undertakings and other documents of a similar character issued by SICA in the course of its business, and to bind SICA thereby as fully as if such instruments had been duly executed by SICA's regularly elected officers at its principal office, in amounts or penalties not exceeding the sum of: **Two Million Seven Hundred Eighty Four Thousand Six Hundred Sixty Four Dollars (\$2,784,664.00)**

Signed this 10th day of May, 2019

SELECTIVE INSURANCE COMPANY OF AMERICA

By:

*[Signature]*  
 Brian C. Sarisky  
 Its SVP, Strategic Business Units, Commercial Lines



STATE OF NEW JERSEY :

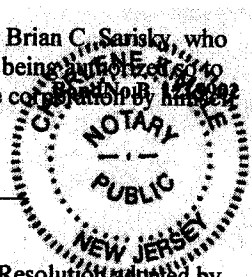
:ss. Branchville

COUNTY OF SUSSEX :

On this 10th day of May, 2019 before me, the undersigned officer, personally appeared Brian C. Sarisky, who acknowledged himself to be the Sr. Vice President of SICA, and that he, as such Sr. Vice President, being authorized to do, executed the foregoing instrument for the purposes therein contained, by signing the name of the corporation as Sr. Vice President and that the same was his free act and deed and the free act and deed of SICA.

*[Signature]*  
 Charlene Kimble  
 Notary Public of New Jersey  
 My Commission Expires 6/2/2021

*[Signature]*  
 Notary Public



The power of attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of SICA at a meeting duly called and held on the 6th of February 1987, to wit:

"RESOLVED, the Board of Directors of Selective Insurance Company of America authorizes and approves the use of a facsimile corporate seal, facsimile signatures of corporate officers and notarial acknowledgements thereof on powers of attorney for the execution of bonds, recognizances, contracts of indemnity and other writing obligatory in the nature of a bond, recognizance or conditional undertaking."

**CERTIFICATION**

I do hereby certify as SICA's Corporate Secretary that the foregoing extract of SICA's By-Laws and Resolutions in full force and effect and this Power of Attorney issued pursuant to and in accordance with the By-Laws is valid.

Signed this 10th day of May, 2019

*[Signature]*  
 Michael H. Lanza, SICA Corporate Secretary



Important Notice: If the bond number embedded within the Notary Seal does not match the number in the upper right-hand corner of this Power of Attorney, contact us at 973-948-3000.

CERTIFIED COPY



Selective Insurance Company of America Bond No. B 1215902  
 40 Wantage Avenue  
 Branchville, New Jersey 07890  
 973-948-3000

STATEMENT OF FINANCIAL CONDITION

Class B Performance Bond

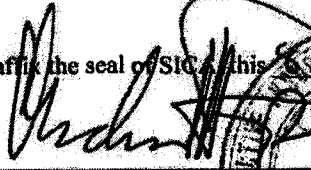
I hereby certify that the following information is contained in the Annual Statement of Selective Insurance Company of America ("SICA") to the New Jersey Department of Banking and Insurance as of December 31, 2018:

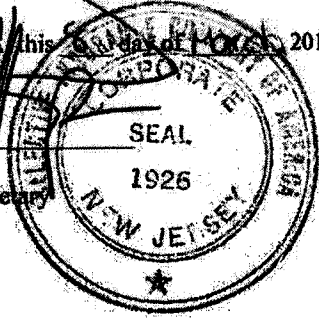
<u>ADMITTED ASSETS (in thousands)</u>		<u>LIABILITIES AND SURPLUS (in thousands)</u>	
Bonds	\$1,645,203	Reserve for losses and loss expenses	\$1,067,538
Preferred stocks at convention value	15,958	Reserve for unearned premiums	407,747
Common stocks at convention values	108,870	Provision for unauthorized reinsurance	613
Subsidiary common stock at convention values	0	Commissions payable and contingent commissions	28,217
Short-term investments	118,739	Other accrued expenses	27,209
Mortgage loans on real estate (including collateral loans)	32,517	Other liabilities	<u>375,544</u>
Other invested assets	104,132	Total liabilities	1,906,868
Interest and dividends due or accrued	13,554		
Premiums receivable	378,538	Surplus as regards policyholders	<u>632,803</u>
Other admitted assets	<u>122,160</u>		
Total admitted assets	<u>2,539,671</u>	Total liabilities and surplus as regards policyholders	<u>2,539,671</u>

I further certify that the following is a true and exact excerpt from Article VII, Section 1 of the By-Laws of SICA, which is still valid and existing.

The Chairman of the Board, President, Chief Executive Officer, any Executive Vice President, any Senior Vice President or any Corporate Secretary may, from time to time, appoint attorneys in fact, and agents to act for and on behalf of the Corporation and they may give such appointee such authority, as his/her certificate of authority may prescribe, to sign with the Corporation's name and seal with the Corporation's seal, bonds, recognizances, contracts of indemnity and other writings obligatory in the nature of a bond, recognizance or conditional undertaking, and any of said Officers may, at any time, remove any such appointee and revoke the power and authority given him/her.

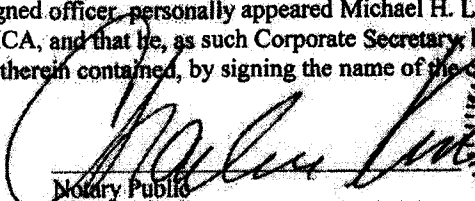
IN WITNESS WHEREOF, I hereunto subscribe my name and affix the seal of SICA, this 8 day of March, 2019.

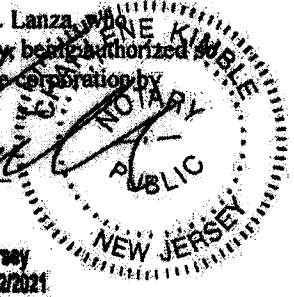
  
 Michael H. Lanza  
 SICA Corporate Secretary



STATE OF NEW JERSEY :  
 :ss. Branchville  
 COUNTY OF SUSSEX :

On this 8 day of March, 2019, before me, the undersigned officer, personally appeared Michael H. Lanza, who acknowledged himself to be the Corporate Secretary of SICA, and that he, as such Corporate Secretary, being authorized to do, executed the foregoing instrument for the purposes therein contained, by signing the name of the Corporation by himself as Corporate Secretary.

  
 Notary Public  
 My Commission Expires Charlene Kimble  
 Notary Public of New Jersey  
 My Commission Expires 8/2/2021



**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**

**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 #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

\_\_\_\_\_ 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 #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 \_\_\_\_\_ 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 resides at \_\_\_\_\_

\_\_\_\_\_ ; that he/she is the \_\_\_\_\_ 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.

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

**ACKNOWLEDGMENT OF PRINCIPAL IF A PARTNERSHIP**

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

On this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_ before me personally came \_\_\_\_\_, to me known, who, being by me duly sworn did depose and say that he/she resides at \_\_\_\_\_

\_\_\_\_\_ ; that he/she is \_\_\_\_\_ partner of \_\_\_\_\_, a limited/general partnership existing under the laws of the State of \_\_\_\_\_, the partnership described in and which executed the foregoing instrument; and that he/she signed his/her name to the foregoing instrument as the duly authorized and binding act of said partnership.

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

**ACKNOWLEDGMENT OF PRINCIPAL IF AN INDIVIDUAL**

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

On this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_ before me personally came \_\_\_\_\_, to me known, who, being by me duly sworn did depose and say that he/she resides at \_\_\_\_\_

\_\_\_\_\_ , and that he/she is the individual whose name is subscribed to the within instrument and acknowledged to me that by his/her signature on the instrument, said individual executed the instrument.

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

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

\*\*\*\*\*

Affix Acknowledgments and Justification of Sureties.

**Payment Bond (Pages 108 to 111): Use for any contract for which a Payment Bond is required.**

PAYMENT BOND (Page 1)

Bond No. B1215902

**PAYMENT BOND**

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

Gryphon Construction, Inc. \_\_\_\_\_

28 Hilltop Boulevard \_\_\_\_\_

East Brunswick, NJ 08816 \_\_\_\_\_

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

Selective Insurance Company of America \_\_\_\_\_

40 Wantage Avenue \_\_\_\_\_

Branchville, NJ 07890 \_\_\_\_\_

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

Two Million Seven Hundred Eighty Four Thousand Six Hundred Sixty Four and 00/100 \_\_\_\_\_

(\$2,784,664.00) 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: SANDELEC5 - E:PIN: 85018B0010001 - DDC PIN: 8502017PD0011C \_\_\_\_\_

NYPD 100th Precinct Power Recovery and Upgrade, Borough of Queens \_\_\_\_\_

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 place 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 10th day of May, 2019.

(Seal)

Gryphon Construction, Inc. (L.S.)

Principal

By:

MALAVALLI RAVI, PRESIDENT

(Seal)

Selective Insurance Company of America

Surety

By:

Dawn M. Jones, Attorney-in-Fact

(Seal)

Surety

By:

(Seal)

Surety

By:

(Seal)

Surety

By:

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

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

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

**Payment Bond (Pages 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 JERSEY County of MIDDLESEX ss:

On this 10<sup>th</sup> day of MAY, 2019, before me personally came MALAVALLI RAVI to me known, who, being by me duly sworn did depose and say that he resides at 28 HILLTOP BLVD, EAST BRUNSWICK, NJ 08816 that he is the PRESIDENT of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

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

**SUDHIR SUNDAR KITTUR**  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
COMMISSION EXPIRES NOV 21 2023  
ID# 2380118

**ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP**

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

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

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

**ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL**

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

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

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

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

\*\*\*\*\*

Affix Acknowledgments and Justification of Sureties.

ACKNOWLEDGMENT OF PRINCIPAL  
(Individual or Partnership)

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_ } ss:

On this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, before me personally  
appeared the above named \_\_\_\_\_

to me known and known to me to be the same described in and who executed the above instrument and dully acknowledged  
the execution of the same.

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

(Corporation)

STATE OF NEW JERSEY  
COUNTY OF MIDDLESEX } ss:

On this 10th day of MAY, 2019, before me personally  
appeared MALAVALLI RAVI

to me known, who, being by me duly sworn, did depose and say that he/she resides in 28 HILLTOP BLVD.,  
EAST BRUNSWICK, NJ 08816  
that he/she is the PRESIDENT of GRYPHON CONSTRUCTION INC.  
the corporation described in and which executed the foregoing instrument; that he/she knows the seal of said corporation; that  
the seal affixed to said instrument is such corporate seal; that it was affixed by order of the Board of Directors of said  
corporation and that he/she signed his/her name thereto by like order.

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

**SUDHIR SUNDAR KITTUR**  
NOTARY PUBLIC  
STATE OF NEW JERSEY  
MY COMMISSION EXPIRES NOV 21 2023  
ID# 2380118

ACKNOWLEDGMENT OF SURETY

STATE OF New Jersey  
COUNTY OF Monmouth } ss:

On this 10th day of May, 2019, before me personally  
appeared Dawn M. Jones to me known, who, being by me

duly sworn, did depose and say that he/she resides in Manahawkin, NJ  
that he/she is the Attorney-in-Fact of the  
Selective Insurance Company of America

the corporation described in and which executed the foregoing instrument; that he/she knows the seal of said corporation; that  
the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said  
corporation and that he/she signed his/her name thereto by like order; and deponent further says that he/she is acquainted  
with Dawn M. Jones and knows him/her to be the  
Attorney-in-Fact subscribed to the within instrument is in the genuine handwriting of the said Dawn M. Jones  
and was subscribed thereto by like order of the Board of Directors in the presence of deponent.

\_\_\_\_\_  
Notary Public Monmouth County

**JOANNE BATTAGLIA**  
NOTARY PUBLIC, State of New Jersey  
No. 2434810  
Commission Expires May 30, 2023



Selective Insurance Company of America  
 40 Wantage Avenue  
 Branchville, New Jersey 07890 BondNo.B 1215902  
 973-948-3000

**POWER OF ATTORNEY**

**SELECTIVE INSURANCE COMPANY OF AMERICA**, a New Jersey corporation having its principal office at 40 Wantage Avenue, in Branchville, State of New Jersey ("SICA"), pursuant to Article VII, Section 1 of its By-Laws, which state in pertinent part:

The Chairman of the Board, President, Chief Executive Officer, any Executive Vice President, any Senior Vice President or any Corporate Secretary may, from time to time, appoint attorneys in fact, and agents to act for and on behalf of the Corporation and they may give such appointee such authority, as his/her certificate of authority may prescribe, to sign with the Corporation's name and seal with the Corporation's seal, bonds, recognizances, contracts of indemnity and other writings obligatory in the nature of a bond, recognizance or conditional undertaking, and any of said Officers may, at any time, remove any such appointee and revoke the power and authority given him/her.

does hereby appoint **Dawn M Jones**

, its true and lawful attorney(s)-in-fact, full authority to execute on SICA's behalf fidelity and surety bonds or undertakings and other documents of a similar character issued by SICA in the course of its business, and to bind SICA thereby as fully as if such instruments had been duly executed by SICA's regularly elected officers at its principal office, in amounts or penalties not exceeding the sum of: **Two Million Seven Hundred Eighty Four Thousand Six Hundred Sixty Four Dollars (\$2,784,664.00)**

Signed this 10th day of May, 2019

SELECTIVE INSURANCE COMPANY OF AMERICA

By:   
 Brian C. Sarisky  
 Its SVP, Strategic Business Units, Commercial Lines

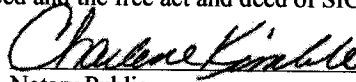


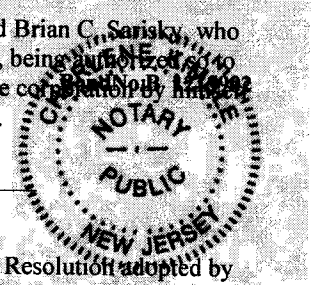
CERTIFIED COPY

STATE OF NEW JERSEY :  
 :ss. Branchville  
 COUNTY OF SUSSEX :

On this **10th** day of **May**, **2019** before me, the undersigned officer, personally appeared **Brian C. Sarisky**, who acknowledged himself to be the Sr. Vice President of SICA, and that he, as such Sr. Vice President, being authorized to do, executed the foregoing instrument for the purposes therein contained, by signing the name of the corporation by him as Sr. Vice President and that the same was his free act and deed and the free act and deed of SICA.

**Charlene Kimble**  
 Notary Public of New Jersey  
 My Commission Expires 6/2/2021

  
 Notary Public



The power of attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of SICA at a meeting duly called and held on the 6th of February 1987, to wit:

"RESOLVED, the Board of Directors of Selective Insurance Company of America authorizes and approves the use of a facsimile corporate seal, facsimile signatures of corporate officers and notarial acknowledgements thereof on powers of attorney for the execution of bonds, recognizances, contracts of indemnity and other writing obligatory in the nature of a bond, recognizance or conditional undertaking."

**CERTIFICATION**

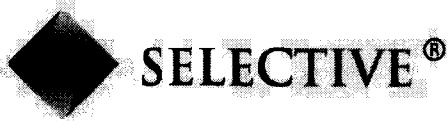
I do hereby certify as SICA's Corporate Secretary that the foregoing extract of SICA's By-Laws and Resolution in full force and effect and this Power of Attorney issued pursuant to and in accordance with the By-Laws is valid.

Signed this 10th day of May, 2019

  
 Michael H. Lanza, SICA Corporate Secretary



Important Notice: If the bond number embedded within the Notary Seal does not match the number in the upper right-hand corner of this Power of Attorney, contact us at 973-948-3000.



Selective Insurance Company of America Bond No. B 1215902  
 40 Wantage Avenue  
 Branchville, New Jersey 07890  
 973-948-3000

**STATEMENT OF FINANCIAL CONDITION**

Class B Performance Bond

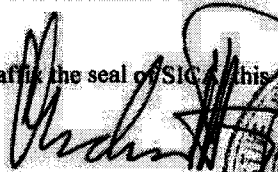
I hereby certify that the following information is contained in the Annual Statement of Selective Insurance Company of America ("SICA") to the New Jersey Department of Banking and Insurance as of December 31, 2018:

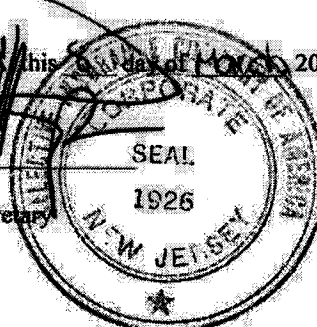
<u>ADMITTED ASSETS (in thousands)</u>		<u>LIABILITIES AND SURPLUS (in thousands)</u>	
Bonds	\$1,645,203	Reserve for losses and loss expenses	\$1,067,538
Preferred stocks at convention value	15,958	Reserve for unearned premiums	407,747
Common stocks at convention values	108,870	Provision for unauthorized reinsurance	613
Subsidiary common stock at convention values	0	Commissions payable and contingent commissions	28,217
Short-term investments	118,739	Other accrued expenses	27,209
Mortgage loans on real estate (including collateral loans)	32,517	Other liabilities	375,544
Other invested assets	104,132	Total liabilities	1,906,868
Interest and dividends due or accrued	13,554		
Premiums receivable	378,538	Surplus as regards policyholders	632,803
Other admitted assets	122,160		
Total admitted assets	<u>2,539,671</u>	Total liabilities and surplus as regards policyholders	<u>2,539,671</u>

I further certify that the following is a true and exact excerpt from Article VII, Section 1 of the By-Laws of SICA, which is still valid and existing.

The Chairman of the Board, President, Chief Executive Officer, any Executive Vice President, any Senior Vice President or any Corporate Secretary may, from time to time, appoint attorneys in fact, and agents to act for and on behalf of the Corporation and they may give such appointee such authority, as his/her certificate of authority may prescribe, to sign with the Corporation's name and seal with the Corporation's seal, bonds, recognizances, contracts of indemnity and other writings obligatory in the nature of a bond, recognizance or conditional undertaking, and any of said Officers may, at any time, remove any such appointee and revoke the power and authority given him/her.

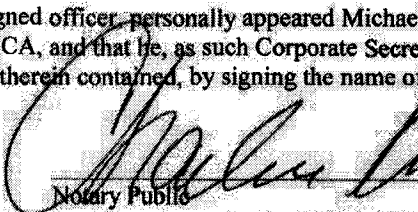
IN WITNESS WHEREOF, I hereunto subscribe my name and affix the seal of SICA, this 8th day of March, 2019.

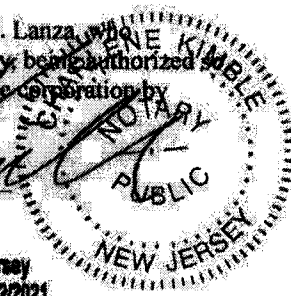
  
 Michael H. Lanza  
 SICA Corporate Secretary



STATE OF NEW JERSEY :  
 :ss. Branchville  
 COUNTY OF SUSSEX :

On this 8 day of March 2019, before me, the undersigned officer, personally appeared Michael H. Lanza, who acknowledged himself to be the Corporate Secretary of SICA, and that he, as such Corporate Secretary, being authorized to do, executed the foregoing instrument for the purposes therein contained, by signing the name of the Corporation by himself as Corporate Secretary.

  
 Notary Public  
 My Commission Expires Charlene Kimble  
 Notary Public of New Jersey  
 My Commission Expires 6/2/2021



**State of New York**

**DEPARTMENT OF FINANCIAL SERVICES**

**WHEREAS IT APPEARS THAT**

**Selective Insurance Company of America**

**Home Office Address**

**Branchville, New Jersey**

**Organized under the Laws of**

**New Jersey**

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

**licensed to do within this State the business of**

accident and health, fire, miscellaneous property, water damage, burglary and theft, glass, boiler and machinery, elevator, animal, collision, personal injury liability, property damage liability, workers' compensation and employers' liability, fidelity and surety, credit, motor vehicle and aircraft physical damage, marine and inland marine, marine protection and indemnity, legal services and gap insurance, as specified in paragraph(s) 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 29 and 26(A)(B)(C)(D) of Section 1113(a) of the New York Insurance Law and also such workers' compensation insurance as may be incident to coverages contemplated under paragraphs 20 and 21 of Section 1113(a), including insurances described in the Longshoremen's and Harbor Workers' Compensation Act (Public Law No. 803, 69 Cong. as amended; 33 USC Section 901 et seq. as amended) to the extent permitted by certified copy of its charter document on file in this Department until July 1, 2019.

**In Witness Whereof, I have hereunto set  
my hand and affixed the official seal of this  
Department at the City of Albany, New York, this  
1st day of July, 2018**



**Maria T. Vullo  
Superintendent**

**By**

*Kathleen Grandenath*

**Kathleen Grandenath  
Special Deputy Superintendent**





GRYPCON-01

CONDELLO

**CERTIFICATE OF LIABILITY INSURANCE**DATE (MM/DD/YYYY)  
5/28/2019

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 have ADDITIONAL INSURED provisions or 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 License # 0E67768 Insurance Office of America, Inc. 1451 Route 34, Suite 101 Farmingdale, NJ 07727	CONTACT NAME: PHONE (A/C, No, Ext): (732) 751-2900 E-MAIL ADDRESS:	FAX (A/C, No): (732) 751-2929
	INSURER(S) AFFORDING COVERAGE	
INSURED  Gryphon Construction, Inc. 28 Hilltop Boulevard East Brunswick, NJ 08816	INSURER A: Mesa Underwriters Specialty Insurance Company	NAIC # 36838
	INSURER B: Mt Hawley Insurance Company	37974
	INSURER C: Westchester Surplus Lines Insurance Company	10172
	INSURER D:	
	INSURER E:	
	INSURER F:	

**COVERAGES**                      **CERTIFICATE NUMBER:**                      **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Contractual Liab <input checked="" type="checkbox"/> CG2010 & CG2037 GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	X		MP0062001001094	6/1/2019	6/1/2020	EACH OCCURRENCE	\$ 1,000,000
							DAMAGE TO RENTED PREMISES (Per 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	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY			MP0062001001094	6/1/2019	6/1/2020	COMBINED SINGLE LIMIT (Per accident)	\$ 1,000,000
							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 checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED      RETENTION \$			MXL0430242	6/1/2019	6/1/2020	EACH OCCURRENCE	\$ 1,000,000
							AGGREGATE	\$ 1,000,000
								\$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NY) If yes, describe under DESCRIPTION OF OPERATIONS below		Y/N	N/A			PER STATUTE	OTH-ER
							E.L. EACH ACCIDENT	\$
							E.L. DISEASE - EA EMPLOYEE	\$
							E.L. DISEASE - POLICY LIMIT	\$
C	Pollution Liability			G71172260002	6/1/2019	6/1/2020	Each Occurrence	2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
 RE: FMS ID: SANDELECS, DDC PIN: 8502017PD0011C NYPD 100th Precinct Power Recovery & Upgrade - Borough of Queens  
 City of New York, including its officials and employees, NYPD, Project Manager are Additional Insureds with respect to General Liability when required by written contract per form#CG2010 7/04, CG2037 4/13.

**CERTIFICATE HOLDER****CANCELLATION**

ACCO's Office, Insurance Unit 30-30 Thomson Avenue, 4th Floor 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 <i>Paola Gilman</i>
--	--



# EVIDENCE OF PROPERTY INSURANCE

DATE (MM/DD/YYYY)  
5/20/2019

THIS EVIDENCE OF PROPERTY INSURANCE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE ADDITIONAL INTEREST NAMED BELOW. THIS EVIDENCE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS EVIDENCE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE ADDITIONAL INTEREST.

AGENCY Insurance Office of America, Inc. 1451 Route 34, Suite 101 Farmingdale, NJ 07727		PHONE (A/C, No, Ext): (732) 751-2900	COMPANY Selective Insurance Company of America 40 Wantage Avenue Branchville, NJ 07890	
FAX (A/C, No): (732) 751-2929		E-MAIL ADDRESS:		
CODE: 29986		SUB CODE:		
AGENCY CUSTOMER ID #: GRYPCON-01		License # 0E67768		
INSURED Gryphon Construction, Inc. 28 Hilltop Boulevard East Brunswick, NJ 08816		LOAN NUMBER		POLICY NUMBER \$2314817
		EFFECTIVE DATE 5/17/2019	EXPIRATION DATE 5/17/2020	<input type="checkbox"/> CONTINUED UNTIL TERMINATED IF CHECKED
THIS REPLACES PRIOR EVIDENCE DATED:				

### PROPERTY INFORMATION

LOCATION/DESCRIPTION  
 Loc # 1, Bldg # 1, 9224 Rockaway Beach Blvd, Queens, NY, Police Precinct 100

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 EVIDENCE OF PROPERTY INSURANCE 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.

COVERAGE INFORMATION	PERILS INSURED	BASIC	BROAD	SPECIAL	AMOUNT OF INSURANCE		DEDUCTIBLE
Loc # 1, Bldg # 1							
Building, Special (Including theft)					\$2,784,664		1,000
Property Off Premises, Special (Including theft)					\$250,000		1,000
Property In Transit, Special (Including theft)					\$250,000		1,000

**REMARKS (Including Special Conditions)**

Remarks:  
 RE: SANDELEC5 DDC PIN: 8502017PD0011C NYPD 100th Precinct Power Recovery/Upgrade

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

**ADDITIONAL INTEREST**

NAME AND ADDRESS  ACCO's Office, Insurance Unit 30-30 Thomson Avenue, 4th Floor Long Island City, NY 11101	<input type="checkbox"/> ADDITIONAL INSURED <input type="checkbox"/> MORTGAGEE	<input type="checkbox"/> LENDER'S LOSS PAYABLE <input type="checkbox"/> LOSS PAYEE
	LOAN #  AUTHORIZED REPRESENTATIVE <i>Peter Gilman</i>	





**CERTIFICATE OF  
NYS WORKERS' COMPENSATION INSURANCE COVERAGE**

<p>1a. Legal Name and address of Insured (use street address only)</p> <p>GRYPHON CONSTRUCTION INC 28 HILLTOP BLVD EAST BRUNSWICK NJ 08816</p> <p><i>Work Location of Insured (Only required if coverage is specifically limited to certain locations in New York State, i.e. a Wrap-Up Policy)</i></p>	<p>1b. Business Telephone Number of Insured</p> <p>1c. NYS Unemployment Insurance Employer Registration Number of Insured</p> <p>1d. Federal Employer Identification Number of Insured or Social Security Number 38-3669153</p>
<p>2. Name and Address of the Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)</p> <p>ACCO's Office, Insurance Unit NYC DDC 3030 THOMSON AVE FL 4 LONG ISLAND CITY NY 11101-3045</p>	<p>3a. Name of Insurance Carrier The Hartford Casualty Insurance Company 29424</p> <p>3b. Policy Number of Entity Listed in Box "1a": 76 WBG DZ2492</p> <p>3c. Policy effective period: 03/17/2019 to 03/17/2020</p> <p>3d. The Proprietor, Partners or Executive Officers are</p> <p><input type="checkbox"/> Included. (Only check box if all partners/officers included)</p> <p><input type="checkbox"/> all excluded or certain partners/officers excluded.</p>

This certifies that the insurance carrier indicated above in box "3" insures the business referenced above in box "1a" for workers' compensation under the New York State Workers' Compensation Law. **(To use this form, New York (NY) must be listed under Item 3A on the INFORMATION PAGE of the workers' compensation insurance policy).** The Insurance Carrier or its licensed agent will send this Certificate of Insurance to the entity listed above as the certificate holder in box "2".

The insurance carrier must notify the above certificate holder and the Workers' Compensation Board within 10 days IF a policy is canceled due to nonpayment of premiums or within 30 days IF there are reasons other than nonpayment of premiums that cancel the policy or eliminate the insured from the coverage indicated on this Certificate. (These notices may be sent by regular mail.) **Otherwise, this Certificate is valid for one year after this form is approved by the insurance carrier or its licensed agent, or until the policy expiration date listed in box "3c", whichever is earlier.**

This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend or alter the coverage afforded by the policy listed, nor does it confer any rights or responsibilities beyond those contained in the referenced policy.

This certificate may be used as evidence of a Worker's Compensation contract of insurance only while the underlying policy is in effect.

**Please Note: Upon cancellation of the workers' compensation 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 Workers' Compensation Coverage or other authorized proof that 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 or licensed agent of the insurance carrier referenced above and that the named insured has the coverage as depicted on this form.**

Approved by: Danielle Clausen  
(print name of authorized representative or licensed agent of insurance carrier)

Approved by: *Danielle Clausen* 05/20/2019  
(Signature) (Date)

Title: Operations Manager

Telephone Number of authorized representative or licensed agent of insurance carrier: (877) 287-1312

**Please Note: Only insurance carriers and their licensed agents are authorized to issue Form C-105.2. Insurance brokers are NOT authorized to issue it.**

## 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 this chapter. 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 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 this 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 this chapter.



**CERTIFICATE OF INSURANCE COVERAGE  
DISABILITY AND PAID FAMILY LEAVE BENEFITS LAW**

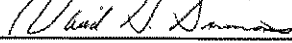
**PART 1. To be completed by Disability and Paid Family Leave Benefits Carrier or Licensed Insurance Agent of that Carrier**

<p>1a. Legal Name &amp; Address of Insured (use street address only) Gryphon Construction Inc 28 Hilltop Blvd East Brunswick, NJ 08816</p> <p>Work Location of Insured (Only required if coverage is specifically limited to certain locations in New York State, i.e., Wrap-Up Policy)</p>	<p>1b. Business Telephone Number of Insured 732-257-1889</p> <p>1c. Federal Employer Identification Number of Insured or Social Security Number 383669153</p>
<p>2. Name and Address of Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder) ACCO's Office, Insurance Unit, NYC-DDC 30-30 Thomson Avenue, 4th Floor LONG ISLAND CITY, NY 11101</p>	<p>3a. Name of Insurance Carrier AmGUARD Insurance Company</p> <p>3b. Policy Number of Entity Listed in Box "1a" DB01631167</p> <p>3c. Policy effective period 01/01/2019 to 01/01/2020</p>

4. Policy provides the following benefits:  
 A. Both disability and paid family leave benefits.  
 B. Disability benefits only.  
 C. Paid family leave benefits only.

5. Policy covers:  
 A. All of the employer's employees eligible under the NYS Disability and Paid Family Leave Benefits Law.  
 B. Only the following class or classes of employer's employees:  
 \_\_\_\_\_  
 \_\_\_\_\_

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

Date Signed 05/20/2019 By   
 (Signature of insurance carrier's authorized representative or NYS Licensed Insurance Agent of that insurance carrier)

Telephone Number 800-673-2465 Name and Title Vice President of Sales

**IMPORTANT:** If Boxes 4A and 5A are checked, and this form is signed by the insurance carrier's authorized representative or NYS Licensed Insurance Agent of that carrier, this certificate is COMPLETE. Mail it directly to the certificate holder.

If Box 4B, 4C or 5B is checked, this certificate is NOT COMPLETE for purposes of Section 220, Subd. 8 of the NYS 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.

**PART 2. To be completed by the NYS Workers' Compensation Board (Only if Box 4C or 5B of Part 1 has been checked)**

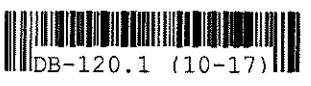
**State of New York  
Workers' Compensation Board**

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

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

Telephone Number \_\_\_\_\_ Name and Title \_\_\_\_\_

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



## Additional Instructions for Form DB-120.1

By signing this form, the insurance carrier identified in Box 3 on this form is certifying that it is insuring the business referenced in box "1a" for disability and/or paid family leave benefits under the New York State Disability and Paid Family Leave Benefits Law. The Insurance Carrier or its licensed agent will send this Certificate of Insurance to the entity listed as the certificate holder in Box 2.

The insurance carrier must notify the above certificate holder and the Workers' Compensation Board within 10 days IF a policy is cancelled due to nonpayment of premiums or within 30 days IF there are reasons other than nonpayment of premiums that cancel the policy or eliminate the insured from coverage indicated on this Certificate. (These notices may be sent by regular mail.) Otherwise, this Certificate is valid for one year after this form is approved by the insurance carrier or its licensed agent, or until the policy expiration date listed in Box 3c, whichever is earlier

This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend or alter the coverage afforded by the policy listed, nor does it confer any rights or responsibilities beyond those contained in the referenced policy.

This certificate may be used as evidence of a Disability and/or Paid Family Leave Benefits contract of insurance only while the underlying policy is in effect.

**Please Note: Upon the cancellation of the disability and/or paid family leave 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 not withstanding 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 and 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 payment of family leave benefits for all employees has been secured as provided by this article.

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.

Insurance Office of America

[Name of broker or agent (typewritten)]

1451 Route 34, Suite 101, Farmingdale, NJ 07727

[Address of broker or agent (typewritten)]

Larry.Depalmajr@ioausa.com

[Email address of broker or agent (typewritten)]

732-751-2900

[Phone number/Fax number of broker or agent (typewritten)]

X Lawrence E. DePalma, Jr., VP

[Signature of authorized official or broker or agent]

Lawrence DePalma, Jr., Vice President

[Name and title of authorized official, broker or agent (typewritten)]

State of New Jersey )  
County of Monmouth ) ss:

Sworn to before me this

15<sup>th</sup> day of May, 2019

Britni Mederos

NOTARY PUBLIC FOR THE STATE OF New Jersey  
BRITNI MEDEROS  
Notary Public  
State of New Jersey  
My Commission Expires August 25, 2020  
Addendum to the General Conditions  
March 1, 2017

**FEMA - PAGES:**

**FEDERAL EMERGENCY  
MANAGEMENT AGENCY PROJECTS**

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**(NO TEXT ON THIS PAGE)**

# FEDERAL EMERGENCY MANAGEMENT AGENCY ("FEMA") FUNDING ATTACHMENT

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

## THIS ATTACHMENT IS HEREBY MADE A PART OF THE CONTRACT DOCUMENTS

1. The riders and exhibits listed below, and included in this Attachment, are made a part of this contract documents, and the Contractor shall be responsible for compliance with all the provisions contained therein:
  - UNIFORM FEDERAL CONTRACT PROVISIONS RIDER FOR FEDERALLY FUNDED PROCUREMENT CONTRACTS (2/16/2018)
  - FEDERAL EMERGENCY MANAGEMENT AGENCY ("FEMA") RIDER (10/27/2015)
2. **SCOPE OF WORK SEPERATION.** This project, either in part or in whole, is eligible to receive FEMA disaster assistance funding. As a result, the scopes of work eligible for reimbursement by FEMA will be tracked separately during the construction. The Contractor will be required to assist the City in this effort. The Contractor will be provided budget codes for eligible and non-eligible scope items that the Contractor must use while invoicing for such scope. The quantity and scope of budget codes will be provided to the Contractor upon award. The Contractor's requisition for payment must organize elements of scope into the correct budget codes defining non-eligible and eligible items and provide a subtotal for the each of the same. If the Work of this Contract covers work at multiple facilities and/or sites, the Contractor's requisition for payment must first be itemized by facility and/or site.
3. **CHANGE ORDERS AND OVERRUNS.** When change orders or overruns pertain to those portions of the project eligible for reimbursement by FEMA, the Contractor must provide detailed documentation to justify the eligibility of the added work, in addition to the requirements of Articles 25 and 26 of the New York City Standard Construction Contract. At a minimum, this documentation shall include the exact location of the work, justification for changing the original scope of work (either new work or quantity changes), field sketches/as-built drawings for the added work and photographs detailing the conditions necessitating the work.

In addition, change order requests shall be formatted as follows:

- a. If contract covers work at multiple facilities and/or sites, change order requests shall identify the facility and/or site to which they apply.
- b. Change order requests shall identify the component scope(s) to which the change applies and separate the cost accordingly.



(NO TEXT THIS PAGE)

**UNIFORM FEDERAL CONTRACT PROVISIONS RIDER  
FOR FEDERALLY FUNDED PROCUREMENT CONTRACTS**  
(Version 02.16.2018)

*[Instructions to Agencies: This Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts (“Rider”) must be attached to all federally funded procurement contracts (of any dollar amount) that are subject to 2 CFR Part 200 (Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards). This Rider does not apply to subrecipient or subaward agreements. Procurement contracts funded by the U.S. Department of Housing and Urban Development CDBG Program or CDBG-DR Program must also include the CDBG or CDBG-DR Rider, as applicable.]*

A. *Definitions.* As used in this Rider:

- (1) “Awarding Entity” means the entity awarding the Contract. The Awarding Entity may be the City or a contractor at any tier.
- (2) “City” means the City of New York.
- (3) “Commissioner” means the head of the City agency entering into this Contract.
- (4) “Construction” means the building, rehabilitation, alteration, conversion, extension, demolition, painting or repair of any improvement to real property.

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- (5) “Contract” refers to the contract or the agreement between the Awarding Entity and the Contractor.
- (6) “Contractor” means the entity performing the services pursuant to a Contract.
- (7) “Federal Agency” means the U.S. agency or agencies funding this Contract in whole or in part.
- (8) “Government” means the U.S. government.
- (9) “Rider” means this Uniform Federal Contract Provisions Rider.

B. *Termination and Remedies for Breach of Contract.* The following provisions concerning remedies for breach of contract and termination apply to Contracts between the City and the City’s Contractor.

- (1) **Remedies for Breach of Contract.** If the Contractor violates or breaches the Contract, the City may avail itself of any or all of the remedies provided for elsewhere in this Contract. If there are no remedies provided for elsewhere in this Contract, the City may avail itself of any or all of the following remedies.

After declaring the Contractor in default pursuant to the procedures in paragraph (a) of subdivision (2) of this section (B) below, the City may (i) withhold payment for unsatisfactory services, (ii) suspend or terminate the Contract in whole or in part; and/or

(iii) have the services under this Contract completed by such means and in such manner, by contract procured with or without competition, or otherwise, as the City may deem advisable in accordance with all applicable Contract provisions and law. After completion of the services under this Contract, the City shall certify the expense incurred in such completion, which shall include the cost of procuring that contract. Should the expense of such completion, as certified by the City, exceed the total sum which would have been payable under the Contract if it had been completed by the Contractor, any excess shall be promptly paid by the Contractor upon demand by the City. The excess expense of such completion, including any and all related and incidental costs, as so certified by the City may be charged against and deducted out of monies earned by the Contractor.

(2) **Termination.** The City shall have the right to terminate the Contract in whole or in part for cause, for convenience, due to force majeure, or due to reductions in federal funding. If the Contract does not include termination provisions elsewhere, the following termination provisions apply:

a. **Termination for Cause.** The City shall have the right to terminate the Contract, in whole or in part, for cause upon a determination that the Contractor is in default of the Contract. Unless a shorter time is determined by the City to be necessary, the City shall effect termination according to the following procedure:

i. *Notice to Cure.* The City shall give written notice of the conditions of default signed by the Commissioner, setting forth the ground or grounds upon which such default is declared ("Notice to Cure"). The Contractor shall have ten (10) days from receipt of the Notice to Cure or any longer period that is set forth in the Notice to Cure to cure the default. The Commissioner may temporarily suspend services under the Contract pending the outcome of the default proceedings pursuant to this section.

ii. *Opportunity to be Heard.* If the conditions set forth in the Notice to Cure are not cured within the period set forth in the Notice to Cure, the Commissioner may declare the Contractor in default. Before the Commissioner may exercise his or her right to declare the Contractor in default, the Contractor must be given an opportunity to be heard upon not less than five (5) business days' notice. The Commissioner may, in his or her discretion, provide for such opportunity to be in writing or in person. Such opportunity to be heard shall not occur prior to the end of the cure period but notice of such opportunity to be heard may be given prior to the end of the cure period and may be given contemporaneously with the Notice to Cure.

iii. *Notice of Termination.* After an opportunity to be heard, the Commissioner may terminate the Contract, in whole

or in part, upon finding the Contractor in default. The Commissioner shall give the Contractor written notice of such termination ("Notice of Termination"), specifying the applicable provision(s) under which the Contract is terminated and the effective date of termination. If no date is specified in the Notice of Termination, the termination shall be effective either 10 calendar days from the date the notice is personally delivered or 15 calendar days from the date Notice of Termination is sent by another method. The Notice of Termination shall be personally delivered, sent by certified mail return receipt requested, or sent by fax and deposited in a post office box regularly maintained by the United States Postal Service in a postage pre-paid envelope.

iv. *Grounds for Default.* The City shall have the right to declare the Contractor in default:

1. Upon a breach by the Contractor of a material term or condition of this Contract, including unsatisfactory performance of the services;

2. Upon insolvency or the commencement of any proceeding by or against the Contractor, either voluntarily or involuntarily, under the Bankruptcy Code or relating to the insolvency, receivership, liquidation, or composition of the Contractor, for the benefit of creditors;

3. If the Contractor refuses or fails to proceed with the services under the Contract when and as directed by the Commissioner;

4. If the Contractor or any of its officers, directors, partners, five percent (5%) or greater shareholders, principals, or other employee or person substantially involved in its activities are indicted or convicted after execution of the Contract under any state or federal law of any of the following:

a. a criminal offense incident to obtaining or attempting to obtain or performing a public or private contract;

b. fraud, embezzlement, theft, bribery, forgery, falsification, or destruction of records, or receiving stolen property;

c. a criminal violation of any state or federal antitrust law;

d. violation of the Racketeer Influence and Corrupt Organization Act, 18 U.S.C. § 1961 et seq., or the Mail Fraud Act, 18

U.S.C. § 1341 et seq., for acts in connection with the submission of bids or proposals for a public or private contract;

e. conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any statute described in subparagraph (d) above; or

f. an offense indicating a lack of business integrity that seriously and directly affects responsibility as a City vendor.

5. If the Contractor or any of its officers, directors, partners, five percent (5%) or greater shareholders, principals, or other employee or person substantially involved in its activities are subject to a judgment of civil liability under any state or federal antitrust law for acts or omissions in connection with the submission of bids or proposals for a public or private contract; or

6. If the Contractor or any of its officers, directors, partners, five percent (5%) or greater shareholders, principals, or other employee or person substantially involved in its activities makes or causes to be made any false, deceptive, or fraudulent material statement, or fail to make a required material statement in any bid, proposal, or application for City or other government work.

v. *Basis of Settlement.* The City shall not incur or pay any further obligation pursuant to this Contract beyond the termination date set by the City in its Notice of Termination. The City shall pay for satisfactory services provided in accordance with this Contract prior to the termination date. In addition, any obligation necessarily incurred by the Contractor on account of this Contract prior to receipt of notice of termination and falling due after the termination date shall be paid by the City in accordance with the terms of this Contract. In no event shall such obligation be construed as including any lease or other occupancy agreement, oral or written, entered into between the Contractor and its landlord.

b. **Termination for Convenience.** The City shall have the right to terminate the Contract for convenience, by providing written notice ("Notice of Termination") according to the following procedure. The Notice of Termination shall specify the applicable provision(s) under which the Contract is terminated and the effective date of termination, which shall be not less than 10 calendar days from the date the notice is personally delivered or 15 days from the date the Notice of Termination is sent by another method. The Notice of Termination shall be personally

delivered, sent by certified mail return receipt requested, or sent by fax and deposited in a post office box regularly maintained by the United States Postal Service in a postage pre-paid envelope. The basis of settlement shall be as provided for in subparagraph (iv) of paragraph (a) of subdivision (2) of this section (B), above.

**c. Termination due to Force Majeure**

- i. For purposes of this Contract, a force majeure event is an act or event beyond the control and without any fault or negligence of the Contractor ("Force Majeure Event"). Force Majeure Events may include, but are not limited to, fire, flood, earthquake, storm or other natural disaster, civil commotion, war, terrorism, riot, and labor disputes not brought about by any act or omission of the Contractor.
- ii. In the event the Contractor cannot comply with the terms of the Contract (including any failure by the Contractor to make progress in the performance of the services) because of a Force Majeure Event, then the Contractor may ask the Commissioner to excuse the nonperformance and/or terminate the Contract. If the Commissioner, in his or her reasonable discretion, determines that the Contractor cannot comply with the terms of the Contract because of a Force Majeure Event, then the Commissioner shall excuse the nonperformance and may terminate the Contract. Such a termination shall be deemed to be without cause.
- iii. If the City terminates the Contract due to a Force Majeure Event, the basis of settlement shall be as provided for in subparagraph (iv) of paragraph (a) of subdivision (2) of this section (B), above.

**d. Termination due to Reductions in Federal Funding**

- i. This Contract is funded in whole or in part by funds secured from the Federal government. Should the Federal government reduce or discontinue such funds, the City shall have, in its sole discretion, the right to terminate this Contract in whole or in part, or to reduce the funding and/or level of services of this Contract caused by such action by the Federal government, including, in the case of the reduction option, but not limited to, the reduction or elimination of programs, services or service components; the reduction or elimination of contract-reimbursable staff or staff-hours, and corresponding reductions in the budget of this Contract and in the total amount payable under this Contract. Any reduction in funds pursuant to this

paragraph shall be accompanied by an appropriate reduction in the services performed under this Contract.

- ii. In the case of the reduction option referred to in subparagraph (i), above, any such reduction shall be effective as of the date set forth in a written notice thereof to the Contractor, which shall be not less than 30 calendar days from the date of such notice. Prior to sending such notice of reduction, the City shall advise the Contractor that such option is being exercised and afford the Contractor an opportunity to make within seven calendar days any suggestion(s) it may have as to which program(s), service(s), service component(s), staff or staff-hours might be reduced or eliminated, provided, however, that the City shall not be bound to utilize any of the Contractor's suggestions and that the City shall have sole discretion as to how to effectuate the reductions.
- iii. If the City reduces funding pursuant to this paragraph (c), the basis of settlement shall be as provided for in subparagraph (iv) of paragraph (a) of subdivision (2) of this section (B), above.

**C. Standard Provisions.** The Contractor shall comply with, include in its subcontracts, and cause its subcontractors to comply with the following provisions, as applicable:

- (1) *Reporting.* Contractor shall be required to produce and deliver such reports relating to the services performed under the Contract as may be required by the Awarding Entity, City or any other State or Federal governmental agency with jurisdiction.
- (2) *Non-Discrimination.* Contractor shall not violate any Federal, State, or City law prohibiting discrimination concerning employment, the provision of services, and, if applicable, housing, funded by this Contract.
- (3) *Environmental Protection.* If the Contract is in excess of \$150,000, the Contractor shall comply with all applicable standards, orders, or regulations issued under the Clean Air Act (42 U.S.C. § 7401-7671q), Federal Water Pollution control Act (33 U.S.C. §§ 1251-1387) Section 508 of the Clean Water Act (33 U.S.C. § 1368), Executive Order 11738, and Environmental Protection Agency regulations (provisions of 40 CFR Part 50 and 2 CFR Part 1532 related to the Clean Air Act and Clean Water Act). Violations must be reported to the Federal Agency and the Regional Office of the Environmental Protection Agency (EPA). The Contractor shall include this provision in all subcontracts.
- (4) *Energy Efficiency.* The Contractor shall comply with mandatory standards and policies relating to energy efficiency that are contained in the New York State energy conservation plan issued in compliance with the Energy Policy Conservation Act (Pub. L. 94-163).
- (5) *Debarment.* The Contractor certifies that neither it nor its principals is currently in a state of debarment, suspension, or other ineligible status as a result of prior performance, failure, fraud, or violation of City laws. The Contractor further certifies that neither it nor

its principals is debarred, suspended, otherwise excluded from or ineligible for participation in Federal assistance programs. The City reserves the right to terminate this Contract if knowledge of debarment, suspension or other ineligibility has been withheld by the Contractor.

(6) *Lobbying.* The Contractor certifies, to the best of its knowledge and belief, that:

(a) No Federal appropriated funds have been paid or will be paid, by or on behalf of it, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement;

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, it will complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," (which is available on the HUD website or here: <https://www.hudexchange.info/resources/documents/HUD-Form-Sflll.pdf>) in accordance with its instructions; and

~~(c) It will require that the language of this Section (C)(6) be included in the award documents for all subcontracts at all tiers.~~

(d) This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. § 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

(7) *Solid Waste Disposal Act.* Pursuant to 2 CFR § 200.322, Contractor must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (codified at 42 USC § 6962). The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$ 10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$ 10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

(8) *Documentation of Costs.* All costs shall be supported by properly executed payrolls, time records, invoices, or vouchers, or other official documentation evidencing in proper detail the nature and propriety of the charges. All checks, payrolls, invoices, contracts,



vouchers, orders or other accounting documents, pertaining in whole or in part to the Agreement, shall be clearly identified and regularly accessible.

(9) *Records Retention.* The Contractor shall retain all books, documents, papers, and records relating to the services performed under the Contract for three years after final payment under the Contract is made and all other pending matters are closed.

(10) *Records Access.* The Contractor shall grant access to the City, State or any other pass-through entity, the Federal Agency, Inspectors General, and/or the Comptroller General of the United States, or any of their duly authorized representatives, to any books, documents, papers, and/or records of the Contractor that are pertinent to the Contract for the purpose of making audits, examinations, excerpts, and transcripts. The right also includes timely and reasonable access to the Contractor's personnel for the purpose of interview and discussion related to such documents. The rights of access in this section are not limited to the required retention period but last as long as the records are retained.

(11) *Small Firms, M/WBE Firms, and Labor Surplus Area Firms.* Contractor shall take the following affirmative steps in the letting of subcontracts, if subcontracts are to be let, in order to ensure that minority firms, women's business enterprises, and labor surplus area firms are used when possible:

- a. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
- b. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
- c. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
- d. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and
- e. Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce.

(12) *Intangible Property.*

- a. Pursuant to 2 CFR § 200.315(d), the Government reserves a royalty-free, non-exclusive, and irrevocable right to obtain, reproduce, publish, or otherwise use, and to authorize others to use, for Government purposes: (a) the copyright in any work developed under the Contract or subcontract; and (b) any rights of copyright to which a Contractor purchases ownership with grant support.

b. Any reports, documents, data, photographs, deliverables, and/or other materials produced pursuant to the Contract ("Copyrightable Materials"), and any and all drafts and/or other preliminary materials in any format related to such items produced pursuant to the contract, shall upon their creation become the exclusive property of the City. The 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 Contractor 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 Contractor shall retain no copyright or intellectual property interest in the Copyrightable Materials. The Copyrightable Materials shall be used by the Contractor for no purpose other than in the performance of this Contract without the prior written permission of the City. The City may grant the Contractor a license to use the Copyrightable Materials on such terms as determined by the City and set forth in the license.

c. ~~The Contractor 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 Contractor shall fully cooperate in this effort, and agrees to provide any and all documentation necessary to accomplish this.~~

d. The Contractor 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 Contractor has obtained all necessary permissions and clearances, in writing, for the use of such non-original material under this Contract, copies of which shall be provided to the City upon execution of this Contract.

e. The Contractor shall promptly and fully report to the City any discovery or invention arising out of or developed in the course of performance of this Contract and the Contractor shall promptly and fully report to the Government to make a determination as to whether patent protection on such invention shall be sought and how the rights in the invention or discovery,

including rights under any patent issued thereon. shall be disposed of and administered in order to protect the public interest.

- f. If the Contractor publishes a work dealing with any aspect of performance under this Agreement, or with the results of such performance, the City shall have a royalty-free, non-exclusive irrevocable license to reproduce, publish, or otherwise use such work for City governmental purposes.

**D. Special Provisions for Construction Contracts.** If this Contract involves Construction work, design for Construction, or Construction services, all such work or services performed by the Contractor and its subcontractors shall be subject to the following requirements in addition to those set forth above in paragraphs (A), (B), and (C):

(1) *Federal Labor Standards.* The Contractor will comply with the following:

- a. The Davis-Bacon Act (40 U.S.C. §§ 3141-3148): If required by the federal program legislation, in Construction contracts involving an excess of \$2000, and subject to any other federal program limitations, all laborers and mechanics must be paid at a rate not less than those determined by the Secretary of Labor to be prevailing for the City, which rates are to be provided by the City. These wage rates are a federally mandated minimum only, and will be superseded by any State or City requirement mandating higher wage rates. The Contractor also agrees to comply with Department of Labor Regulations pursuant to the Davis-Bacon Act found in 29 CFR Parts 1, 3, 5 and 7 which enforce statutory labor standards provisions.
- b. If required by the federal program legislation and subject to any other federal program limitations, Sections 103 and 107 of the Contract Work Hours and Safe Standards Act (40 U.S.C. §§ 3701-3708), which provides that no laborer or mechanic shall be required or permitted to work more than eight hours in a calendar day or in excess of forty hours in any workweek, unless such laborer or mechanic is paid at an overtime rate of 1½ times his/her basic rate of pay for all hours worked in excess of these limits, under any Construction contract costing in excess of \$2000. In the event of a violation of this provision, the Contractor shall not only be liable to any affected employee for his/her unpaid wages, but shall be additionally liable to the United States for liquidated damages.
- c. The Copeland “Anti-Kickback” Act (18 U.S.C. § 874), as supplemented by the regulations contained in 29 CFR Part 3, requiring that all laborers and mechanics shall be paid unconditionally and not less often than once a week, and prohibiting all but “permissible” salary deductions.

- d. If this Contract involves Construction work, design for Construction, or Construction services, a more complete detailed statement of Federal Labor Standards annexed hereto as FEDERAL EXHIBIT 2.

(2) *Equal Employment Opportunity*. Executive Order 11246, as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR chapter 60) for Construction contracts or subcontracts in excess of \$10,000. The Contractor shall include the notice found at FEDERAL EXHIBIT 1 in all Construction subcontracts. For the purposes of the Equal Opportunity Construction Contract Specifications and Clause below, the term "Construction Work" means the construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways, or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection, and other onsite functions incidental to the actual construction .

**Standard Federal Equal Employment Opportunity Construction Contract Specifications for Contracts and Subcontracts in Excess of \$10,000.**

- 1. As used in these specifications:
  - a. "Covered area" means the geographical area described in the solicitation from which this Contract resulted;
  - b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
  - c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
  - d. "Minority" includes:
    - (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
    - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
    - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
    - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
- 2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any Construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this Contract resulted.
- 3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area

(including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this Contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each Construction trade in which it has employees in the covered area. Covered Construction Contractors performing Construction Work in geographical areas where they do not have a Federal or federally assisted Construction contract shall apply the minority and female goals established for the geographical areas where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each Construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to

community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organization's responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; ~~by publicizing it in the company newspaper, annual report, etc.;~~ by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where Construction Work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of Construction Work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above,

describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female Construction contractors and suppliers, including circulation of solicitations to minority and female Contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a Contractor association, joint Contractor-union, Contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the Program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246 or suspended or is otherwise excluded from or ineligible for participation in federal assistance programs.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, ~~Construction-trade, union-affiliation-if-any, employee-identification-~~ number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for hiring of local or other areas residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

(3) **Equal Opportunity Clause** (for contracts for Construction Work) required by 41 CFR § 60-1.4(b).

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:



Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering

agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

**E. Rights to Inventions. [Special Provisions For Contracts Involving Experimental, Developmental, or Research Work.]**

(1) If this Contract involves the performance of experimental, developmental, or research work by the Contractor or its subcontractors, and the entity performing such work is a Nonprofit Organization or Small Business Firm as defined below, the following provisions apply in addition to those set forth above in paragraphs (A), (B), and (C), unless the Contract specifically states that this provision is superseded:

*a. Definitions.* The following definitions apply to this section (D).

- i. "Invention" means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code, or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. § 2321 *et seq.*).
- ii. "Subject-invention" means any invention of the Contractor conceived or first actually reduced to practice in the performance of work under this Contract, provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d)) must also occur during the period of Contract performance.
- iii. "Practical Application" means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or government regulations, available to the public on reasonable terms.
- iv. "Made" when used in relation to any invention means the conception or first actual reduction to practice of such invention.
- v. "Small Business Firm" means a small business concern as defined at section 2 of Pub. L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this clause, the size standards for small business

concerns involved in government procurement and subcontracting at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.

- vi. "Nonprofit Organization" means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c) and exempt from taxation under section 501(a) of the Internal Revenue Code (25 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.
- b. *Allocation of Principal Rights.* The Contractor may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any subject invention in which the Contractor retains title, the Federal government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.
- c. *Invention Disclosure, Election of Title and Filing of Patent Application by Contractor.*
  - i. The Contractor will disclose each subject invention to the City and the Federal Agency within two months after the inventor discloses it in writing to Contractor personnel responsible for patent matters. Such disclosure shall be in the form of a written report and shall identify the contract under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after such disclosure, the Contractor will promptly notify the City and the Federal Agency of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the Contractor.
  - ii. The Contractor will elect in writing whether or not to retain title to any such invention by notifying the City and the Federal Agency within two years of disclosure to the City and the Federal Agency. However, in any case

where publication, on sale or public use has initiated the one year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the Federal Agency to a date that is no more than 60 days prior to the end of the statutory period.

- iii. The Contractor will file its initial patent application on a subject invention to which it elects to retain title within one year after election of title or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The Contractor will file patent applications in additional countries or international patent offices within either ten months of the corresponding initial patent application or six months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.
- iv. Requests for extension of the time for disclosure, election, and filing under subparagraphs (1), (2), and (3) may be granted at the discretion of the Federal Agency.

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*d. Conditions-When-the-Government-May-Obtain-Title*

The Contractor will convey to the Federal Agency, upon written request, title to any subject invention --

- i. If the Contractor fails to disclose or elect title to the subject invention within the times specified in (c), above, or elects not to retain title; provided that the Federal Agency may only request title within 60 calendar days after learning of the failure of the Contractor to disclose or elect within the specified times.
- ii. In those countries in which the Contractor fails to file patent applications within the times specified in (c) above; provided, however, that if the Contractor has filed a patent application in a country after the times specified in (c) above, but prior to its receipt of the written request of the Federal Agency, the Contractor shall continue to retain title in that country.
- iii. In any country in which the Contractor decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in reexamination or opposition proceeding on, a patent on a subject invention.

e. Minimum Rights to Contractor and Protection of the Contractor Right to File

- i. The Contractor will retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, except if the Contractor fails to disclose the invention within the times specified in (c), above. The Contractor's license extends to its domestic subsidiary and affiliates, if any, within the corporate structure of which the Contractor is a party and includes the right to grant sublicenses of the same scope to the extent the Contractor was legally obligated to do so at the time the Contract was awarded. The license is transferable only with the approval of the Federal Agency except when transferred to the successor of that party of the Contractor's business to which the invention pertains.
- ii. The Contractor's domestic license may be revoked or modified by the funding Federal Agency to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR Part 404 and agency licensing regulations (if any). This license will not be revoked in that field of use or the geographical areas in which the Contractor has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the funding Federal Agency to the extent the Contractor, its licensees, or the domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.
- iii. Before revocation or modification of the license, the funding Federal Agency will furnish the Contractor a written notice of its intention to revoke or modify the license, and the Contractor will be allowed thirty calendar days (or such other time as may be authorized by the funding Federal Agency for good cause shown by the Contractor) after the notice to show cause why the license should not be revoked or modified. The Contractor has the right to appeal, in accordance with applicable regulations in 37 CFR Part 404 and Federal Agency regulations (if any) concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of the license.

f. Contractor Action to Protect the Government's Interest

- i. The Contractor agrees to execute or to have executed and promptly deliver to the Federal Agency all instruments necessary to (i) establish or confirm the rights the Government has throughout the world in those subject inventions to which the Contractor elects to retain title, and (ii) convey title to the Federal Agency when requested under paragraph (d) above and to enable the Government to obtain patent protection throughout the world in that subject invention.
- ii. The Contractor agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the Contractor each subject invention made under contract in order that the Contractor can comply with the disclosure provisions of paragraph (c), above, and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by (c)(1), above. The Contractor shall instruct such employees through employee agreements or other suitable educational programs on the importance of reporting inventions in ~~suffieient-time-to-permit-the-filing-of-patent-applications~~ prior to U.S. or foreign statutory bars.
- iii. The Contractor will notify the Federal Agency of any decisions not to continue the prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than thirty calendar days before the expiration of the response period required by the relevant patent office.
- iv. The Contractor agrees to include, within the specification of any United States patent applications and any patent issuing thereon covering a subject invention, the following statement, "This invention was made with government support under (identify the contract) awarded by (identify the Federal Agency). The government has certain rights in the invention."

g. Subcontracts

- i. The Contractor will include this clause, suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental or research work to be performed by a small business firm or domestic nonprofit organization. The subcontractor

will retain all rights provided for the Contractor in this clause, and the Contractor will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.

- ii. The Contractor will include in all other subcontracts, regardless of tier, for experimental developmental or research work the patent rights clause required by 2 CFR § 200.315(c) and Appendix II to 2 CFR Part 200.
- h. *Reporting on Utilization of Subject Inventions.* The Contractor agrees to submit on request periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the Contractor or its licensees or assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Contractor, and such other data and information as the Federal Agency may reasonably specify. The Contractor also agrees to provide additional reports as may be requested by the Federal Agency in connection with any march-in proceeding undertaken by the Federal Agency in accordance with paragraph (j) of this clause. As required by 35 U.S.C. § 202(c)(5), the Federal Agency agrees it will not disclose such information to persons outside the Government without permission of the Contractor.
- i. *Preference for United States Industry.* Notwithstanding any other provision of this clause, the Contractor agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject inventions in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal Agency upon a showing by the Contractor or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.
- j. *March-in Rights.* The Contractor agrees that with respect to any subject invention in which it has acquired title, the Federal Agency has the right in accordance with the procedures in 37 CFR § 401.6 and any supplemental regulations of the Federal Agency to require the Contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the Contractor, assignee, or exclusive licensee refuses such a request the Federal Agency has the right

to grant such a license itself if the Federal Agency determines that:

- i. Such action is necessary because the Contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use.
- ii. Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the Contractor, assignee or their licensees;
- iii. Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the Contractor, assignee or licensees; or
- iv. Such action is necessary because the agreement required by paragraph (i) of this clause has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

k. *Special Provisions for Contracts with Nonprofit Organizations.*  
If the Contractor is a nonprofit organization, it agrees that:

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- i. Rights to a subject invention in the United States may not be assigned without the approval of the Federal Agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions, provided that such assignee will be subject to the same provisions as the Contractor;
  - ii. The Contractor will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when the Federal Agency deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. § 202(e) and 37 CFR § 401.10;
  - iii. The balance of any royalties or income earned by the Contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, will be utilized for the support of scientific research or education; and
  - iv. It will make efforts that are reasonable under the circumstances to attract licensees of subject invention that are Small Business Firms and that it will give a



preference to a Small Business Firm when licensing a subject invention if the Contractor determines that the Small Business Firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not Small Business Firms; provided, that the Contractor is also satisfied that the Small Business Firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the Contractor. However, the Contractor agrees that the Secretary may review the Contractor's licensing program and decisions regarding Small Business Firm applicants, and the Contractor will negotiate changes to its licensing policies, procedures, or practices with the Secretary when the Secretary's review discloses that the Contractor could take reasonable steps to implement more effectively the requirements of this paragraph (k)(iv).

1. *Communication.* The central point of contact at the Federal Agency for communications on matters relating to this clause may be obtained from the City upon request.

NOTICE TO BIDDERS

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246, as amended) FOR ALL CONSTRUCTION CONTRACTS AND SUB-CONTRACTS IN EXCESS OF \$10,000.**

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all Construction Work in the covered area, are as follows:

Goals and Timetables for Minorities

<u>Trade</u>	<u>Goal</u> <u>(percent)</u>
Electricians .....	9.0 to 10.2
Carpenters .....	27.6 to 32.0
Steamfitters .....	12.2 to 13.5
Metal Lathers .....	24.6 to 25.6
Painters .....	28.6 to 26.0
Operating Engineers .....	25.6 to 26.0
Plumbers .....	12.0 to 14.5
Iron Workers (structural) .....	25.9 to 32.0
Elevator Constructors .....	5.5 to 6.5
Bricklayers .....	13.4 to 15.5
Asbestos Workers .....	22.8 to 28.0
Roofers .....	6.3 to 7.5
Iron Workers (ornamental) .....	22.4 to 23.0
Cement Masons .....	23.0 to 27.0
Glazers .....	16.0 to 20.0
Plasterers .....	15.8 to 18.0
Teamsters .....	22.0 to 22.5
Boilermakers .....	13.0 to 15.5
All Other .....	16.4 to 17.5

Goals and Timetables for Women

From April 1, 1980 until the present ..... 6.9

These goals are applicable to all the Contractor's Construction Work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs Construction Work in a geographical area located outside of the covered area, it shall apply the goals established for such

geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved Construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any Construction subcontract in excess of \$10,000 at any tier for Construction Work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Contract, the "covered area" is the City of New York.

**EXHIBIT 2**  
**Federal Labor Standards Provisions (Non-Davis Bacon)<sup>1</sup>**  
**Federal Emergency Management Agency**  
**(10/27/2015)**

**Applicability:** The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

**A. Compliance with the Copeland "Anti-Kickback" Act.**

1. **Contractor.** The contractor shall comply with 18 U.S.C. § 874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into this contract.
2. **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clause in paragraph 1 above and such other clauses as the FEMA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.
3. **Breach.** A breach of the contract clauses above may be grounds for termination of the contract, and for debarment as a contractor and subcontractor as provided in 29 C.F.R. § 5.12.

**B. Compliance with the Contract Work Hours and Safety Standards Act.** The provisions of this Section B are applicable where the amount of the prime contract exceeds \$100,000.

1. **Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
2. **Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph (1) of this Section B the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In

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<sup>1</sup> This version of Exhibit 2 applies to contracts funded by FEMA Grant and Cooperative Agreement Programs, including the Public Assistance Program. Do not use this version of Exhibit 2 in connection with FEMA programs that are subject to the Davis-Bacon Act; such programs are the Emergency Management Preparedness Grant Program, the Homeland Security Grant Program, Nonprofit Security Grant Program, Tribal Homeland Security Grant Program, Port Security Grant Program, and Transit Security Grant Program.

addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

3. **Withholding for unpaid wages and liquidated damages.** The City of New York shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.
4. **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) of this Section B and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section B.

C. **Health and Safety.** The provisions of this paragraph C are applicable where the amount of the prime contract exceeds \$100,000.

1. No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.
2. The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.
3. The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as FEMA or the Secretary of Labor shall direct as a means of enforcing such provisions.

**FEDERAL EMERGENCY MANAGEMENT AGENCY (“FEMA”) RIDER**  
**(10/27/2015)**

**For use with contracts funded by the FEMA Grant and Cooperative Agreement Programs,  
including the Public Assistance Program**

(This Rider should not be used with contracts funded by the following FEMA Programs: Emergency Management Preparedness Grant Program, Homeland Security Grant Program, Nonprofit Security Grant Program, Tribal Homeland Security Grant Program, Port Security Grant Program, and Transit Security Grant Program. This Rider should be accompanied by the Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts.)

1. Suspension and Debarment. Section C(5) of the Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts is supplemented with the following provisions:
  - (a) This contract is a covered transaction for purposes of 2 C.F.R. Parts 180 and 3000. As such the Contractor is required to verify that none of the Contractor, its principals (defined at 2 C.F.R. § 180.995), or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935). By entering into this contract, the Contractor certifies that it is in compliance with 2 C.F.R. Parts 180 and 3000.
  - (b) The Contractor must comply with 2 C.F.R. Part 180, subpart C and 2 C.F.R. Part 3000, subpart C during the term of this contract and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.
  - (c) The certification in paragraph (a), above, and section C(5) of the Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts is a material representation of fact relied upon by the City of New York. If it is later determined that the Contractor did not comply with 2 C.F.R. Part 180, subpart C and 2 C.F.R. Part 3000, subpart C, in addition to remedies available to the City of New York and, if applicable, the State of New York, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.
2. Davis-Bacon Act. For the purposes of Section D(1)(a) of the Uniform Federal Contract Provisions Rider, compliance with the Davis-Bacon Act (40 U.S.C. §§ 3141-3148) is not required of the Contractor pursuant to FEMA regulations. However, if this Contract is funded by another federal funding source (e.g., the U.S. Department of Housing and Urban Development CDBG or CDBG-DR programs), compliance with the Davis-Bacon Act is required to the extent required by law and as set forth in the contract documents.
3. Rights to Inventions Made Under a Contract or Agreement. Section E of the Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts does not

apply to the following FEMA Programs: Public Assistance Program, Hazard Mitigation Grant Program, Fire Management Assistance Grant Program, Crisis Counseling Assistance and Training Grant Program, Disaster Case Management Program, and Federal Assistance to Individuals and Households – Other Needs Assistance Grant Program.

4. Copeland “Anti-Kickback” Act. The Contractor shall comply with provisions of the Copeland “Anti-Kickback” Act (18 U.S.C. § 874) as delineated in the Uniform Federal Contract Provisions Rider, FEMA Exhibit 2, Section (A).
5. Contract Work Hours and Safety Standards Act. The Contractor shall comply with the provisions of the Contract Work Hours and Safety Standards Act as delineated in the Uniform Federal Contract Provisions Rider, FEMA Exhibit 2, Section (B).
6. Access to Records.
  - (a) The Contractor agrees to provide the City of New York, the FEMA Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.
  - (b) The Contractor agrees to permit any of the foregoing parties to reproduce said documents by any means or to copy excerpts and transcriptions as reasonably needed.
  - (c) The Contractor agrees to provide the FEMA Administrator or his/her authorized representative access to construction or other work sites pertaining to the work being completed under the contract.
7. Logos. The Contractor shall not use DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre-approval.
8. Compliance with Law. The Contractor acknowledges that FEMA financial assistance will be used to fund the contract only and agrees to comply with all applicable federal law, regulations, executive orders, FEMA policies, procedures, and directives.
9. Federal Government not a Party. The Contractor acknowledges and understands that the Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the City, Contractor or any other party pertaining to any matter resulting from the contract.
10. False Claims. The Contractor acknowledges that 31 U.S.C. Chap. 38 applies to the Contractor’s actions pertaining to this contract.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**LABOR LAW ARTICLE 8 - NYC PUBLIC WORKS**

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 Article 8 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 projects. Prevailing rates are required to be annexed to and form part of the public work contract pursuant to § 220 (3).

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 work contracts. Contractors are advised to review the Comptroller's Prevailing Wage Schedule before bidding on public work contracts. Contractors with questions concerning trade classifications, prevailing rates or prevailing practices with respect to public work 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 work 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 work 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 [comptroller.nyc.gov/wages](http://comptroller.nyc.gov/wages). 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 [comptroller.nyc.gov/wages](http://comptroller.nyc.gov/wages).

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  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Prevailing rates and ratios for apprentices are published in the Construction Apprentice Prevailing Wage Schedule. 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 paid at the apprentice rates. Apprentices who are not so registered must be paid as journey persons.

New York City public work projects 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:

<https://www1.nyc.gov/site/mocs/contract/project-labor-agreements.page>

All the provisions of Labor Law Article 8 remain applicable to PLA work including, but not limited to, the enforcement of prevailing wage requirements by the Comptroller in accordance with the trade classifications in this schedule; 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.

Paid Holidays, Vacation and Sick Leave when listed must be paid or provided in addition to the prevailing hourly supplemental benefit rate.

For more information, please refer to the Comptroller's Prevailing Wage Law Regulations in Title 44 of the Rules of the City of New York, Chapter 2, available at [comptroller.nyc.gov/wages](http://comptroller.nyc.gov/wages).

Wasył Kinach, P.E.  
Director of Classifications  
Bureau of Labor Law

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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**ASBESTOS HANDLER**  
**SEE HAZARDOUS MATERIAL HANDLER**

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**BLASTER**

**Blaster**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$55.21**

Supplemental Benefit Rate per Hour: **\$42.53**

**Blaster- Hydraulic Trac Drill**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$49.35**

Supplemental Benefit Rate per Hour: **\$42.53**

**Blaster - Wagon: Air Trac: Quarry Bar: Drillrunners**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$48.52**

Supplemental Benefit Rate per Hour: **\$42.53**

**Blaster - Journeyperson**

(Laborer, Chipper/Jackhammer including Walk Behind Self Propelled Hydraulic Asphalt and Concrete Breakers and Hydro (Water) Demolition, Powder Carrier, Hydraulic Chuck Tender, Chuck Tender and Nipper)

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$42.00**

Supplemental Benefit Rate per Hour: **\$42.53**

**Blaster - Magazine Keepers: (Watch Person)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$21.00**

Supplemental Benefit Rate per Hour: **\$42.53**

**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  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

### 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)

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## BOILERMAKER

### Boilermaker

Effective Period: 7/1/2018 - 6/30/2019

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

### 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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)

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## **BRICKLAYER**

### **Bricklayer**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$55.10**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Thanksgiving Day  
Christmas Day

**Paid Holidays**

None

**Shift Rates**

Overtime rates to be paid outside the regular scheduled work day.

(Bricklayer District Council)

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**CARPENTER - BUILDING COMMERCIAL**

**Building Commercial**

Effective Period: 7/1/2018 - 6/30/2019

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

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

**Paid Holidays**

None

**Shift Rates**

The employer may work two (2) shifts with the first shift at the straight time wage rate starting at the established time between 7 a.m. and 9 a.m. The second shift will receive one hour at the double time rate of pay for the last hour of the shift; eight (8) hours pay for seven (7) hours of work, nine (9) hours pay for eight (8) hours of work.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

When it is not possible to conduct alteration work during regular working hours in a building occupied by tenants, the rule for the second shift will apply.

(Carpenters District Council)

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**CARPENTER - HEAVY CONSTRUCTION WORK**  
(Construction of Engineering Structures and Building Foundations)

**Heavy Construction Work**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$53.63**

Supplemental Benefit Rate per Hour: **\$50.67**

**Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

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**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)

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## **CARPENTER - HIGH RISE CONCRETE FORMS** **(Excludes Engineering Structures and Building Foundations)**

### **Carpenter High Rise A**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$50.78**

Supplemental Benefit Rate per Hour: **\$43.34**

### **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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$40.19**

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

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: 7/1/2018 - 6/30/2019

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

### **Shift Rates**

The second shift will receive one hour at the double time rate of pay for the last hour of the shift; eight hours pay for seven hours of work, nine hours pay for eight hours of work. There must be a first shift in order to work a second shift.

(Carpenters District Council)

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## **CEMENT & CONCRETE WORKER**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**Cement & Concrete Worker**

Effective Period: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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**

1/2 day before Christmas Day

1/2 day before New Year's Day

**Shift Rates**

On shift work extending over a twenty-four hour period, all shifts are paid at straight time.

(Cement Concrete Workers District Council)

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## CEMENT MASON

### Cement Mason

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$43.97**

Supplemental Benefit Rate per Hour: **\$39.71**

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

### 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

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### 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)

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## CORE DRILLER

### Core Driller

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$39.69**

Supplemental Benefit Rate per Hour: **\$25.45**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**Core Driller Helper**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$31.62**

Supplemental Benefit Rate per Hour: **\$25.45**

**Core Driller Helper(Third year in the industry)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$28.46**

Supplemental Benefit Rate per Hour: **\$25.45**

**Core Driller Helper (Second year in the industry)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$25.30**

Supplemental Benefit Rate per Hour: **\$25.45**

**Core Driller Helper (First year in the industry)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$22.13**

Supplemental Benefit Rate per Hour: **\$25.45**

**Overtime Description**

Time and one half the regular rate for work on a holiday plus Holiday pay when worked.

**Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Time and one half the regular rate for work on the following holiday(s).

**Paid Holidays**

New Year's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

**Shift Rates**

The shift day shall be the continuous eight and one-half (8½) hours from 6:00 A.M. to 2:30 P.M. and from 2:30 P.M. to 11:00 P.M., including one-half (½) hour of employees regular rate of pay for lunch. When two (2) or more shifts are employed, single time shall be paid for each shift, but those employees employed on a shift other than from 8:00 A.M. to 5:00 P.M. shall, in addition, receive seventy-five cents (\$0.75) per hour differential for each hour worked. When three (3) shifts are needed, each shift shall work seven and one-half (7 ½) hours paid for eight (8) hours of labor and be permitted one-half (½) hour for mealtime.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

(Carpenters District Council)

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## **DERRICKPERSON AND RIGGER**

### **Derrick Person & Rigger**

Effective Period: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

### **Paid Holidays**

1/2 day on Christmas Eve if work is performed in the A.M.

(Local #197)

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

## DIVER

### Diver (Marine)

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$67.94**

Supplemental Benefit Rate per Hour: **\$50.67**

### Diver Tender (Marine)

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$48.24**

Supplemental Benefit Rate per Hour: **\$50.67**

### Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

### Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

### Paid Holidays

None

### Shift Rates

When three shifts are utilized each shift shall work seven and one half-hours (7 1/2 hours) and paid for 8 hours, allowing for one half hour for lunch.

(Carpenters District Council)

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## DOCKBUILDER - PILE DRIVER

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**Dockbuilder - Pile Driver**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$53.63**

Supplemental Benefit Rate per Hour: **\$50.67**

**Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

**Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

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)

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**DRIVER: TRUCK (TEAMSTER)**

**Driver - Dump Truck**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$41.18**

Supplemental Benefit Rate per Hour: **\$47.22**

Supplemental Note: Over 40 hours worked: at time and one half rate - \$20.58; at double time rate - \$27.44

**Driver - Tractor Trailer**

Effective Period: 7/1/2018 - 6/30/2019



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$42.97**

Supplemental Benefit Rate per Hour: **\$47.15**

Supplemental Note: Over 40 hours worked: at time and one half rate - \$18.30; at double time rate - \$24.41

**Driver - Euclid & Turnapull Operator**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$43.53**

Supplemental Benefit Rate per Hour: **\$47.15**

Supplemental Note: Over 40 hours worked: at time and one half rate - \$18.30 at double time rate - \$24.41

**Overtime Description**

For Paid Holidays: Holiday pay for all holidays shall be prorated based two hours per day for each day worked in the holiday week, not to exceed 8 hours of holiday pay. For Thanksgiving week, the prorated share shall be 5 1/3 hours of holiday pay for each day worked in Thanksgiving week.

**Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

**Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

**Paid Holidays**

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

**Shift Rates**

Off single shift work commencing between 6:00 P.M. and 5:00 A.M. shall work eight and one half (8 1/2) hours allowing for one half hour for lunch and be paid 117.3% of the straight time hourly wage rate.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**Driver Redi-Mix (Sand & Gravel)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$38.40**

Supplemental Benefit Rate per Hour: **\$44.12**

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

Election Day

Thanksgiving Day

Christmas Day

(Local #282)

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**ELECTRICIAN**

(Including installation of low voltage cabling carrying data, video and/or voice on building construction/alteration/renovation projects.)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**Electrician "A" (Regular Day / Day Shift)**

Effective Period: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$84.00

Supplemental Benefit Rate per Hour: \$59.23

**Electrician "A" (Swing Shift)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$65.71

Supplemental Benefit Rate per Hour: \$63.52

**Electrician "A" (Swing Shift Overtime After 7.5 hours)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$98.57

Supplemental Benefit Rate per Hour: \$67.64

**Electrician "A" (Graveyard Shift)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$73.60

Supplemental Benefit Rate per Hour: \$70.09

**Electrician "A" (Graveyard Shift Overtime After 7 hours)**

Effective Period: 7/1/2018 - 6/30/2019

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Independence Day  
Labor Day  
Columbus Day  
Veteran's Day  
Thanksgiving Day  
Day after Thanksgiving  
Christmas Day

### **Paid Holidays**

None

### **Shift Rates**

When so elected by the Employer, one or more shifts of at least five days duration may be scheduled as follows:  
Day Shift: 8:00 am to 4:30 pm, Swing Shift 4:30 pm to 12:30 am, Graveyard Shift: 12:30 am to 8:00 am.

For multiple shifts of temporary light and/or power, the temporary light and/or power employee shall be paid for 8 hours at the straight time rate. For three or less workers performing 8 hours temporary light and/or power the supplemental benefit rate is \$25.92.

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### **Electrician "M" (First 8 hours)**

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

Effective Period: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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  
CONSTRUCTION WORKER 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)

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**ELECTRICIAN - ALARM TECHNICIAN**

(Scope of Work - Inspect, test, repair, and replace defective, malfunctioning, or broken devices, components and controls of Fire, Burglar and Security Systems)

**Alarm Technician**

Effective Period: 7/1/2018 - 3/9/2019

Wage Rate per Hour: **\$32.90**

Supplemental Benefit Rate per Hour: **\$16.82**

Supplemental Note: \$15.32 only after 8 hours worked in a day

Effective Period: 3/10/2019 - 6/30/2019

Wage Rate per Hour: **\$33.40**

Supplemental Benefit Rate per Hour: **\$17.68**

Supplemental Note: \$16.06 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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Time and one half the regular rate for Saturday.  
Double time the regular rate for Sunday.

**Paid Holidays**

- New Year's Day
- Martin Luther King Jr. Day
- President's Day
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Veteran's Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Day

**Shift Rates**

Night Differential is based upon a ten percent (10%) differential between the hours of 4:00 P.M. and 12:30 A.M. and a fifteen percent (15%) differential for the hours 12:00 A.M. to 8:00 A.M.

**Vacation**

- At least 1 year of employment.....ten (10) days
- 5 years or more of employment.....fifteen (15) days
- 10 years of employment.....twenty (20) days
- Plus one Personal Day per year

**Sick Days:**

One day per Year. Up to 4 vacation days may be used as sick days.

(Local #3)

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**ELECTRICIAN-STREET LIGHTING WORKER**

**Electrician - Electro Pole Electrician**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$56.00  
Supplemental Benefit Rate per Hour: \$57.63

**Electrician - Electro Pole Foundation Installer**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$42.16  
Supplemental Benefit Rate per Hour: \$42.19

**Electrician - Electro Pole Maintainer**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019

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)

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## ELEVATOR CONSTRUCTOR

### Elevator Constructor

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$64.48

Supplemental Benefit Rate per Hour: \$35.80

### 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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**Overtime**

Double time the regular rate for work on the following holiday(s).

**Paid Holidays**

New Year's Day  
President's Day  
Good Friday  
Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Veteran's Day  
Thanksgiving Day  
Day after Thanksgiving  
Christmas Day

**Vacation**

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

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**ELEVATOR REPAIR & MAINTENANCE**

**Elevator Service/Modernization Mechanic**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$50.49

Supplemental Benefit Rate per Hour: \$35.65

**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



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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)

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## ENGINEER

### Engineer - Heavy Construction Operating Engineer I

Cherry pickers 20 tons and over and Loaders (rubber tired and/or tractor type with a manufacturer's minimum rated capacity of six cubic yards and over).

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$68.99**

Supplemental Benefit Rate per Hour: **\$38.28**

Supplemental Note: \$69.16 on overtime

Shift Wage Rate: **\$110.38**

### Engineer - Heavy Construction Operating Engineer II

Backhoes, Basin Machines, Groover, Mechanical Sweepers, Bobcat, Boom Truck, Barrier Transport (Barrier Mover) & machines of similar nature. Operation of Churn Drills and machines of a similar nature, Stetco Silent Hoist and machines of similar nature, Vac-Alls, Meyers Machines, John Beam and machines of a similar nature, Ross Carriers and Travel Lifts and machines of a similar nature, Bulldozers, Scrapers and Turn-a-Pulls: Tugger Hoists (Used exclusively for handling excavated material); Tractors with attachments, Hyster and Roustabout Cranes, Cherry pickers. Austin Western, Grove and machines of a similar nature, Scoopmobiles, Monorails, Conveyors, Trenchers: Loaders-Rubber Tired and Tractor: Barber Greene and Eimco Loaders and Eimco Backhoes; Mighty Midget and similar breakers and Tampers, Curb and Gutter Pavers and Motor Patrol, Motor Graders and all machines of a similar nature. Locomotives 10 Tons or under. Mini-Max, Break-Tech and machines of a similar nature; Milling machines, robotic and demolition machines and machines of a similar nature, shot blaster, skid steer machines and machines of a similar nature including bobcat, pile rig rubber-tired excavator (37,000 lbs. and under), 2 man auger.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$66.92**

Supplemental Benefit Rate per Hour: **\$38.28**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Supplemental Note: \$69.16 on overtime  
Shift Wage Rate: \$107.07

**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: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$63.44  
Supplemental Benefit Rate per Hour: \$38.28  
Supplemental Note: \$69.16 on overtime  
Shift Wage Rate: \$101.50

**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: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$66.60  
Supplemental Benefit Rate per Hour: \$38.28  
Supplemental Note: \$69.16 on overtime  
Shift Wage Rate: \$106.56

**Engineer - Heavy Construction Maintenance Engineer II**

On Base Mounted Tower Cranes

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$87.74  
Supplemental Benefit Rate per Hour: \$38.28  
Supplemental Note: \$69.16 on overtime  
Shift Wage Rate: \$140.38

**Engineer - Heavy Construction Maintenance Engineer III**

On Generators, Light Towers

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$43.66

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: **\$38.28**  
Supplemental Note: \$69.16 on overtime  
Shift Wage Rate: **\$69.86**

**Engineer - Heavy Construction Maintenance Engineer IV**

On Pumps and Mixers including mud sucking

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$44.82**  
Supplemental Benefit Rate per Hour: **\$38.28**  
Supplemental Note: \$69.16 on overtime  
Shift Wage Rate: **\$71.71**

**Engineer - Heavy Construction Oilers I**

Gradalls, Cold Planer Grader, Concrete Pumps, Driving Truck Cranes, Driving and Operating Fuel and Grease Trucks.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$59.97**  
Supplemental Benefit Rate per Hour: **\$38.28**  
Supplemental Note: \$69.16 on overtime  
Shift Wage Rate: **\$95.95**

**Engineer - Heavy Construction Oilers II**

All gasoline, electric, diesel or air operated Shovels, Draglines, Backhoes, Keystones, Pavers, Gunite Machines, Battery of Compressors, Crawler Cranes, two-person Trenching Machines.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$41.22**  
Supplemental Benefit Rate per Hour: **\$38.28**  
Supplemental Note: \$69.16 on overtime  
Shift Wage Rate: **\$65.95**

**Engineer - Steel Erection Maintenance Engineers**

Derrick, Travelers, Tower, Crawler Tower and Climbing Cranes

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$63.75**  
Supplemental Benefit Rate per Hour: **\$38.28**  
Supplemental Note: \$69.16 on overtime  
Shift Wage Rate: **\$102.00**

**Engineer - Steel Erection Oiler I**

On a Truck Crane

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$59.61**

Supplemental Benefit Rate per Hour: **\$38.28**

Supplemental Note: \$69.16 on overtime

Shift Wage Rate: **\$95.38**

**Engineer - Steel Erection Oiler II**

On a Crawler Crane

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$45.16**

Supplemental Benefit Rate per Hour: **\$38.28**

Supplemental Note: \$69.16 on overtime

Shift Wage Rate: **\$72.26**

**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).

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**Paid Holidays**

New Year's Day

Lincoln's Birthday

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

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**Engineer - Building Work Maintenance Engineers I**

Installing, repairing, maintaining, dismantling (of all equipment including: Steel Cutting and Bending Machines, Mechanical Heaters, Mine Hoists, Climbing Cranes, Tower Cranes, Linden Peine, Lorain, Liebherr, Mannes, or machines of a similar nature, Well Point Systems, Deep Well Pumps, Concrete Mixers with loading Device, Concrete Plants, Motor Generators when used for temporary power and lights), skid steer machines of a similar nature including bobcat.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$61.05**  
Supplemental Benefit Rate per Hour: **\$38.28**  
Supplemental Note: \$69.16 on overtime

**Engineer - Building Work Maintenance Engineers II**

On Pumps, Generators, Mixers and Heaters

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$47.25**  
Supplemental Benefit Rate per Hour: **\$38.28**  
Supplemental Note: \$69.16 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: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$58.01**  
Supplemental Benefit Rate per Hour: **\$38.28**  
Supplemental Note: \$69.16 on overtime

**Engineer - Building Work Oilers II**

Oilers on Crawler Cranes, Backhoes, Trenching Machines, Guniting Machines, Compressors (three or more in Battery).

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$42.89**  
Supplemental Benefit Rate per Hour: **\$38.28**  
Supplemental Note: \$69.16 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Veteran's Day  
Thanksgiving Day  
Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

### Shift Rates

Off Shift: double time the regular hourly rate.

(Local #15)

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## ENGINEER - CITY SURVEYOR AND CONSULTANT

### Party Chief

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$39.90**

Supplemental Benefit Rate per Hour: **\$21.60**

Supplemental Note: Overtime Benefit Rate - \$29.83 per hour (time & one half) \$38.05 per hour (double time).

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### Instrument Person

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$32.81**

Supplemental Benefit Rate per Hour: **\$21.60**

Supplemental Note: Overtime Benefit Rate - \$29.83 per hour (time & one half) \$38.05 per hour (double time).

### Rodperson

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$28.34**

Supplemental Benefit Rate per Hour: **\$21.60**

Supplemental Note: Overtime Benefit Rate - \$29.83 per hour (time & one half) \$38.05 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Veteran's Day  
Thanksgiving Day  
Day after Thanksgiving  
Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

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**ENGINEER - FIELD (BUILDING CONSTRUCTION)**  
(Construction of Building Projects, Concrete Superstructures, etc.)

**Field Engineer - BC Party Chief**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$63.81**

Supplemental Benefit Rate per Hour: **\$33.93**

Supplemental Note: Overtime Benefit Rate - \$47.57 per hour (time & one half) \$61.21 per hour (double time).

**Field Engineer - BC Instrument Person**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$49.60**

Supplemental Benefit Rate per Hour: **\$33.93**

Supplemental Note: Overtime Benefit Rate - \$47.57 per hour (time & one half) \$61.21 per hour (double time).

**Field Engineer - BC Rodperson**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$32.11**

Supplemental Benefit Rate per Hour: **\$33.93**

Supplemental Note: Overtime Benefit Rate - \$47.57 per hour (time & one half) \$61.21 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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)

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**ENGINEER - FIELD (HEAVY CONSTRUCTION)**  
(Construction of Roads, Tunnels, Bridges, Sewers, Building Foundations,  
Engineering Structures etc.)

**Field Engineer - HC Party Chief**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$72.19**

Supplemental Benefit Rate per Hour: **\$35.32**

Supplemental Note: Overtime benefit rate - \$49.53 per hour (time & one half), \$63.74 per hour (double time).

**Field Engineer - HC Instrument Person**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$53.03**

Supplemental Benefit Rate per Hour: **\$35.32**

Supplemental Note: Overtime benefit rate - \$49.53 per hour (time & one half), \$63.74 per hour (double time).

**Field Engineer - HC Rodperson**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$44.51**

Supplemental Benefit Rate per Hour: **\$35.32**

Supplemental Note: Overtime benefit rate - \$49.53 per hour (time & one half), \$63.74 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



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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)

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## **ENGINEER - FIELD (STEEL ERECTION)**

### **Field Engineer - Steel Erection Party Chief**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$67.31**

Supplemental Benefit Rate per Hour: **\$34.82**

Supplemental Note: Overtime benefit rate - \$48.78 per hour (time & one half), \$62.74 per hour (double time).

### **Field Engineer - Steel Erection Instrument Person**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$52.47**

Supplemental Benefit Rate per Hour: **\$34.82**

Supplemental Note: Overtime benefit rate - \$48.78 per hour (time & one half), \$62.74 per hour (double time).

### **Field Engineer - Steel Erection Rodperson**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$35.14**

Supplemental Benefit Rate per Hour: **\$34.82**

Supplemental Note: Overtime benefit rate - \$48.78 per hour (time & one half), \$62.74 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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)

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## **ENGINEER - OPERATING**

### **Operating Engineer - Road & Heavy Construction I**

Back Filling Machines, Cranes, Mucking Machines and Dual Drum Paver.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$79.03**

~~Supplemental Benefit Rate per Hour: \$31.85~~

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: **\$126.45**

### **Operating Engineer - Road & Heavy Construction II**

Backhoes, Power Shovels, Hydraulic Clam Shells, Steel Erection, Moles and machines of a similar nature.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$81.79**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: **\$130.86**

### **Operating Engineer - Road & Heavy Construction III**

Mine Hoists, Cranes, etc. (Used as Mine Hoists)

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$84.39**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: **\$135.02**

### **Operating Engineer - Road & Heavy Construction IV**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Gradealls, Keystones, Cranes on land or water (with digging buckets), Bridge Cranes, Vermeer Cutter and machines of a similar nature, Trenching Machines.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$82.38**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: **\$131.81**

**Operating Engineer - Road & Heavy Construction V**

Pile Drivers & Rigs (employing Dock Builder foreperson): Derrick Boats, Tunnel Shovels.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$80.77**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: **\$129.23**

**Operating Engineer - Road & Heavy Construction VI**

Mixers (Concrete with loading attachment), Concrete Pavers, Cableways, Land Derricks, Power Houses (Low Air Pressure Units).

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$76.78**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: **\$122.85**

**Operating Engineer - Road & Heavy Construction VII**

Barrier Movers , Barrier Transport and Machines of a Similar Nature.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$62.16**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: **\$99.46**

**Operating Engineer - Road & Heavy Construction VIII**

Utility Compressors

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$48.42**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: **\$60.82**

**Operating Engineer - Road & Heavy Construction IX**

Horizontal Boring Rig

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$73.05**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: **\$57.75** overtime hours

Shift Wage Rate: **\$116.88**

**Operating Engineer - Road & Heavy Construction X**

Elevators (manually operated as personnel hoist).

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$67.21**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: **\$57.75** overtime hours

Shift Wage Rate: **\$107.54**

**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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$52.38**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: **\$57.75** overtime hours

Shift Wage Rate: **\$83.81**

**Operating Engineer - Road & Heavy Construction XII**

All Drills and Machines of a similar nature.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$77.58**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: **\$57.75** overtime hours

Shift Wage Rate: **\$124.13**

**Operating Engineer - Road & Heavy Construction XIII**

Concrete Pumps, Concrete Plant, Stone Crushers, Double Drum Hoist, Power Houses (other than above).

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$75.16**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: **\$57.75** overtime hours

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Shift Wage Rate: \$120.26

**Operating Engineer - Road & Heavy Construction XIV**

Concrete Mixer

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$71.89

Supplemental Benefit Rate per Hour: \$31.85

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: \$115.02

**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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$48.73

Supplemental Benefit Rate per Hour: \$31.85

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: \$77.97

**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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$68.69

Supplemental Benefit Rate per Hour: \$31.85

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: \$109.90

**Operating Engineer - Road & Heavy Construction XVII**

On-Site concrete plant engineer, On-site Asphalt Plant Engineer, and Vibratory console.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$69.21

Supplemental Benefit Rate per Hour: \$31.85

Supplemental Note: \$57.75 overtime hours

Shift Wage Rate: \$110.74

**Operating Engineer - Road & Heavy Construction XVIII**

Tower Crane

Effective Period: 7/1/2018 - 6/30/2019

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$98.99**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: **\$57.75** overtime hours  
Shift Wage Rate: **\$158.38**

**Operating Engineer - Paving I**

Asphalt Spreaders, Autogrades (C.M.I.), Roto/Mil

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$76.78**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: **\$57.75** overtime hours  
Shift Wage Rate: **\$122.85**

**Operating Engineer - Paving II**

Asphalt Roller

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$74.81**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: **\$57.75** overtime hours  
Shift Wage Rate: **\$119.70**

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**Operating Engineer - Paving III**

Asphalt Plants

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$63.40**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: **\$57.75** overtime hours  
Shift Wage Rate: **\$101.44**

**Operating Engineer - Concrete I**

Cranes

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$82.02**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: **\$57.75** overtime hours

**Operating Engineer - Concrete II**

Compressors

Effective Period: 7/1/2018 - 6/30/2019

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$49.10**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours

**Operating Engineer - Concrete III**

Micro-traps (Negative Air Machines), Vac-All Remediation System.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$65.70**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours

**Operating Engineer - Steel Erection I**

Three Drum Derricks

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$84.83**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours  
Shift Wage Rate: **\$135.73**

**Operating Engineer - Steel Erection II**

Cranes, 2 Drum Derricks, Hydraulic Cranes, Fork Lifts and Boom Trucks.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$81.54**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours  
Shift Wage Rate: **\$130.46**

**Operating Engineer - Steel Erection III**

Compressors, Welding Machines.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$48.69**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours  
Shift Wage Rate: **\$77.90**

**Operating Engineer - Steel Erection IV**

Compressors - Not Combined with Welding Machine.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$46.39**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours  
Shift Wage Rate: **\$74.22**

**Operating Engineer - Building Work I**

Forklifts, Plaster (Platform machine), Plaster Bucket, Concrete Pump and all other equipment used for hoisting material.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$67.78**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours

**Operating Engineer - Building Work II**

Compressors, Welding Machines (Cutting Concrete-Tank Work), Paint Spraying, Sandblasting, Pumps (with the exclusion of Concrete Pumps), All Engines irrespective of Power (Power-Pac) used to drive Auxiliary Equipment, Air, Hydraulic, Jacking System, etc.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$50.96**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours

**Operating Engineer - Building Work III**

Double Drum

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$77.03**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours

**Operating Engineer - Building Work IV**

Stone Derrick, Cranes, Hydraulic Cranes Boom Trucks.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$81.56**  
Supplemental Benefit Rate per Hour: **\$31.85**  
Supplemental Note: \$57.75 overtime hours

**Operating Engineer - Building Work V**

Dismantling and Erection of Cranes, Relief Engineer.

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$75.21**  
Supplemental Benefit Rate per Hour: **\$31.85**



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Supplemental Note: \$57.75 overtime hours

**Operating Engineer - Building Work VI**

4 Pole Hoist, Single Drum Hoists.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$74.43**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: \$57.75 overtime hours

**Operating Engineer - Building Work VII**

Rack & Pinion and House Cars

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$59.35**

Supplemental Benefit Rate per Hour: **\$31.85**

Supplemental Note: \$57.75 overtime hours

For New House Car projects Wage Rate per Hour \$47.54

**Overtime Description**

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

For House Cars and Rack & Pinion only: Overtime paid at time and one-half for all hours in excess of eight hours in a day, Saturday, Sunday and Holidays worked.

**Overtime**

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

**Paid Holidays**

New Year's Day

Lincoln's Birthday

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

**Shift Rates**

For Steel Erection Only: Shifts may be worked at the single time rate at other than the regular working hours (8:00 A.M. to 4:30 P.M.) on the following work ONLY: Heavy construction jobs on work below the street level, over railroad tracks and on building jobs.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

(Operating Engineer Local #14)

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## **FLOOR COVERER**

(Interior vinyl composition tile, sheath vinyl linoleum and wood parquet tile including site preparation and synthetic turf not including site preparation)

### **Floor Coverer**

Effective Period: 7/1/2018 - 6/30/2019

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

Presidential Election Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

### **Paid Holidays**

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

### **Shift Rates**

Two shifts may be utilized with the first shift working 8:00 A.M. to the end of the shift at the straight time of pay. The second shift will receive one hour at double time rate for the last hour of the shift. (eight for seven, nine for eight).

(Carpenters District Council)

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## **GLAZIER**

**(New Construction, Remodeling, and Alteration)**

### **Glazier**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$45.55**

Supplemental Benefit Rate per Hour: **\$41.39**

Supplemental Note: Supplemental Benefit Overtime Rate: \$62.10

### **Overtime Description**

An optional 8th hour can be worked at straight time rate. If 9th hour is worked, then both hours or more (8th & 9th or more) will be at the double time rate of pay.

### **Overtime**

Double time the regular rate after a 7 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

### **Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

### **Paid Holidays**

None

### **Shift Rates**

Shifts shall be any 7 hours beyond 4:00 P.M. for which the glazier shall receive 8 hours pay for 7 hours worked.

(Local #1281)

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## **GLAZIER - REPAIR & MAINTENANCE**

**(For the Installation of Glass - All repair and maintenance work on a particular building, whenever performed, where the total cumulative contract value is**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

under \$141,750. 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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$25.06

Supplemental Benefit Rate per Hour: \$21.54

**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 rate for work on the following holiday(s).

Time and one half the regular hourly rate after 40 hours in any work week.

**Paid Holidays**

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

(Local #1281)

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**HAZARDOUS MATERIAL HANDLER**

(Removal, abatement, encapsulation or decontamination of asbestos, lead, mold, or other toxic or hazardous waste/materials)

**Handler**

Effective Period: 7/1/2018 - 6/30/2019

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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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)

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## HEAT AND FROST INSULATOR

### Heat & Frost Insulator

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$61.21

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Christmas Day

Triple time the regular rate for work on the following holiday(s).  
Labor Day

## **Paid Holidays**

None

## **Shift Rates**

The first shift shall work seven hours at the regular straight time rate. The second and third shift shall work seven hours the regular straight time hourly rate plus a fourteen percent wage and benefit premium. Off hour work in occupied or retail buildings may be worked on weekdays with an increment of \$1.00 per hour and eight hours pay for seven (7) hours worked. Double time will apply for over seven (7) hours worked on weekdays, weekends or holidays.

(Local #12) (BCA)

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## **HOUSE WRECKER (TOTAL DEMOLITION)**

### **House Wrecker - Tier A**

On all work sites the first, second, eleventh and every third House Wrecker thereafter will be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). Other House Wreckers may be Tier B House Wreckers.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$36.88**

Supplemental Benefit Rate per Hour: **\$29.47**

### **House Wrecker - Tier B**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$26.11**

Supplemental Benefit Rate per Hour: **\$21.88**

## **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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Independence Day  
Labor Day  
Thanksgiving Day  
Christmas Day

**Paid Holidays**

None

(Mason Tenders District Council)

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**IRON WORKER - ORNAMENTAL**

**Iron Worker - Ornamental**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$44.40**

Supplemental Benefit Rate per Hour: **\$52.62**

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

time rate. When two or three shifts are worked on Saturday, Sunday or holidays, each shift shall be seven hours and paid fifteen and three-quarters hours.

(Local #580)

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## IRON WORKER - STRUCTURAL

### Iron Worker - Structural

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$50.35

Supplemental Benefit Rate per Hour: \$73.95

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

### Overtime Description

Monday through Friday- the first eight hours are paid at straight time, the 9th and 10th hours are paid at time and one-half the regular rate, all additional weekday overtime is paid at double the regular rate. Saturdays- the first eight hours are paid at time and one-half the regular rate, double time thereafter. Sunday-all shifts are paid at double time.

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### 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.



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

(Local #40 & #361)

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**LABORER**  
**(Foundation, Concrete, Excavating, Street Pipe Layer and Common)**

**Laborer**

Excavation and foundation work for buildings, heavy construction, engineering work, and hazardous waste removal in connection with the above work. Landscaping tasks in connection with heavy construction work, engineering work and building projects. Projects include, but are not limited to pollution plants, sewers, parks, subways, bridges, highways, etc.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$42.00**

Supplemental Benefit Rate per Hour: **\$42.63**

**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

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)

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## **LANDSCAPING**

(Landscaping tasks, as well as tree pruning, tree removing, spraying and maintenance in connection with the planting of street trees and the planting of trees in city parks but not when such activities are performed as part of, or in connection with, other construction or reconstruction projects.)

### **Landscaper (Above 6 years experience)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$30.25

Supplemental Benefit Rate per Hour: \$16.05

### **Landscaper (3 - 6 years experience)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$29.25

Supplemental Benefit Rate per Hour: \$16.05

### **Landscaper (up to 3 years experience)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$26.75

Supplemental Benefit Rate per Hour: \$16.05

### **Groundperson**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$26.75

Supplemental Benefit Rate per Hour: \$16.05

### **Tree Remover / Pruner**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$35.25

Supplemental Benefit Rate per Hour: \$16.05

### **Landscaper Sprayer (Pesticide Applicator)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$25.25

Supplemental Benefit Rate per Hour: \$16.05

### **Watering - Plant Maintainer**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$20.22

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$16.05

### Overtime Description

For all overtime work performed, supplemental benefits shall include an additional seventy-five (\$0.75) cents per hour.

### Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Time and one half the regular rate for work on a holiday plus the day's pay.

### Paid Holidays

New Year's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

### Shift Rates

Work performed on a 4pm to 12am shift has a 15% differential. Work performed on a 12am to 8am shift has a 20% differential.

(Local #175)

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## MARBLE MECHANIC

### Marble Setter

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$53.63

Supplemental Benefit Rate per Hour: \$40.35

### Marble Finisher

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$42.21

Supplemental Benefit Rate per Hour: \$37.71

### Marble Polisher

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$37.99

Supplemental Benefit Rate per Hour: \$29.48

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**Overtime Description**

Supplemental Benefit contributions are to be made at the applicable overtime rates. Time and one half the regular rate after a 7 hour day or time and one half the regular rate after an 8 hour day - chosen by Employer at the start of the project and then would last for the full duration of the project.

**Overtime**

Time and one half the regular rate for Saturday.  
Double time the regular rate for Sunday.

**Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

New Year's Day  
President's Day  
Good Friday  
Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Veteran's Day  
Thanksgiving Day  
Day after Thanksgiving  
Christmas Day

**Paid Holidays**

None

(Local #7)

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**MASON TENDER**

**Mason Tender**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$38.40**

Supplemental Benefit Rate per Hour: **\$31.04**

**Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

**Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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. When it is not possible to conduct alteration work during regular working hours in a building occupied by tenants, the rule for the second shift will apply.

(Local #79)

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## **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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$36.44**

Supplemental Benefit Rate per Hour: **\$24.50**

### **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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$25.63**

Supplemental Benefit Rate per Hour: **\$18.82**

### **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).

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

New Year's Day  
President's Day  
Memorial Day  
Independence Day  
Labor Day  
Thanksgiving Day  
Christmas Day

**Paid Holidays**

None

(Local #79)

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**METALLIC LATHER**

**Metallic Lather**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$46.28**

Supplemental Benefit Rate per Hour: **\$44.92**

Supplemental Note: Supplemental benefits for overtime are paid at the appropriate overtime rate.

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**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**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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)

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## MILLWRIGHT

### Millwright

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$52.70**

Supplemental Benefit Rate per Hour: **\$53.21**

### Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

### Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

### Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

### Shift Rates

The first shift shall receive the straight time rate of pay. The second shift receives the straight time rate of pay plus fifteen (15%) per cent. Members of the second shift shall be allowed one half hour to eat, with this time being included in the hours of the workday established. There must be a first shift to work a second shift. All additional hours worked shall be paid at the time and one-half rate of pay plus fifteen (15%) per cent for weekday hours.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

(Local #740)

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## **MOSAIC MECHANIC**

### **Mosaic Mechanic - Mosaic & Terrazzo Mechanic**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$48.85**

Supplemental Benefit Rate per Hour: **\$41.33**

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$52.35 per hour.

### **Mosaic Mechanic - Mosaic & Terrazzo Finisher**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$47.25**

Supplemental Benefit Rate per Hour: **\$41.31**

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$52.33 per hour.

### **Mosaic Mechanic - Machine Operator Grinder**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$47.25**

Supplemental Benefit Rate per Hour: **\$41.33**

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$52.33 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



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

(Local #7)

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## **PAINTER**

### **Painter - Brush & Roller**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$42.50**

Supplemental Benefit Rate per Hour: **\$30.87**

Supplemental Note: \$ 35.50 on overtime

### **Spray & Scaffold / Decorative / Sandblast**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$45.50**

Supplemental Benefit Rate per Hour: **\$30.87**

Supplemental Note: \$ 35.50 on overtime

### **Overtime**

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

### **Overtime Holidays**

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Christmas Day

### **Paid Holidays**

None

(District Council of Painters #9)

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## **PAINTER - METAL POLISHER**

### **METAL POLISHER**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$30.58**

Supplemental Benefit Rate per Hour: **\$7.16**

**METAL POLISHER - NEW CONSTRUCTION**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$31.53**

Supplemental Benefit Rate per Hour: **\$7.16**

**METAL POLISHER - SCAFFOLD OVER 34 FEET**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$34.08**

Supplemental Benefit Rate per Hour: **\$7.16**

**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 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 - SIGN**

### **Sign Painter**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$41.16**

Supplemental Benefit Rate per Hour: **\$16.04**

### **Assistant Sign Painter**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$34.97**

Supplemental Benefit Rate per Hour: **\$14.92**

### **Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

### **Paid Holidays**

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Election Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

### **Vacation**

At least 1 year of employment.....1 week

2 years or more of employment.....2 weeks

8 years or more of employment.....3 weeks

(Local #8A-28A)

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## **PAINTER - STRIPER**

### **Striper (paint)**

Effective Period: 7/1/2018 - 6/30/2019

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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: 7/1/2018 - 6/30/2019

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**

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)

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**PAINTER - STRUCTURAL STEEL**

**Painters on Structural Steel**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$49.50**

Supplemental Benefit Rate per Hour: **\$38.83**

**Painter - Power Tool**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$55.50**

Supplemental Benefit Rate per Hour: **\$38.83**

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)

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**PAPERHANGER**

**Paperhanger**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$44.89**

Supplemental Benefit Rate per Hour: **\$33.13**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Supplemental Note: Supplemental benefits are to be paid at the appropriate straight time and overtime rate.

### Overtime

Time and one half the regular rate after a 7 hour day.  
Time and one half the regular rate for Saturday.  
Time and one half the regular rate for Sunday.

### Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day  
President's Day  
Memorial Day  
Independence Day  
Labor Day  
Thanksgiving Day  
Day after Thanksgiving  
Christmas Day

### Paid Holidays

None

### Shift Rates

Evening shift - 4:30 P.M. to 12:00 Midnight (regular rate of pay); any work performed before 7:00 A.M. shall be at time and one half the regular base rate of pay.

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(District Council of Painters #9)

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## PAVER AND ROADBUILDER

### Paver & Roadbuilder - Formsetter

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$46.35

Supplemental Benefit Rate per Hour: \$43.01

Supplemental Note: For time and one half overtime - \$46.89 For double overtime - \$50.76

### 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: 7/1/2018 - 6/30/2019

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$42.48**

Supplemental Benefit Rate per Hour: **\$43.01**

Supplemental Note: For time and one half overtime - \$46.89 For double overtime - \$50.76

### Production Paver & Roadbuilder - Screed Person

(Production paving is asphalt paving when using a paving machine or on a project where a paving machine is traditionally used)

Adjustment of paving machinery on production paving jobs.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$46.95**

Supplemental Benefit Rate per Hour: **\$43.01**

Supplemental Note: For time and one half overtime - \$46.89 For double overtime - \$50.76

### Production Paver & Roadbuilder - Raker

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$46.35**

Supplemental Benefit Rate per Hour: **\$43.01**

Supplemental Note: For time and one half overtime - \$46.89 For double overtime - \$50.76

### 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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$42.48**

Supplemental Benefit Rate per Hour: **\$43.01**

Supplemental Note: For time and one half overtime - \$46.89 For double overtime - \$50.76

### **Overtime Description**

If an employee works New Year's Day or Christmas Day, they receive the single time rate plus 25%.

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.

### **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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**Paid Holidays**

Memorial Day  
Independence Day  
Labor 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.

(Local #1010)

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**PLASTERER**

**Plasterer**

Effective Period: 7/1/2018 - 7/31/2018

Wage Rate per Hour: **\$45.58**

Supplemental Benefit Rate per Hour: **\$25.87**

Effective Period: 8/1/2018 - 6/30/2019

Wage Rate per Hour: **\$45.93**

Supplemental Benefit Rate per Hour: **\$26.52**

**Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

**Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Thanksgiving Day  
Christmas Day

**Paid Holidays**

None

**Shift Rates**

When it is not possible to conduct work during regular working hours (between 6:30am and 4:30pm), a shift differential shall be paid at the regular hourly rate plus a twelve per cent (12%) per hour differential. Workers on shift work shall be allowed a paid one-half hour meal break.

(Local #262)

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**PLASTERER - TENDER**

**Plasterer - Tender**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$38.40**

Supplemental Benefit Rate per Hour: **\$31.04**

**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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

(Mason Tenders District Council)

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## **PLUMBER**

### **Plumber**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$68.40**

Supplemental Benefit Rate per Hour: **\$33.80**

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

### **Plumber - Temporary Services**

Temporary Services - When there are no Plumbers on the job site, there may be three shifts designed to cover the entire twenty-four hour period, including weekends if necessary, at the following rate straight time.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$54.80**

Supplemental Benefit Rate per Hour: **\$26.96**

### **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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

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**PLUMBER (MECHANICAL EQUIPMENT AND SERVICE)**  
(Mechanical Equipment and Service work shall include any repair and/or replacement of the present plumbing system.)

**Plumber**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$41.55**

Supplemental Benefit Rate per Hour: **\$16.61**

**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)

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**PLUMBER (RESIDENTIAL RATES FOR 1, 2 AND 3 FAMILY HOME CONSTRUCTION)**

Effective Period: 7/1/2018 - 6/30/2019

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$47.47**

Supplemental Benefit Rate per Hour: **\$24.36**

**Overtime**

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

**Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

**Paid Holidays**

None

**Shift Rates**

~~30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday.~~

50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

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**PLUMBER: PUMP & TANK**

**Oil Trades (Installation and Maintenance)**

**Plumber - Pump & Tank**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$65.65**

Supplemental Benefit Rate per Hour: **\$25.06**

**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  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**Overtime Holidays**

Time and one half the regular rate for work on the following holiday(s).

New Year's Day  
President's Day  
Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Veteran's Day  
Thanksgiving Day  
Day after Thanksgiving  
Christmas Day

**Paid Holidays**

None

**Shift Rates**

All work outside the regular workday (8:00 A.M. to 3:30 P.M.) is to be paid at time and one half the regular hourly rate

(Plumbers Local #1)

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**POINTER, WATERPROOFER, CAULKER, SANDBLASTER,  
STEAMBLASTER  
(Exterior Building Renovation)**

**Journey person**

Effective Period: 7/1/2018 - 6/30/2019

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Independence Day  
Labor Day  
Thanksgiving Day  
Christmas Day

**Paid Holidays**

None

**Shift Rates**

All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:30 P.M.) is to be paid at time and one half the regular rate.

(Bricklayer District Council)

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**ROOFER**

**Roofer**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$42.50**

Supplemental Benefit Rate per Hour: **\$33.37**

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**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)

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## **SHEET METAL WORKER**

### **Sheet Metal Worker**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$49.65**

Supplemental Benefit Rate per Hour: **\$49.15**

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

### **Sheet Metal Worker - Fan Maintenance**

(The temporary operation of fans or blowers in new or existing buildings for heating and/or ventilation, and/or air conditioning prior to the completion of the project.)

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$39.72**

Supplemental Benefit Rate per Hour: **\$49.15**

### **Sheet Metal Worker - Duct Cleaner**

Effective Period: 7/1/2018 - 6/30/2019

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**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

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)

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## **SHEET METAL WORKER - SPECIALTY (Decking & Siding)**

### **Sheet Metal Specialty Worker**

The first worker to perform this work must be paid at the rate of the Sheet Metal Worker. The second and third workers shall be paid the Specialty Worker Rate. The ratio of One Sheet Metal Worker, then Two Specialty Workers shall be utilized thereafter.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$45.26**

Supplemental Benefit Rate per Hour: **\$25.66**

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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$28.19**

Supplemental Benefit Rate per Hour: **\$3.03**

### **Shipyard Mechanic - Second Class**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$20.87**

Supplemental Benefit Rate per Hour: **\$2.75**

### **Shipyard Laborer - First Class**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$21.89**

Supplemental Benefit Rate per Hour: **\$2.79**

### **Shipyard Laborer - Second Class**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$15.71**

Supplemental Benefit Rate per Hour: **\$2.55**

### **Shipyard Dockhand - First Class**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$21.57**

Supplemental Benefit Rate per Hour: **\$2.78**

### **Shipyard Dockhand - Second Class**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$16.96**

Supplemental Benefit Rate per Hour: **\$2.60**

### **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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Double time the regular rate for Sunday.

Time and one half the regular hourly rate after 40 hours in any work week.

### **Paid Holidays**

New Year's Day  
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

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## **SIGN ERECTOR** **(Sheet Metal, Plastic, Electric, and Neon)**

### **Sign Erector**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$48.50**

Supplemental Benefit Rate per Hour: **\$52.89**

### **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  
President's Day  
Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Election Day  
Thanksgiving Day  
Day after Thanksgiving  
Christmas Day

### **Shift Rates**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Time and one half the regular hourly rate is to be paid for all hours worked outside the regular workday either (7:00 A.M. through 2:30 P.M.) or (8:00 A.M. through 3:30 P.M.)

(Local #137)

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## STEAMFITTER

### Steamfitter I

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$57.25**

Supplemental Benefit Rate per Hour: **\$55.79**

Supplemental Note: Overtime supplemental benefit rate: \$110.84

### 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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$43.51**

Supplemental Benefit Rate per Hour: **\$45.22**

### **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**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Work performed between 3:30 P.M. and 7:00 A.M. and on Saturdays, Sundays and Holidays shall be at double time the regular hourly rate and paid at the overtime supplemental benefit rate above.

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### **Steamfitter II**

For heating, ventilation, air conditioning and mechanical public work contracts with a dollar value not to exceed \$15,000,000 and for fire protection/sprinkler public work contracts not to exceed \$1,500,000.

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$57.25**

Supplemental Benefit Rate per Hour: **\$55.79**

Supplemental Note: Overtime supplemental benefit rate: \$110.84

### **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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$43.51**

Supplemental Benefit Rate per Hour: **\$45.22**

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### **Overtime**

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

### **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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Saturday or 12:01 A.M. the day before a Holiday will be paid at double time. When shift work is performed the wage rate for regular time worked is a thirty percent premium together with fringe benefits.

On Transit Authority projects, where work is performed in the vicinity of tracks all shift work on weekends and holidays may be performed at the regular shift rates.

Local #638

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**STEAMFITTER - REFRIGERATION AND AIR CONDITIONER  
(Maintenance and Installation Service Person)**

**Refrigeration and Air Conditioner Mechanic**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$41.50**

Supplemental Benefit Rate per Hour: **\$16.56**

**Refrigeration and Air Conditioner Service Person V**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$34.10**

Supplemental Benefit Rate per Hour: **\$14.80**

**Refrigeration and Air Conditioner Service Person IV**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$28.25**

Supplemental Benefit Rate per Hour: **\$13.36**

**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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$24.24**

Supplemental Benefit Rate per Hour: **\$12.29**

**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: 7/1/2018 - 6/30/2019

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$20.10**

Supplemental Benefit Rate per Hour: **\$11.29**

**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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$14.71**

Supplemental Benefit Rate per Hour: **\$10.12**

**Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

**Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

New Year's Day

Independence Day

Labor Day

Veteran's Day

Thanksgiving Day

Christmas Day

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Double time and one half the regular rate for work on the following holiday(s).

Martin Luther King Jr. Day

President's Day

Memorial Day

Columbus Day

**Paid Holidays**

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Christmas Day

(Local #638B)

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## STONE MASON - SETTER

### Stone Mason - Setter

Effective Period: 7/1/2018 - 6/30/2019

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

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)

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## TAPER

### Drywall Taper

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$47.82**

Supplemental Benefit Rate per Hour: **\$25.61**

### **Overtime**

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER 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  
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)

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**TELECOMMUNICATION WORKER**

(Install/maintain/repair telecommunications cables carrying data, video, and/or voice except for installation on building construction/alteration/renovation projects. Locate & mark underground telecommunications cables and utilities for street excavation.)

**Telecommunication Worker**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$43.66**

Supplemental Benefit Rate per Hour: **\$23.15**

Supplemental Note: The above rate applies for Manhattan, Bronx, Brooklyn, Queens. \$22.84 for Staten Island only.

**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  
Lincoln's Birthday  
Washington's Birthday  
Memorial Day



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Independence Day  
Labor Day  
Columbus Day  
Election Day  
Veteran's Day  
Thanksgiving Day  
Christmas Day

**Paid Holidays**

New Year's Day  
Lincoln's Birthday  
Washington's Birthday  
Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Election Day  
Veteran's Day  
Thanksgiving Day  
Christmas Day

Employees have the option of observing either Martin Luther King's Birthday or the day after Thanksgiving instead of Lincoln's Birthday

**Shift Rates**

For any workday that starts before 8A.M. or ends after 6P.M. there is a 10% differential for the applicable worker's hourly rate.

**Vacation**

After 6 months.....one week.  
After 12 months but less than 7 years.....two weeks.  
After 7 or more but less than 15 years.....three weeks.  
After 15 years or more but less than 25 years.....four weeks.

(C.W.A.)

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**TILE FINISHER**

**Tile Finisher**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$41.77  
Supplemental Benefit Rate per Hour: \$30.87

**Overtime**

Time and one half the regular rate after a 7 hour day.  
Time and one half the regular rate for Saturday.  
Double time the regular rate for Sunday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**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)

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**TILE LAYER - SETTER**

**Tile Layer - Setter**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$53.98**

Supplemental Benefit Rate per Hour: **\$35.38**

**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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Day after Thanksgiving  
Christmas Day

### Shift Rates

Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

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## TIMBERPERSON

### Timberperson

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$49.10

Supplemental Benefit Rate per Hour: \$49.97

### Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$62.37**

Supplemental Benefit Rate per Hour: **\$52.39**

### **Tunnel Workers (Compressed Air Rates)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$60.21**

Supplemental Benefit Rate per Hour: **\$50.65**

### **Top Nipper (Compressed Air Rates)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$59.11**

Supplemental Benefit Rate per Hour: **\$49.74**

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### **Outside Lock Tender, Outside Gauge Tender, Muck Lock Tender (Compressed Air Rates)**

Effective Period: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$58.04**

Supplemental Benefit Rate per Hour: **\$48.81**

### **Changehouse Attendant: Powder Watchperson (Compressed Air Rates)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$50.87**

Supplemental Benefit Rate per Hour: **\$46.11**

### **Blasters (Free Air Rates)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$59.52**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$50.03

**Tunnel Workers (Free Air Rates)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$56.97

Supplemental Benefit Rate per Hour: \$47.89

**All Others (Free Air Rates)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$52.63

Supplemental Benefit Rate per Hour: \$44.29

**Microtunneling (Free Air Rates)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$45.58

Supplemental Benefit Rate per Hour: \$38.31

**Overtime Description**

For Repair-Maintenance Work on Existing Equipment and Facilities - Time and one half the regular rate after a 7 hour day, or for Saturday, or for Sunday. Double time the regular rate for work on a holiday.

For Small-Bore Micro Tunneling Machines - Time and one-half the regular rate shall be paid for all overtime.

**Overtime**

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

**Paid Holidays**

New Year's Day

Lincoln's Birthday

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Election Day

Veteran's Day

Thanksgiving Day

Christmas Day

(Local #147)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION WORKER PREVAILING WAGE SCHEDULE

**WELDER**

**TO BE PAID AT THE RATE OF THE JOURNEYPERSON IN THE TRADE  
PERFORMING THE WORK.**

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ARTICLE 8 – NYC PUBLIC WORKS

**OFFICE OF THE COMPTROLLER  
CITY OF NEW YORK**

**CONSTRUCTION APPRENTICE  
PREVAILING WAGE SCHEDULE**

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 paid at the apprentice rates in this schedule. Apprentices who are not so registered must be paid as journey persons in accordance with the trade classification of the work they actually performed.

Apprentice ratios are established to ensure the proper safety, training and supervision of apprentices. A ratio establishes the number of journey workers required for each apprentice in a program and on a job site. Ratios are interpreted as follows: in the case of a 1:1, 1:4 ratio, there must be one journey worker for the first apprentice, and four additional journey workers for each subsequent apprentice.



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

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**BOILERMAKER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

**Boilermaker (First Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$31.26

**Boilermaker (Second Year: 1st Six Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 70% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$33.02

**Boilermaker (Second Year: 2nd Six Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 75% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$34.78

**Boilermaker (Third Year: 1st Six Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$36.56

**Boilermaker (Third Year: 2nd Six Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 85% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$38.32

**Boilermaker (Fourth Year: 1st Six Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 90% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$40.09

**Boilermaker (Fourth Year: 2nd Six Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 95% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$41.84

(Local #5)

## **BRICKLAYER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

### **Bricklayer (First 750 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$18.80

### **Bricklayer (Second 750 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$18.80

### **Bricklayer (Third 750 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 70% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$18.80

### **Bricklayer (Fourth 750 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$18.80

### **Bricklayer (Fifth 750 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 90% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$18.80

### **Bricklayer (Sixth 750 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 95% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$18.80

(Bricklayer District Council)

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**CARPENTER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

**Carpenter (First Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 40% of Journeyman's rate

Supplemental Benefit Rate Per Hour For Building Apprentice: \$31.34

Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$33.54

**Carpenter (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 50% of Journeyman's rate

Supplemental Benefit Rate Per Hour For Building Apprentice: \$31.34

Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$33.54

**Carpenter (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 65% of Journeyman's rate

Supplemental Benefit Rate Per Hour For Building Apprentice: \$31.34

Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$33.54

**Carpenter (Fourth Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 80% of Journeyman's rate

Supplemental Benefit Rate Per Hour For Building Apprentice: \$31.34

Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$33.54

(Carpenters District Council)

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**CARPENTER - HIGH RISE CONCRETE FORMS**

(Ratio of Apprentice to Journeyman: 1 to 1, 2 to 5)

**Carpenter - High Rise (First Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$17.52

Supplemental Benefit Rate per Hour: \$16.20

**Carpenter - High Rise (Second Year)**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$23.95**  
Supplemental Benefit Rate per Hour: **\$16.33**

**Carpenter - High Rise (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$30.53**  
Supplemental Benefit Rate per Hour: **\$16.46**

**Carpenter - High Rise (Fourth Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$38.15**  
Supplemental Benefit Rate per Hour: **\$16.61**

(Carpenters District Council)

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**CEMENT MASON**

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

**Cement Mason (First Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's Rate

**Cement Mason (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's Rate

**Cement Mason (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 70% of Journeyperson's Rate

(Local #780)

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**CEMENT AND CONCRETE WORKER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

**Cement & Concrete Worker (First 1333 hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$17.75

**Cement & Concrete Worker (Second 1333 hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$23.03

**Cement & Concrete Worker (Last 1334 hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$24.30

**Cement & Concrete Worker (Hired after 2/6/2016 - First 1334 hours)**

Effective Period: 7/1/2018 - 6/30/2019  
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: 7/1/2018 - 6/30/2019  
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: 7/1/2018 - 6/30/2019  
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 Journeyman: 1 to 1, 1 to 4)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

**Derrickperson & Rigger (stone) - First Year**

Effective Period: 7/1/2018 - 6/30/2019  
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: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

**Derrickperson & Rigger (stone) - Second Year: 2nd Six Months**

Effective Period: 7/1/2018 - 6/30/2019  
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: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 90% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

(Local #197)

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**DOCKBUILDER/PILE DRIVER**

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

**Dockbuilder/Pile Driver (First Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 40% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$33.54

**Dockbuilder/Pile Driver (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 50% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$33.54

**Dockbuilder/Pile Driver (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Wage Rate Per Hour: 65% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$33.54

**Dockbuilder/Pile Driver (Fourth Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 80% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$33.54

(Carpenters District Council)

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**ELECTRICIAN**  
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

**Electrician (First Term: 0-6 Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$14.50  
Supplemental Benefit Rate per Hour: \$12.63  
Overtime Supplemental Rate Per Hour: \$13.58

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**Electrician (First Term: 7-12 Months)**

Effective Period: 7/1/2018 - 6/30/2019  
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: 7/1/2018 - 6/30/2019  
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: 7/1/2018 - 6/30/2019  
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)**



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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)

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**ELEVATOR CONSTRUCTOR**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)

**Elevator (Constructor) - First Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Rate Per Hour: \$30.89

**Elevator (Constructor) - Second Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 55% of Journeyman's rate  
Supplemental Rate Per Hour: \$31.38

**Elevator (Constructor) - Third Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Rate Per Hour: \$32.36

**Elevator (Constructor) - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 75% of Journeyman's rate  
Supplemental Rate Per Hour: \$33.34

(Local #1)

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**ELEVATOR REPAIR & MAINTENANCE**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)

**Elevator Service/Modernization Mechanic (First Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Benefit Per Hour: \$30.82

**Elevator Service/Modernization Mechanic (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 55% of Journeyman's rate  
Supplemental Benefit Per Hour: \$31.30

**Elevator Service/Modernization Mechanic (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 65% of Journeyperson's rate  
Supplemental Benefit Per Hour: \$32.26

**Elevator Service/Modernization Mechanic (Fourth Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 75% of Journeyperson's rate  
Supplemental Benefit Per Hour: \$33.23

(Local #1)

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**ENGINEER**

**(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 5)**

**Engineer - First Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$25.38**  
Supplemental Benefit Rate per Hour: **\$25.53**

**Engineer - Second Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$31.72**  
Supplemental Benefit Rate per Hour: **\$25.53**

**Engineer - Third Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$34.89**  
Supplemental Benefit Rate per Hour: **\$25.53**

**Engineer - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$38.06**  
Supplemental Benefit Rate per Hour: **\$25.53**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

(Local #15)

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**ENGINEER - OPERATING**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 5)

**Operating Engineer - First Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour 40% of Journeyman's Rate

Supplemental Benefit Per Hour: \$21.60

**Operating Engineer - Second Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 50% of Journeyman's Rate

Supplemental Benefit Per Hour: \$21.60

**Operating Engineer - Third Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 60% of Journeyman's Rate

Supplemental Benefit Per Hour: \$21.60

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(Local #14)

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**FLOOR COVERER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

**Floor Coverer (First Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 40% of Journeyman's rate

Supplemental Rate Per Hour: \$31.14

**Floor Coverer (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 50% of Journeyman's rate

Supplemental Rate Per Hour: \$31.14

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

**Floor Coverer (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Rate Per Hour: \$31.14

**Floor Coverer (Fourth Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Rate Per Hour: \$31.14

(Carpenters District Council)

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**GLAZIER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

**Glazier (First Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 40% of Journeyman's rate  
Supplemental Rate Per Hour: \$15.66

**Glazier (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Rate Per Hour: \$25.76

**Glazier (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$29.02

**Glazier (Fourth Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Rate Per Hour: \$35.07

(Local #1281)

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**HAZARDOUS MATERIAL HANDLER**  
(Ratio of Apprentice Journeyperson: 1 to 1, 1 to 3)

**Handler (First 1000 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 78% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$14.25

**Handler (Second 1000 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 80% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$14.25

**Handler (Third 1000 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 83% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$14.25

**Handler (Fourth 1000 Hours)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 89% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$14.25

(Local #78)

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**HEAT & FROST INSULATOR**  
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

**Heat & Frost Insulator (First Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

**Heat & Frost Insulator (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

**Heat & Frost Insulator (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 70% of Journeyman's rate

**Heat & Frost Insulator (Fourth Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

(Local #12)

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**HOUSE WRECKER  
(TOTAL DEMOLITION)  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

**House Wrecker - First Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$21.17

Supplemental Benefit Rate per Hour: \$18.79

**House Wrecker - Second Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$22.32

Supplemental Benefit Rate per Hour: \$18.79

**House Wrecker - Third Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$23.97

Supplemental Benefit Rate per Hour: \$18.79

**House Wrecker - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$26.53

Supplemental Benefit Rate per Hour: \$18.79

(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: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Rate Per Hour: \$40.20

**Iron Worker (Ornamental) - 11 -16 Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 55% of Journeyman's rate  
Supplemental Rate Per Hour: \$41.44

**Iron Worker (Ornamental) - 17 - 22 Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$42.68

**Iron Worker (Ornamental) - 23 - 28 Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 70% of Journeyman's rate  
Supplemental Rate Per Hour: \$45.17

**Iron Worker (Ornamental) - 29 - 36 Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Rate Per Hour: \$47.65

(Local #580)

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**IRON WORKER - STRUCTURAL**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 6)



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

**Iron Worker (Structural) - 1st Six Months**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$26.27

Supplemental Benefit Rate per Hour: \$51.18

**Iron Worker (Structural) - 7- 18 Months**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$26.87

Supplemental Benefit Rate per Hour: \$51.18

**Iron Worker (Structural) - 19 - 36 months**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$27.47

Supplemental Benefit Rate per Hour: \$51.18

(Local #40 and #361)

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**LABORER (FOUNDATION, CONCRETE, EXCAVATING, STREET PIPE  
LAYER & COMMON)**

(Ratio Apprentice to Journeyman: 1 to 1, 1 to 3)

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - First  
1000 hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 50% of Journeyman's rate

Supplemental Rate Per Hour: \$42.63

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) -  
Second 1000 hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 60% of Journeyman's rate

Supplemental Rate Per Hour: \$42.63

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) -  
Third 1000 hours**

Effective Period: 7/1/2018 - 6/30/2019

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Wage Rate Per Hour: 75% of Journeyperson's rate  
Supplemental Rate Per Hour: \$42.63

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) -  
Fourth 1000 hours**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 90% of Journeyperson's rate  
Supplemental Rate Per Hour: \$42.63

(Local #731)

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**MARBLE MECHANICS  
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)**

**Cutters & Setters - First 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

**Cutters & Setters - Second 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

**Cutters & Setters - Third 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

**Cutters & Setters - Fourth 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

**Cutters & Setters - Fifth 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019  
Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

**Cutters & Setters - Sixth 750 Hours**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 95% of Journeyperson's rate

**Polishers & Finishers - First 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

**Polishers & Finishers - Second 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

**Polishers & Finishers - Third 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

**Polishers & Finishers - Fourth 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 90% of Journeyperson's rate

(Local #7)

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**MASON TENDER**

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

**Mason Tender - First Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$21.39**

Supplemental Benefit Rate per Hour: **\$19.90**

**Mason Tender - Second Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$22.54**

Supplemental Benefit Rate per Hour: **\$19.90**

**Mason Tender - Third Year**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$24.29**

Supplemental Benefit Rate per Hour: **\$19.95**

**Mason Tender - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$26.95**

Supplemental Benefit Rate per Hour: **\$19.95**

(Local #79)

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**METALLIC LATHER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

**Metallic Lather (First Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$26.38**

Supplemental Benefit Rate per Hour: **\$14.96**

**Metallic Lather (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$30.38**

Supplemental Benefit Rate per Hour: **\$16.96**

**Metallic Lather (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$35.38**

Supplemental Benefit Rate per Hour: **\$18.92**

**Metallic Lather (Fourth Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$37.38**

Supplemental Benefit Rate per Hour: **\$19.92**

(Local #46)

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## **MILLWRIGHT**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)**

### **Millwright (First Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$28.33**

Supplemental Benefit Rate per Hour: **\$34.28**

### **Millwright (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$33.48**

Supplemental Benefit Rate per Hour: **\$37.88**

### **Millwright (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$38.63**

Supplemental Benefit Rate per Hour: **\$42.13**

### **Millwright (Fourth Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$48.93**

Supplemental Benefit Rate per Hour: **\$48.69**

(Local #740)

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## **PAINTER**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

### **Painter - Brush & Roller - First Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$17.00**

Supplemental Benefit Rate per Hour: **\$14.46**

### **Painter - Brush & Roller - Second Year**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$21.25**

Supplemental Benefit Rate per Hour: **\$18.63**

**Painter - Brush & Roller - Third Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$25.50**

Supplemental Benefit Rate per Hour: **\$21.86**

**Painter - Brush & Roller - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$34.00**

Supplemental Benefit Rate per Hour: **\$27.88**

(District Council of Painters)

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**PAINTER - METAL POLISHER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

**Metal Polisher (First Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$13.00**

Supplemental Benefit Rate per Hour: **\$5.13**

**Metal Polisher (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$13.00**

Supplemental Benefit Rate per Hour: **\$5.13**

**Metal Polisher (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$15.75**

Supplemental Benefit Rate per Hour: **\$5.13**

(Local 8A-28)

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## **PAINTER - STRUCTURAL STEEL**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

### **Painters - Structural Steel (First Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 40% of Journeyman's rate

### **Painters - Structural Steel (Second Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

### **Painters - Structural Steel (Third Year)**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

(Local #806)

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## **PAVER AND ROADBUILDER**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

### **Paver and Roadbuilder - First Year (Minimum 1000 hours)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$28.36

Supplemental Benefit Rate per Hour: \$20.30

### **Paver and Roadbuilder - Second Year (Minimum 1000 hours)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: \$30.00

Supplemental Benefit Rate per Hour: \$20.30

(Local #1010)

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## **PLASTERER**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

### **Plasterer - First Year: 1st Six Months**

Effective Period: 7/1/2018 - 7/31/2018  
Wage Rate Per Hour: 40% of Journeyman's rate  
Supplemental Rate Per Hour: \$13.43

Effective Period: 8/1/2018 - 6/30/2019  
Wage Rate Per Hour: 40% of Journeyman's rate  
Supplemental Rate Per Hour: \$13.88

### **Plasterer - First Year: 2nd Six Months**

Effective Period: 7/1/2018 - 7/31/2018  
Wage Rate Per Hour: 45% of Journeyman's rate  
Supplemental Rate Per Hour: \$13.91

Effective Period: 8/1/2018 - 6/30/2019  
Wage Rate Per Hour: 45% of Journeyman's rate  
Supplemental Rate Per Hour: \$14.36

### **Plasterer - Second Year: 1st Six Months**

Effective Period: 7/1/2018 - 7/31/2018  
Wage Rate Per Hour: 55% of Journeyman's rate  
Supplemental Rate Per Hour: \$15.88

Effective Period: 8/1/2018 - 6/30/2019  
Wage Rate Per Hour: 55% of Journeyman's rate  
Supplemental Rate Per Hour: \$16.44

### **Plasterer - Second Year: 2nd Six Months**

Effective Period: 7/1/2018 - 7/31/2018  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$16.96

Effective Period: 8/1/2018 - 6/30/2019  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$17.53

### **Plasterer - Third Year: 1st Six Months**

Effective Period: 7/1/2018 - 7/31/2018  
Wage Rate Per Hour: 70% of Journeyman's rate  
Supplemental Rate Per Hour: \$19.13



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Effective Period: 8/1/2018 - 6/30/2019  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Rate Per Hour: \$19.72

**Plasterer - Third Year: 2nd Six Months**

Effective Period: 7/1/2018 - 7/31/2018  
Wage Rate Per Hour: 75% of Journeyperson's rate  
Supplemental Rate Per Hour: \$20.21

Effective Period: 8/1/2018 - 6/30/2019  
Wage Rate Per Hour: 75% of Journeyperson's rate  
Supplemental Rate Per Hour: \$20.81

(Local #530)

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**PLASTERER - TENDER**  
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

**Plasterer Tender - First Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$21.39  
Supplemental Benefit Rate per Hour: \$19.90

**Plasterer Tender - Second Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$22.54  
Supplemental Benefit Rate per Hour: \$19.90

**Plasterer Tender - Third Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$24.29  
Supplemental Benefit Rate per Hour: \$19.95

**Plasterer Tender - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: \$26.95  
Supplemental Benefit Rate per Hour: \$19.95

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

(Local #79)

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## **PLUMBER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

### **Plumber - First Year: 1st Six Months**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$16.28**

Supplemental Benefit Rate per Hour: **\$5.43**

### **Plumber - First Year: 2nd Six Months**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$19.28**

Supplemental Benefit Rate per Hour: **\$6.43**

### **Plumber - Second Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$26.93**

Supplemental Benefit Rate per Hour: **\$18.10**

### **Plumber - Third Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$29.03**

Supplemental Benefit Rate per Hour: **\$18.10**

### **Plumber - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$31.88**

Supplemental Benefit Rate per Hour: **\$18.10**

### **Plumber - Fifth Year: 1st Six Months**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate per Hour: **\$33.28**

Supplemental Benefit Rate per Hour: **\$18.10**

### **Plumber - Fifth Year: 2nd Six Months**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$45.35**  
Supplemental Benefit Rate per Hour: **\$18.10**

(Plumbers Local #1)

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**POINTER, WATERPROOFER, CAULKER, SANDBLASTER,  
STEAMBLASTER**  
(Exterior Building Renovation)  
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

**Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - First Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$25.89**  
Supplemental Benefit Rate per Hour: **\$13.64**

**Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - Second Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$28.97**  
Supplemental Benefit Rate per Hour: **\$18.15**

**Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - Third Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$34.12**  
Supplemental Benefit Rate per Hour: **\$20.90**

**Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate per Hour: **\$41.33**  
Supplemental Benefit Rate per Hour: **\$21.60**

(Bricklayer District Council)

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**ROOFER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)

**Roofer - First Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 35% of Journeyman's Rate

Supplemental Rate Per Hour: 20% of Journeyman's Rate

**Roofer - Second Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 50% of Journeyman's Rate

**Roofer - Third Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 60% of Journeyman's Rate

**Roofer - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 75% of Journeyman's Rate

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(Local #8)

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**SHEET METAL WORKER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

**Sheet Metal Worker (0-6 Months)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 25% of Journeyman's rate

Supplemental Rate Per Hour: \$6.45

**Sheet Metal Worker (7-18 Months)**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 35% of Journeyman's rate

Supplemental Rate Per Hour: \$18.07

**Sheet Metal Worker (19-30 Months)**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 45% of Journeyperson's rate  
Supplemental Rate Per Hour: \$24.76

**Sheet Metal Worker (31-36 Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 55% of Journeyperson's rate  
Supplemental Rate Per Hour: \$29.17

**Sheet Metal Worker (37-42 Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 55% of Journeyperson's rate  
Supplemental Rate Per Hour: \$29.17

**Sheet Metal Worker (43-48 Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Rate Per Hour: \$35.85

**Sheet Metal Worker (49-54 Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Rate Per Hour: \$35.85

**Sheet Metal Worker (55-60 Months)**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 80% of Journeyperson's rate  
Supplemental Rate Per Hour: \$40.30

(Local #28)

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**SIGN ERECTOR**  
**(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)**

**Sign Erector - First Year: 1st Six Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 35% of Journeyperson's rate  
Supplemental Rate Per Hour: \$15.28

**Sign Erector - First Year: 2nd Six Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 40% of Journeyperson's rate  
Supplemental Rate Per Hour: \$17.33

**Sign Erector - Second Year: 1st Six Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 45% of Journeyperson's rate  
Supplemental Rate Per Hour: \$19.38

**Sign Erector - Second Year: 2nd Six Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 50% of Journeyperson's rate  
Supplemental Rate Per Hour: \$21.45

**Sign Erector - Third Year: 1st Six Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 55% of Journeyperson's rate  
Supplemental Rate Per Hour: \$28.98

**Sign Erector - Third Year: 2nd Six Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 60% of Journeyperson's rate  
Supplemental Rate Per Hour: \$31.53

**Sign Erector - Fourth Year: 1st Six Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 65% of Journeyperson's rate  
Supplemental Rate Per Hour: \$34.80

**Sign Erector - Fourth Year: 2nd Six Months**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Rate Per Hour: \$37.43

**Sign Erector - Fifth Year**

Effective Period: 7/1/2018 - 6/30/2019  
Wage Rate Per Hour: 75% of Journeyperson's rate  
Supplemental Rate Per Hour: \$40.03

**Sign Erector - Sixth Year**

Effective Period: 7/1/2018 - 6/30/2019

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

Wage Rate Per Hour: 80% of Journeyperson's rate  
Supplemental Rate Per Hour: \$42.63

(Local #137)

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## **STEAMFITTER**

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

### **Steamfitter - First Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate and Supplemental Per Hour: 40% of Journeyperson's rate

### **Steamfitter - Second Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate and Supplemental Rate Per Hour: 50% of Journeyperson's rate.

### **Steamfitter - Third Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate and Supplemental Rate per Hour: 65% of Journeyperson's rate.

### **Steamfitter - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate and Supplemental Rate Per Hour: 80% of Journeyperson's rate.

### **Steamfitter - Fifth Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate and Supplemental Rate Per Hour: 85% of Journeyperson's rate.

(Local #638)

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## **STONE MASON - SETTER**

(Ratio Apprentice of Journeyperson: 1 to 1, 1 to 2)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

**Stone Mason - Setters - First 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

**Stone Mason - Setters - Second 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

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: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 100% of Journeyman's rate

Supplemental Rate Per Hour: 50% of Journeyman's rate

(Bricklayers District Council)

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**TAPER**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)**

**Drywall Taper - First Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 40% of Journeyman's rate



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

**Drywall Taper - Second Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

**Drywall Taper - Third Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

(Local #1974)

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**TILE LAYER - SETTER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

**Tile Layer - Setter - First 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

**Tile Layer - Setter - Second 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 55% of Journeyman's rate

**Tile Layer - Setter - Third 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 65% of Journeyman's rate

**Tile Layer - Setter - Fourth 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 75% of Journeyman's rate

**Tile Layer - Setter - Fifth 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 85% of Journeyman's rate

**Tile Layer - Setter - Sixth 750 Hours**

Effective Period: 7/1/2018 - 6/30/2019

Wage and Supplemental Rate Per Hour: 95% of Journeyman's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

(Local #7)

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**TIMBERPERSON**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 6)**

**Timberperson - First Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 40% of Journeyman's rate

Supplemental Rate Per Hour: \$33.19

**Timberperson - Second Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 50% of Journeyman's rate

Supplemental Rate Per Hour: \$33.19

**Timberperson - Third Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 65% of Journeyman's rate

Supplemental Rate Per Hour: \$33.19

**Timberperson - Fourth Year**

Effective Period: 7/1/2018 - 6/30/2019

Wage Rate Per Hour: 80% of Journeyman's rate

Supplemental Rate Per Hour: \$33.19

(Local #1536)

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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**

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NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Issue Date - June 01, 2013  
Revised - January 15, 2015

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NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Issue Date - June 01, 2013  
Revised - January 15, 2015

**DIVISION 01 – DDC STANDARD GENERAL CONDITIONS  
SINGLE CONTRACT PROJECTS  
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NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Issue Date - June 01, 2013  
Revised - January 15, 2015



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**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.



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- 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 Contractor 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.



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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**

PROJECT MANAGEMENT AND COORDINATION

01 31 00 -6



**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**



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**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.



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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.

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**END OF SECTION 01 32 33**





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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.

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- 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  
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Division 01 – DDC STANDARD GENERAL CONDITIONS  
SINGLE CONTRACT PROJECTS

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**PART II – PRODUCTS (Not Used)**

**PART III – EXECUTION (Not Used)**

**END OF SECTION 01 33 00**



**SECTION 01 35 03**  
**GENERAL MECHANICAL REQUIREMENTS**

**REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 03**

**PART I – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

**1.2 SUMMARY:**

- A. The General Mechanical Requirements contained herein shall be followed by the Contractor, as well as its subcontractor for HVAC work. This Section sets forth the General Requirements applicable to mechanical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.

**1.3 RELATED SECTIONS:** Include without limitation the following:

- A. Section 01 10 00 SUMMARY  
B. Section 01 33 00 SUBMITTAL PROCEDURES  
C. ~~Section 01 35 06 GENERAL ELECTRICAL REQUIREMENTS~~  
D. Section 01 42 00 REFERENCES  
E. Section 01 77 00 CLOSEOUT PROCEDURES  
F. Section 01 78 39 CONTRACT RECORD DOCUMENTS

**1.4 DEFINITIONS:**

- A. CONCEALED PIPING AND DUCTS -: shall mean piping and ducts hidden from sight in masonry or other construction, in floor fill, trenches, partitions, hung ceilings, furred spaces, pipe shafts and in service tunnels not used for passage. Where piping and ducts run in areas that have hung ceilings, such piping and ducts shall be installed in the hung ceilings. For work on existing piping any insulation on such existing piping is to be tested for asbestos and abated, if found to be positive by a certified asbestos contractor. Such testing and abatement shall occur prior to the performance of any work on these pipes.

**1.5 SUBMITTALS:**

- A. INTENT OF MECHANICAL CONTRACT DRAWINGS – Mechanical Contract Drawings are in part diagrammatic and show the general arrangement of the equipment, ducts and piping included in the Contract and the approximate size and location of the equipment.
- B. The Contractor shall follow these Contract Drawings in laying out the work and verify the spaces in which it will be installed. The 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

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No Text



GENERAL MECHANICAL REQUIREMENTS

01 35 03 - 4



**SECTION 01 35 06**  
**GENERAL ELECTRICAL REQUIREMENTS**

**PART I – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

**1.2 SUMMARY:**

- A. This Section sets forth the General Requirements applicable to electrical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Project Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.
- B. This Section includes the following:
1. Procedure for Electrical Approval
  2. Submittals
  3. Electrical Installation Procedures
  4. ~~Electrical-Conduit-System-Including-Boxes-(Pull,-Junction-and-Outlet)~~
  5. Electrical Wiring Devices
  6. Electrical Conductors and Terminations
  7. Circuit Protective Devices
  8. Distribution Centers
  9. Motors
  10. Motor Control Equipment
  11. Schedule of Electrical Equipment

**1.3 RELATED SECTIONS:** Include without limitation the following:

- |    |                  |                                 |
|----|------------------|---------------------------------|
| A. | Section 01 10 00 | SUMMARY                         |
| B. | Section 01 33 00 | SUBMITTAL PROCEDURES            |
| C. | Section 01 35 03 | GENERAL MECHANICAL REQUIREMENTS |
| D. | Section 01 42 00 | REFERENCES                      |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES             |
| F. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS       |

**1.4 DEFINITIONS:**

- A. **WIRING:** means both wire and raceway (rigid steel, heavy wall conduit unless specifically indicated otherwise).
- B. **POWER WIRING:** means wiring from a panel board or other specified source to a starter (if required) then to a disconnect (if required), then to the final point of usage such as a motor, unit or device.
- C. **CONTROL and/or INTERLOCK WIRING:** means that wiring that signals the device to operate or shut down in response to a signal from a remote control device such as a temperature, smoke, pressure, float,





etc. device (starters and disconnect switches are not included in this definition) regardless of the voltage required for the controlling device.

- D. **RIGID STEEL CONDUIT:** shall mean rigid steel, heavy wall conduit that is hot dipped galvanized inside and outside. The conduit shall meet the requirements of the latest edition, as amended, of the "Standard for Rigid Steel Conduit" of the Underwriters' Laboratories, Inc. Unless otherwise specified in the Specifications or indicated on the Contract Drawings, rigid steel conduit shall be used for all exposed work, for all underground conduits in contact with earth and for fire alarms systems, as required by the New York City Construction Codes.
- E. **ELECTRICAL METALLIC TUBING (EMT):** shall mean industry standard thin wall conduit of galvanized steel only. All elbows, bends, couplings and similar fittings which are installed as a part of the conduit system shall be compatible for use with electric metallic tubing. Couplings and terminating fittings shall be of the pressure type as approved by the Commissioner. Set screw fittings will not be acceptable. EMT shall meet the requirements of the latest edition, as amended, of the "Standard for Electrical Metallic Tubing of the Underwriters Laboratories Inc." EMT may only be used where specifically indicated. In no case will EMT be permitted in spaces other than hung ceilings and dry wall partitions.
- F. **FLEXIBLE METALLIC CONDUIT (FMC):** Shall mean a conduit made through the coiling of a self-interlocking ribbed strip of aluminum or steel, forming a hollow tube through which wires can be pulled. For final connections to motors and motorized equipment, not more than a 4' - 0" length of flexible conduit may be used. For watertight installations, this conduit shall be of a watertight type, attached with watertight glands or fittings for final connections from outlet box to recessed lighting fixtures and in locations only where specifically permitted by the Specifications or Contract Drawings.

#### 1.5 PROCEDURE FOR ELECTRICAL APPROVAL:

This Sub-Section sets forth General Electrical information, as well as required approvals for all electrical work required for the Project, including ancillary electrical work which may be included in the work of other trade subcontractors.

- A. **ELECTRIC SERVICE:** The electric service supply is subject to commercial and operating variation of the utility company. Proper provision shall be made to have all apparatus operate normally under these conditions.
- B. **ACCEPTANCE:** Acceptance and approval of the work will be contingent upon the inspection and test of the installation by the City regulatory agency.
- C. **TESTS:** The Contractor shall notify the Commissioner when the Contractor has completed the work and is ready to have it inspected and tested. Upon completion of the work tests shall be made as required by the Commissioner of all electrical materials, electrical and associated mechanical equipment, and of appliances installed hereunder. The Contractor shall furnish all labor and material for such tests. Should the tests show that any of the material, appliances or workmanship is not first class or not in compliance with the Contract, the Contractor on written notice shall remove and promptly replace them with other materials in conformity with the Contract.
- D. **CERTIFICATE OF THE BUREAU OF ELECTRICAL CONTROL, OF THE DEPARTMENT OF BUILDINGS (B.E.C.):** The Contractor must file prior to requesting a substantial completion inspection a Certificate of Inspection issued by B.E.C. On completion of the work the Contractor shall obtain certificates of inspection, approval, acceptance and compliance from all agencies and/or entities having jurisdiction over the work and shall deliver these certificates to the Commissioner in accordance with Section 01 77 00 CLOSEOUT PROCEDURES.
- E. **RESPONSIBILITY FOR CARE AND PROTECTION OF EQUIPMENT:**
  - 1. The Contractor furnishing any equipment shall be responsible for the equipment until it has been finally inspected, tested and accepted, in accordance with the requirements of the Contract.



2. After delivery and before and after installation, the Contractor shall protect all equipment against theft, injury or damage from all causes. The Contractor shall carefully store all equipment received for work, which is not immediately installed. If any equipment has been subject to possible injury by water, it shall be thoroughly dried out and put through a special dielectric test as directed by the Commissioner, at the expense of the Contractor or replaced by the Contractor without additional cost to the City.
- F. **UNIFORMITY OF EQUIPMENT:** Any two (2) or more pieces of equipment, apparatus or materials of the same kind, type or classification which are intended to be used for identical types of service, shall be made by the same manufacturer.

#### 1.6 SUBMITTALS:

A. **CONTRACTOR'S ELECTRICAL DRAWINGS AND SAMPLES FOR APPROVAL:**

1. The Contractor shall submit to the Commissioner for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, complete dimensional drawings of all equipment, wiring diagrams, motor test data, details of control, installation layouts showing all details and locations and including all schedules, and descriptions and supplementary data to comprise complete working drawings and instructions for the performance of the work. A description of the operation of the equipment and controls shall be included. A letter, in triplicate, shall accompany each submittal.
  2. The Contractor shall submit in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, duplicate samples of such materials and appliances as may be requested by the Commissioner for approval. These samples shall be properly tagged for identification and submitted for examination and test. After the samples are approved, one (1) sample will be returned to the Contractor and the other sample will be filed in the office of the Commissioner's representative for inspection use. After the Contract is completed, the second set of samples will be returned to the Contractor.
- B. **TIMELINESS:** All material shall be submitted in accordance with the submittal schedule in sufficient time for the progress of construction. Failure to promptly submit acceptable samples and dimensional drawings of equipment will not be accepted as grounds for an extension of time. The Commissioner may decline to consider submittals unless all related items are submitted at the same time.
- C. **CONTRACTOR'S STATEMENT WITH SUBMITTALS:** Contractor shall submit statement in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
- D. **BULLETINS AND INSTRUCTIONS:** The Contractor shall furnish and deliver to the Commissioner in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS and Section 01 77 00, CLOSEOUT PROCEDURES, after acceptance of the work, four (4) complete sets of instructions, technical bulletins and any other printed matter (diagrams, prints, or drawings) required to provide complete information for the proper operation, maintenance and repair of the equipment and the ordering of spare parts.

#### PART II – PRODUCTS (Not Used)



## PART III – EXECUTION

### 3.1 ELECTRICAL INSTALLATION PROCEDURES:

This Sub-Section sets forth the General Installation Procedure that shall apply to all electrical work and electrical equipment appearing in the Contract.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

- A. **INTENT OF CONTRACT DOCUMENTS:** The Drawings and Specifications are to be interpreted as a means of conveying the scope and intent of the work without giving every minor electrical detail. It is intended, nevertheless, that the Contractor shall provide whatever labor and materials are found necessary, within the scope of the Contract, for the successful operation of the installation. Specific details of individual installations are to be finally decided upon when the Contractor submits Working or Shop Drawings for approval to DDC. Whenever there are two (2) or more methods to complete project work within the Contract scope, the Commissioner reserves the right to choose that method which, in the Commissioner's opinion, will afford the most satisfactory performance, lasting qualities, and accessibility for repairs, even though this selection is the most costly.
- B. **SCHEMATIC PLANS – APPROXIMATE LOCATIONS:** Conduits and wiring are shown on the plans for diagrammatic purposes only. Therefore, conduit layouts may not necessarily give the actual physical route of the conduits. The Contractor who installs a conduit system will also be required, as part of the work, to furnish and install all hangers and pull-boxes, including any special pull-boxes found necessary to overcome interferences, and to facilitate the pulling of electrical cables. Similarly, the locations of equipment, appliances, outlets and other items shown on Contract Drawings are only approximate and are to be definitively established when equipment Shop Drawings are submitted and approved by DDC during construction.
- C. **SLEEVES:** required for conduits passing through walls or floors, shall be furnished and set by the Contractor installing the conduits. Sleeves in waterproofed floors shall be provided with flashing extending 12 inches in all directions from sleeve and secured to waterproofing. Flashing shall be turned down into space between pipe and sleeve and caulked watertight. Flashing shall be 20 oz. cold rolled copper. Sleeves shall be supplied with welded flanges similar to those supplied by the subcontractor for Plumbing Work and shall extend one (1) inch above finished floor.
- D. **COORDINATION:** The Contractor shall keep in close touch with the construction progress and obtain the necessary information for the accurate placement of its work in ample time before project construction operations obstruct its work. The Contractor is to consult all other Contract Drawings, as well as approved equipment Shop Drawings on file in the Resident Engineer's Field Office. This will aid in avoiding interferences, omissions and errors in the electrical installation.
- E. **RESTORATION:** If drilling or cutting is done on finished surfaces of equipment or the structure, any marring of the surface shall be repaired or replaced by the Contractor. The Contractor shall be held responsible for corrective restoration due to its cutting or drilling, and for any damage to the project or its contents caused by the Contractor or the Contractor's workers. If any piercing of waterproofing occurs because of the installation of the work, the Contractor shall restore the waterproofing, at its own expense, to the satisfaction of the Commissioner.
- F. **ELECTRICAL WORK AT SITE:** The Contractor furnishing equipment consisting of a number of related electrical devices or appliances, mounted in a single enclosure, or on a common base, shall furnish this unit complete with internal wiring, connections, terminal boxes with copper connectors and/or lugs and ample electrical leads, ready for connection and operation. The cost of any wiring, re-wiring or other work required to be done on this unit in the field, shall be borne by the Contractor, without additional cost to the City.
- G. **COOPERATION AMONG SUBCONTRACTORS:** Whenever an electrically operated unit or system involves the combined work of several subcontractors for its installation and successful operation, the



Contractor shall require each subcontractor to exercise the utmost diligence in cooperating with others to produce a complete, harmonious installation.

**REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2**

**3.2 ELECTRICAL CONDUIT SYSTEM INCLUDING BOXES (PULL, JUNCTION AND OUTLET):**

This Sub-Section sets forth the requirements applying to the installation of electrical conduits, boxes or fittings. Rigid steel conduit shall be used throughout, unless otherwise directed by the Commissioner. Where the word 'conduit', without a modifier such as, rigid steel, EMT, etc., is specified to be used, it shall be interpreted to mean, rigid steel, heavy wall, threaded conduit.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

**A. INSTALLATIONS AND APPLICATIONS:**

1. Unless otherwise specified or indicated on the Contract Drawings, conduit runs shall be installed concealed in finished spaces.
2. **CONDUIT SIZES:** The sizes of conduit shall be as indicated on the Contract Drawings. Wherever conduit sizes are not indicated, the conduit shall meet the requirements of the New York City Electrical Code to accommodate the conductors to be installed therein.
3. Conduits shall be reamed smooth after cutting. No running threads will be permitted. Universal type couplings shall be used where required. Conduit joints shall be screwed up to butt. Empty conduits after installation shall have all open ends temporarily plugged to prevent the entrance of water or other foreign matter.
4. Conduits being installed in concrete or masonry shall be securely held in place during pouring and construction operations. A group of conduits terminating together shall be held in place by a template.
5. **UNDERGROUND STEEL CONDUITS:** Unless otherwise specified, all underground steel conduits in contact with earth shall be encased by the Contractor who installs them, in a covering of not less than two (2) inches of an approved concrete mixture. Concrete mix shall be one (1) part cement to four and one-half (4 ½) parts of fine and coarse aggregate.
6. **EXCAVATION RESTORATION PERMITS:** When installing underground conduits, duct banks or manholes the Contractor shall perform the work of cutting pavement, excavation shoring, keeping trenches or holes pumped dry, backfilling, restoration of surfaces to original condition and removal of excess earth and rubbish from premises. During the work, the Contractor shall provide adequate crossovers, protective barriers, lamps, flags, etc., to safeguard traffic and the public. When the work is in a public highway or street, the Contractor shall secure and pay for all necessary permits and inspection fees and pay the cost of repaving.
7. **EXPOSED CONDUIT SUPPORTS:** Exposed conduit shall be supported by Galvanized hangers with necessary inserts, beam clamps of approved design or attached to walls or ceilings by expansion bolts. Exposed conduits shall be supported or fastened at intervals not more than five (5) feet.
8. Exposed conduit shall be installed parallel or at right angles to ceiling, walls and partitions. Where direction changes of exposed conduit cannot be made with neat bends, such as required around beams or columns, conduit type fitting shall be used.



9. The conduit shall be installed with an approved expansion joint:
  - a. Wherever the conduit crosses a building expansion joint the Contractor will be held responsible for determining where the building expansion joints are located.
  - b. Every 200 feet, when in straight runs of 200 feet or longer.
10. Conduit may only enter and leave a floating slab in the vertical direction, and then only in an approved manner. Horizontal entries into floating slabs are not permitted.
11. Conduit installed in pipe shafts shall be properly supported to carry the total weight of the raceway system complete with cable. In addition at least one (1) horizontal brace per 10 ft. section shall be provided to assure stability of the raceway system.
12. **BUSHINGS AND LOCKNUTS:** Approved bushings and locknuts shall be used wherever conduits enter outlet boxes, switch boxes, pull boxes, panel board cabinets, etc.
13. **CONDUIT BENDS:** shall be made without kinking conduit or appreciably reducing the internal diameter. All bends in conduit of two (2) inch in diameter or larger shall be made with an hydraulic or power pipe bender. The radius of the inner edge of any bend shall not be less than six (6) times the internal diameter of the conduit where rubber covered conductors are to be installed, and not less than 10 times the internal diameter of the conduit where lead covered conductors are to be used. Long gradual sweeps will be required, rather than sharp bends, when changes of direction are necessary.
14. **EMPTY CONDUITS**
  - a. **TESTS:** All conduits and ducts required to be installed and left empty shall be tested for clear bore and correct installation by the Contractor using a ball mandrel and a brush and snake before the installation will be accepted. The ball shall be turned to approximately 85% of the internal diameter of the raceway to be tested. Two (2) short wire brushes shall be included in the mandrel assembly. Snaking of conduits, ducts, etc., shall be performed by the Contractor in the presence of the Resident Engineer. Any conduits or ducts which reject the mandrel shall be cleared at once with the Contractor bearing all costs, such as chopping concrete, to replace the defective conduit and restore the surface to its original condition.
  - b. **TAGS:** Numbers or letters shall be assigned to the various conduit runs, and as they test clear they shall be identified by a fiber tag not less than 1-¼ inch width, attached by means of a nylon cord. All conduit terminations in panel, splice or pull boxes as well as those out of the floor or ceiling shall be tagged.
  - c. **TEST RECORDS:** As the conduit runs clear, a record shall be kept under the heading of "Empty Conduit Tested, Left Clear, Tagged and Capped" showing conduit designation, diameter, location, date tested and by whom. When complete, this record shall be signed by the Resident Engineer and submitted in triplicate for approval. This record shall be entered on the Contract Record Drawings under Section 01 78 39, CONTRACT RECORD DOCUMENTS.
  - d. **CAPPING:** All empty conduit and duct openings, after test, shall be capped or plugged by the Contractor as directed.
  - e. **DRAG LINES:** A drag line shall be left in all empty conduit.

**B. BOXES:**

1. The Contractor shall furnish and erect all pull boxes indicated on the plans or where required. Sides, top and bottom of pull boxes shall be Galvanized coated and shall be built of No. 12 USSG steel reinforced at corners by substantial angle irons and riveted or welded to plates. Bottom or side



of pull boxes shall be removable and held in place by corrosion resistant machine screws. Pull boxes in damp locations shall have threaded hubs and gaskets and be NEMA 4X. All pull boxes shall be suspended from ceiling or walls in the most substantial manner.

2. In centering outlets, the Contractor is cautioned to allow for overhead pipes, ducts and other obstructions, and for variations in arrangement and thickness of fireproofing, soundproofing and plastering. Precaution should be exercised regarding the location of window and door trims, paneling, etc. Mistakes resulting from failure to exercise precaution must be corrected by the Contractor at no additional cost to the City. Outlets in hung ceilings shall be supported from the black iron or structure.
3. The exact location of all outlets in finished rooms shall be as directed. When the interior finish has been applied, the Contractor shall make any necessary adjustment of its work to properly center the outlets. All outlet boxes for local switches near doors shall be located at the strike side of doors as finally hung, whether so indicated on the drawings or not.
4. Exposed wall outlet boxes shall be erected neatly and tight against the walls and securely anchored to same.
5. All wall outlets of each type shall be set accurately at the same level on each floor, except where otherwise specified or directed. Where special conditions occur, outlets shall be located as directed.
6. MOUNTING HEIGHTS: The following heights are standard heights and are subject to correction due to coordination with Contract Drawings. All such changes must be approved by the Resident Engineer. Heights given are from finished floor to center line of outlet or device on wall or partition, unless otherwise indicated.

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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.

<b>REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.5</b>
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### 3.5 CIRCUIT PROTECTIVE DEVICES:

This Section sets forth the circuit protective devices such as circuit breakers and safety switches, used in connection with Motor Control Equipment, Distribution Centers, Panel boards and Service Entrance.

#### A. CIRCUIT BREAKERS:

1. CIRCUIT BREAKERS: shall be operable in any position and shall be of the quick-make, quick-break type on manual operation. The handle shall be trip free, preventing contacts from being held in closed position against abnormal overloads or short circuits. Positive visual indication of automatic tripped position of breaker shall be provided, in addition to the "On" and "Off" indication. All circuit breakers shall be of the bolted type.
2. TRIP RATING: Circuit breakers shall be provided with the required number of trip elements, calibrated at 40 degrees C., ambient temperature, in accordance with wire sizes or motor currents as shown on Contract Drawings or indicated in the Specifications.
3. POLE BARRIER: Multipole pole breakers shall be designed to break all poles simultaneously. They shall be provided with barriers between poles and arc suppressing devices.
4. ELEMENTS: Multipole circuit breakers shall have frames of not less than a 100 Ampere rating. Multipole circuit breakers for 480 volts AC operation shall have an NEMA interrupting rating of 18,000 Amperes, unless a higher rating is specified in the Specific Requirements or indicated on the Contract Drawings.



5. For circuit breakers with frame size up to and including 225 Amperes, the breakers may be provided with non-interchangeable trip elements. For frame ratings above 225 Amperes, the breakers shall be provided with interchangeable trip elements, which can be replaced readily.
6. Single pole circuit breakers for branch circuits shall have a frame size of no less than 100 Amperes, and shall be rated at 125 volt A.C. with a NEMA interrupting rating of 10,000 Amperes, unless a higher rating is specified in the Specifications or indicated on the Contract Drawings.
7. INVERSE TIME ACTION: The circuit breakers shall be dual element type, one (1) element with time limit characteristics, so that tripping will be prevented on momentary overloads, but will occur before dangerous values are reached and the other with instantaneous trip action. Inverse time delay action shall be effective between a minimum tripping point of 125% of rating of breaker and an instantaneous tripping point between 600% and 700% of rated current.
8. CONSTANCY OF CALIBRATION: The tripping elements shall insure constant calibration and be capable of withstanding excessive short circuit conditions without injury.
9. CONTACTS: shall be non-welding under operating conditions and of the silver to silver type.
10. TEMPERATURE RISE: Current carrying parts, except thermal elements, shall not rise in temperature in excess of 30 degrees C. while carrying rated current at rated frequency.
11. NUMBERING: Each circuit breaker shall be distinctly numbered when installed in a group with other breakers. The calibration of trip element shall be indicated on each breaker.

**B. SAFETY SWITCHES:**

NEMA TYPE HD: When safety switches are permitted to be used for service entrance, motor disconnecting means or to control other types of electrical equipment, they shall be of the type HD of a rating not less than 30 Amperes. Enclosures shall be provided with means for locking. For ratings above 60 Amperes terminals shall have double studs.

**REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.6**

**3.6 DISTRIBUTION CENTERS:**

This Section sets forth the construction and installation procedure for Switchboards, Panel boards and Cabinets.

- A. PANELBOARDS-GENERAL TYPE: The panel boards shall be of the automatic circuit breaker type with individual breakers for each circuit, removable without disturbing the other units. Circuit breakers shall be in accordance with the requirements outlined under "Circuit Protective Devices."
- B. NUMBER AND RATING OF CIRCUIT BREAKERS: The Contract Drawings show a layout of each panel, giving the number, frame, size and trip setting of circuit breakers and number of branch circuits and spare breakers. Each branch circuit shall be distinctly numbered.
- C. BUS-BAR CONSTRUCTION AND SUPPORT: Panel Boards shall be of the dead front type and shall have bus bars and branch circuits designed to suit the system and voltage. Current carrying parts, exclusive of circuit breakers shall be copper and based on a maximum density of 1,000 Amperes per square inch. Bus bars for the main switchboard shall be designed for the frame rating of the Service Breaker. Bus bars shall run up the center of the panel, unless otherwise indicated, and shall have connected thereto the various branch circuits. Unless otherwise specified, bus bars for each panel board shall be equipped with main lugs only and capacity as required on Contract Drawings. Where main protection is required, automatic circuit breakers shall be used. A neutral bus of at least the same capacity as a live bus bar shall be provided for the connection of all neutral conductors. Each terminal shall be identified. All current carrying parts, exclusive of circuit breakers, shall be of copper with a minimum number of joints. The bus bar structure shall be a self-supporting unit, firmly fastened to a ½



inch plastic board, extending the full length and width of assembly which shall serve to insulate the bus structure from the back of panel box. Other methods affording equally effective bus structure support and insulation will be given consideration. An insulating barrier shall separate neutral bus from other parts of panel.

- D. **CIRCUIT BREAKER ASSEMBLY:** The entire circuit breaker and bus bar assembly shall be mounted on an adjustable metal base or pan and secured to the back of panel box. The panel shall have edges flanged for rigidity.
- E. **PANEL MOUNTING:** The panel shall be centered in the panel box to line up with door openings and set level and plumb so that no live parts are exposed with the door open.
- F. **PANEL CABINET:**
  - 1. **PANEL CABINET INSTALLATION:** When installed surface mounted in panel closets they shall be mounted on Kindorf channel.
  - 2. Where cabinets cannot be set entirely flush due to shallow walls or partitions or where cabinet is extra deep, the protruding sides of cabinet shall be trimmed with a metal or hardwood return molding of approved design and fastened to cabinet so as to conceal the intersection between the wall and cabinet.
- G. **NAMEPLATES:** Nameplates where required, shall be made of engraved Lamicoid sheet, or approved equal. Letters and numbers shall be engraved white on a black background (except for Firehouse projects which shall have white letters on a red background). The Contractor shall submit an engraved sample for approval as to design and style of lettering before proceeding with the manufacture of the nameplate. Nameplates shall be of suitable size and shall also be provided at the top of the switchboard or section thereof and on the trim at the top of all lighting and power panels. Similar nameplates shall also be provided for each distribution circuit breaker giving the breaker number, the number of the feeder, and the name of the equipment fed.
- H. **SHOP DRAWINGS:** showing all details of boxes, panels, etc., shall be submitted for approval.
- I. **DIRECTORIES:** A directory shall be fastened with brass screws and consist of a noncorrosive metal frame with dimensions not less than five (5) inches x eight (8) inches and a transparent window of Plasticile, Plexiglass, Lucite, Polycarbonate or approved equal that is not less than 1/16 inch thick over cardboard or heavy paper. The directory shall be typewritten and show the number of each circuit, the name of circuit and lighting or equipment supplied. The size of riser feeder shall be as indicated on directory. The dimensions of directory shall be submitted for approval for each size of panel.
- J. **CONSTRUCTION**
  - 1. **FINISH:** Panel boxes, doors and trim for installation in dry locations, shall be zinc coated after fabrication by the hot-dip galvanizing or electroplate process on inside and outside surfaces. In damp locations, panel boards shall be enclosed and gasketed NEMA 3R type. Panel boards located outdoors or exposed to the weather shall be NEMA 3X type.
  - 2. **PAINTING:** Panel boxes, doors and trim shall receive a coat of approved priming paint and a second coat of approved paint in the field after installation. Paint shall be applied to the inside and outside of boxes and on both sides of trim. Panel trims and doors shall receive a third or finishing coat on the outside after installation. Approval as to texture and color must be obtained before the final coat is applied.



**REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.7**

**3.7 MOTORS:**

This Section sets forth the general design, construction and performance requirements, which shall apply to all motors furnished in the Contract.

- A. **MOTOR DESIGN:** All motors shall be designed to comply with the New York State Energy Conservation Construction Code and the New York City Energy Conservation Code. In the event of any conflict or inconsistency between such codes, the New York City Energy Conservation Code shall prevail. Motors shall have standard NEMA frames and shall have nameplate ratings adequate to meet the specified conditions of operation. Motor performance under variable conditions of voltage and frequency shall be within the limits set in NEMA standards, unless modified in the Specifications. Motors shall be expressly designed for the hazard duty load, voltage and frequency as specified in the Contract. All motor windings shall be copper. All motors intended to operate on a 208 volt system shall be designed and rated for 200 volts.
- B. **STANDARDS OF COMPARISON:** In the absence of specific motor specifications, in general, the best standard products of the leading motor manufacturers shall be considered as a standard for comparison. The requirements of the NEMA standards for motors and generators shall be deemed to contain the minimum requirements of performance and design.
- C. **OBJECTIONABLE NOISES:** Objectionable noises will not be tolerated and exceptionally quiet motors may be required for certain specified locations. Noise control tests as per the New York City Construction Codes may be performed as directed by the Commissioner. Such motors shall bear a nameplate lettered "Quiet Motor." Springs and slip rings shall be of approved non-ferrous material.

**D. BEARINGS:**

- 1. Bearings, unless specified otherwise, shall be of the ball or roller type. Motors one (1) horsepower and larger that are equipped with ball roller bearings shall also have lubrication of the pressure-relief greasing type. The Contractor furnishing four (4) or more such motors shall also furnish, as part of the Contract, a pressure grease gun of rugged design, of approximately 10 ounce capacity, complete with necessary adapters. The Contractor shall also provide 10 pounds of approved gun grease.
- 2. For any particular unit where sleeve bearings are deemed desirable, permission for their use may be granted by the Commissioner. Motors one (1) horsepower and larger that are equipped with sleeve type bearings shall in addition to having protected accessible fittings for oiling be provided with visible means for determining normal oil level. Lubrication shall be positive, automatic and continuous.

- E. **MOTOR TERMINALS AND BOXES:** Each motor shall be furnished with flexible leads of sufficient length to extend for a distance of not less than three (3) inches beyond the face of the conduit terminal box. This box shall be furnished of ample size to make and house motor connections. These requirements shall be met irrespective of any other standards or practices. Size of cable terminals and conduit terminal box holes shall be subject to approval. For motors five (5) horsepower or larger, each terminal shall come with two (2) cast or forged copper pressure type connectors with bolts, nuts and washers. For motors of smaller ratings, connectors of other acceptable types may be furnished. For installations exposed to the weather or moist locations, terminal boxes shall be of cast iron with threaded hubs and gasketed covers. Cover screws shall be of non-corrosive material.

- F. **MOTOR TEMPERATURE RISES:** The motor nameplate temperature rises for the various types of motor enclosures shall be as listed below:

- |   |               |
|---|---------------|
| 1. Open Frame                               | 40 degrees C. |
| 2. Totally enclosed and enclosed fan cooled | 55 degrees C. |



3. Explosion proof and submersible 55 degrees C.
4. Partially enclosed and drip proof 40 degrees C.

The temperature of the various parts of a motor shall meet the requirements of NEMA standards for the size and type of the motors. Tests for heating shall be made by loading the motor to its rated horsepower and keeping it so loaded for the rated time interval or until the temperature becomes constant.

- G. SPECIAL CODE INSTALLATIONS: Electrical installations covered by special publications of NBFU and by special City rulings and regulations shall comply in design and safety features with such applicable codes, regulations and rulings, and shall be furnished and installed complete with all accessories and safety devices as therein specified.
- H. MOTORS ON LIGHTING PANELS: The largest A.C. motor permitted on branch circuits of lighting panels shall not exceed 1/4 horsepower.
- I. MOTORS RATED: ½ horsepower and larger shall be polyphase.

**REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8**

**3.8 MOTOR CONTROL EQUIPMENT:**

This Section sets forth the requirements for motor controllers and associated devices. Such requirements are applicable to all motor control equipment furnished or installed.

- A. MANUFACTURER: All control equipment furnished under the Contract shall be the product of a single manufacturer. Exceptions to this rule may be granted in the case of controllers for fractional horsepower motors driving special equipment, the various units of which have been engineered to obtain specific performance.
- B. CONTROL ITEMS REQUIRED: The Contractor furnishing motors shall also furnish therewith complete disconnecting, starting and control equipment as required by the detailed Specifications, the various code authorities and for the successful operation of the driven equipment. These items include circuit breaker, magnetic starter with overload protection and low voltage release or protection, push button stations, pilot lights and alarms, float, pressure, temperature and limit switches, load transfer switches, devices for manual operation and speed controllers, etc. The Contractor shall furnish as many of these items as are required for the successful operation of the driven unit.
  1. Where a motor is to be located out of sight of the controller, the Contractor shall furnish an approved disconnecting means to be mounted near motor.
- C. TYPES OF STARTERS:
  1. SQUIRREL CAGE: A.C. motors of the squirrel cage type, rated from one (1) to 30 horsepower, shall have magnetic across the line starters; motors rated above 30 horsepower shall be furnished with reduced voltage (autotransformer type) starter or part winding start with time delay to reduce inrush current. Size of starters shall be based on 200V operation.
  2. SLIP RING: A.C. Motors of the slip-ring type shall be furnished with primary across the line starters interlocked with secondary starting and regulating equipment. The interlocking feature shall prevent starting of the motor when the secondary controller is off the initial starting point.
  3. MAGNETIC: For fractional horsepower motors, magnetic type starters are not required unless the particular method of controlling the driven equipment makes them necessary. Where individual single phase fractional horsepower motors or the sum of fractional horsepower motors controlled by an automatic device are ½ horsepower or more, magnetic starters and circuit breakers shall be used. Single phase A.C. motors smaller than ½ horsepower or three-phase A.C. motors smaller than one (1) horsepower where manual control is specified may be furnished with starters of toggle



switch or push button type with inbuilt thermal protection. No additional disconnecting means is required to be furnished with this type of starter. This type of starter may also be used in series with automatic control devices such as thermostats, float and pressure switches, provided the individual motor or the sum of fractional horsepower motors is less than ½ horsepower. Means for manual operation shall be provided.

- D. DISCONNECTING BREAKER: All motor starters, unless otherwise specified, shall be provided with a disconnecting means in the form of a circuit breaker of the type specified under Article 3.5 CIRCUIT PROTECTIVE DEVICES. This disconnecting means shall be contained in the same housing with the starter and shall be operable from outside. Means shall be provided for locking the handle of the circuit breaker in the "OFF" position if it is desired to take the equipment out of service and prevent unauthorized starting.
- E. CONTROL CABINET: DRY LOCATIONS - All starters shall be furnished with general purpose, NEMA Type 1, sheet metal enclosures with hinged covers and baked enamel finish.
- F. CONTROL CABINET – WATERTIGHT: In wet locations, cast iron watertight enclosures with threaded hubs, galvanized and gasketed hinged covers shall be provided.
- G.
  - 1. PANELS: Motor control devices and appliances shall be mounted on approved insulating slabs with all wiring and connections made on the back of the slabs.
  - 2. WIRING AND TERMINALS: Wiring connections for currents of 100 Amperes or less may be made with copper wire or cable with special flameproof insulating coverings. Such wires shall be installed in a neat workmanlike manner, flat against the slab, and held in place by clips. Connections shall be made with pressure connectors for No. 8 AWG and larger wires, and with grommets for small stranded wires. Except for incoming and outgoing main leads, all connections shall terminate on approved connector blocks, which may be installed on the face of the slab. For small, across the line starters, the above requirements may be modified if satisfactory connections are provided.
  - 3. COPPER BUS: For currents exceeding 100 Amperes, copper bus shall be used in place of wires. The bus shall be constructed of copper rods, tubing or flat strap, bent and shaped properly and securely attached to the slab in a neat and workmanlike manner. The cross section of copper shall provide sufficient areas to keep current density at not more than 1,000 Amperes per square inch.
- H. COOPERATION: The Contractor's subcontractor(s) who furnish electrically operated equipment shall give to the Contractor and the Contractor's electrical subcontractor full information relative to sizes and locations of apparatus furnished by them which require electrical connections.
- I. SPARE PARTS:
  - 1. FURNISH: The Contractor shall furnish the following spare parts pertaining to equipment furnished by each subcontractor.
    - One (1) set of contact fingers and springs and thermal elements for each three (3) (or fraction) of each size of magnetic contactor starter.
    - One (1) holding coil for each three (3) (or fraction) of each size of magnetic contactor starter.
  - 2. WRAPPER MARKING: All parts shall be delivered to the Resident Engineer neatly wrapped and boxed and plainly tagged and marked for identification and reordering.

END OF SECTION 01 35 06



NEW YORK CITY DEPARTMENT OF  
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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



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SAFETY REQUIREMENTS PROCEDURES

01 35 26 - 4



**SECTION 01 35 91  
HISTORIC TREATMENT PROCEDURES**

**REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 91**

**PART I – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

**1.2 SUMMARY:**

- A. This Section includes administrative and procedural requirements for the treatment of Landmark Structures and Landmark Quality Structures, as identified in the Addendum. Specific requirements are indicated in other sections of the Specifications.
- B. This Section includes, without limitation, the following:
1. Storage and protection of existing historic materials
  2. Temporary protection of historic materials during construction
  3. General Protection
  4. Protection during use of heat-generating equipment
  5. Photographic Documentation
  6. NYC Landmarks Preservation Commission Final Approval signoffs

**1.3 RELATED SECTIONS: include without limitation the following:**

- A. Section 01 10 00 SUMMARY
- B. Section 01 32 33 PHOTOGRAPHIC DOCUMENTATION
- C. Section 01 33 00 SUBMITTAL PROCEDURES
- D. Section 01 77 00 CLOSEOUT PROCEDURES
- E. Section 01 78 39 CONTRACT RECORD DOCUMENTS

**1.4 DEFINITIONS:**

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Landmark Structure or Site: Any building or site which has been designated as a landmark, or any building or site within a landmark district, as designated by the New York City Preservation Commission or the New York State Historic Preservation Office.



- D. **Landmark Quality Structure:** Any building which has been determined by the City to be of landmark quality and/or historical significance.
- E. **Preservation:** To apply measures necessary to sustain the existing form, integrity, and materials of a historic property. Work may include preliminary measures to protect and stabilize the property.
- F. **Rehabilitation:** To make possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.
- G. **Restoration:** To accurately depict the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and the reconstruction of missing features from the restoration period.
- H. **Reconstruction:** To reproduce in the exact form and detail a building, structure, or artifact as it appeared at a specific period in time.
- I. **Stabilize:** To apply measures designed to reestablish a weather-resistant enclosure and the structural reinforcement of an item or portion of the building while maintaining the essential form as it exists at present.
- J. **Protect and Maintain:** To remove deteriorating corrosion, reapply protective coatings, and install protective measures such as temporary guards; to provide the least degree of intervention.
- K. **Repair:** To stabilize, consolidate, or conserve; to retain existing materials and features while employing as little new material as possible. Repair includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials. Within restoration, repair also includes limited replacement in kind, rehabilitation, and reconstruction, with compatible substitute materials for deteriorated or missing parts of features when there are surviving prototypes.
- L. **Replace:** To duplicate and replace entire features with new material in kind. Replacement includes the following conditions:
  - 1. **Duplication:** Includes replacing elements damaged beyond repair or missing. Original material is indicated as the pattern for creating new duplicated elements.
  - 2. **Replacement with New Materials:** Includes replacement with new material when original material is not available as patterns for creating new duplicated elements.
  - 3. **Replacement with Substitute Materials:** Includes replacement with compatible substitute materials. Substitute materials are not allowed, unless otherwise indicated.
- M. **Remove:** To detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- N. **Remove and Salvage:** To detach items from existing construction and deliver them to the City ready for reuse.
- O. **Remove and Reinstall:** To detach items from existing construction, repair and clean them for reuse, and reinstall them where indicated.
- P. **Existing to Remain or Retain:** Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.



- Q. Material in Kind: Material that matches existing materials, as much as possible, in species, cut, color, grain, and finish.

#### 1.5 SUBMITTALS:

- A. Historic Treatment Program: Submit a written plan for each phase or process, including protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work.
- B. Alternative Methods and Materials: If alternative methods and materials to those indicated are proposed for any phase of work, submit for Commissioner's approval a written description including evidence of successful use on other comparable projects, and program of testing to demonstrate effectiveness for use on this Project.
- C. Qualification Data: For historic treatment specialists as specified and required by individual sections of the project specifications.
- D. Photographs for Designated Landmark Structures: Submit photographs in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION and as described in this section.
- E. Record Documents: Include modifications to manufacturer's written instructions and procedures, as documented in the historic treatment preconstruction conference and as the Work progresses.

#### 1.6 QUALITY ASSURANCE:

- A. Special Experience Requirements: Special Experience Requirements may apply to the firm that will provide Historic Treatment Services. ~~If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.~~
- B. Historic Treatment Preconstruction Conference: The Resident Engineer will schedule and hold a preconstruction meeting at the site in accordance with Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION.
1. Review manufacturer's written instructions for precautions and effects of products and procedures on building materials, components, and vegetation.
    - a. Record procedures established as a result of the review and distribute to affected parties.

#### 1.7 STORAGE AND PROTECTION OF HISTORIC MATERIALS:

- A. Removed and Salvaged Historic Materials: As specified and required by individual sections of the project specifications.
- B. Removed and Reinstalled Historic Materials: As specified and required by individual sections of the project specifications.
- C. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling during historic treatment. When permitted by the Commissioner, items may be removed to a suitable, protected storage location during historic treatment and reinstalled in their original locations after historic treatment operations are complete.
- D. Storage and Protection: When removed from their existing location, store historic materials, at a location acceptable to the Commissioner, within a weather tight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature variations. Secure stored materials to protect from theft.
1. Identify removed items with an inconspicuous mark indicating their original location.

## PART II – PRODUCTS (Not Used)

## PART III – EXECUTION

### 3.1 PROTECTION, GENERAL:

- A. Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation.
- B. Ensure that supervisory personnel are present when work begins and during its progress.
- C. Temporary Protection of Historic Materials during Construction:
  - 1. Protect existing materials during installation of temporary protections and construction. Do not deface or remove existing materials.
  - 2. Attachments of temporary protection to existing construction shall be approved by the Commissioner prior to installation.
- D. Protect landscape work adjacent to or within work areas as follows:
  - 1. Provide barriers to protect tree trunks.
  - 2. Bind spreading shrubs.
  - 3. Use coverings that allow plants to breathe and remove coverings at the end of each day. Do not cover plant material with a waterproof membrane for more than 8 hours at a time.
  - 4. Set scaffolding and ladder legs away from plants.
- E. Existing Drains: Prior to the start of work or any cleaning operations, test drains and other water removal systems to ensure that drains and systems are functioning properly. Notify Commissioner immediately of drains or systems that are stopped or blocked. Do not begin Work of this Section until the drains are in working order.
  - 1. Provide a method to prevent solids, including stone or mortar residue, from entering the drains or drain lines. Clean out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this Contract.
  - 2. Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

### 3.2 PROTECTION DURING USE OF HEAT-GENERATING EQUIPMENT:

- A. No roofing work requiring the use of an open flame shall be permitted on any Landmark Structure or any Landmark Quality Structure, whose roof or wall structure is made of wood or primarily of wood.
- B. Comply with the following procedures while performing work with heat-generating equipment, including welding, cutting, soldering, brazing, paint removal with heat, and other operations where open flames or implements utilizing heat are used:
  - 1. Obtain Commissioner's approval for operations involving use of open-flame or welding equipment. Notification shall be given for each occurrence and location of work with heat-generating equipment.
  - 2. As far as practical, use heat-generating equipment in shop areas or outside the building.
  - 3. Before work with heat-generating equipment commences, furnish personnel to serve as a fire watch (or watches) for location(s) where work is to be performed.



4. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
  5. Remove and keep the area free of combustibles, including, rubbish, paper, waste, etc., within area of operations.
  6. If combustible material cannot be removed, provide fireproof blankets to cover such materials.
  7. Where possible, furnish and use baffles of metal or gypsum board to prevent the spraying of sparks or hot slag into surrounding combustible material.
  8. Prevent the extension of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
  9. Inspect each location of the day's work not sooner than 30 minutes after completion of operations to detect hidden or smoldering fires and to ensure that proper housekeeping is maintained.
- C. Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to automatic sprinkler heads, shield the individual heads temporarily with guards.

### 3.3 PHOTOGRAPHIC DOCUMENTATION:

Photographs for Designated Landmark Structures: Show existing conditions prior to any historic treatments, including one overall photograph and two close-up photographs of all areas of work affected. Show one overall photograph and two close-up photographs of all areas of work after the successful execution of all historical treatments.

### 3.4 NEW YORK CITY LANDMARKS PRESERVATION COMMISSION FINAL APPROVALS SIGNOFF:

For all projects involving a Landmark Structure or Site, the Contractor, at the completion of the work, shall submit to the Commissioner, in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS, all documentation concerning the successful execution of all historic treatments. This shall include, but not be limited to, copies of all before and after photographs of historic treatments, one copy of the Contractor's as-built drawings, copies of testing and analysis results, including cleaning, mortar analysis, pointing mortars and all other information pertaining to work performed under the New York City Landmarks Preservation Commission jurisdiction.

**END OF SECTION 01 35 91**





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HISTORIC TREATMENT PROCEDURES

01 35 91 - 6



**SECTION 01 40 00**  
**QUALITY REQUIREMENTS**

**PART I – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

**1.2 SUMMARY:**

- A. This Section includes the following:
- a. Definitions
  - b. Conflicting Requirements
  - c. Quality Assurance
  - d. Quality Control
  - e. Approval of Materials
  - f. Special Inspections (Controlled Inspection)
  - g. Inspections by Other City Agencies
  - h. Certificates of Approval
  - i. Acceptance Tests
  - j. Repair and Protection
- 
- B. This Section includes administrative and procedural requirements for quality control to assure compliance with quality requirements specified in the Contract Documents.
- C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
- D. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
- E. Provisions of this Section do not limit requirements for the Contractor to provide quality-assurance and -control services required by the Commissioner or authorities having jurisdiction.
- F. Specific test and inspection requirements are specified in the individual sections of the Specifications.
- G. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- H. COMMISSIONING: Refer to the Addendum to identify whether this project will be Commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.



**1.3 RELATED SECTIONS:** Include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
- C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
- D. Section 01 33 00 SUBMITTAL PROCEDURES
- E. Section 01 77 00 CLOSEOUT PROCEDURES
- F. Section 01 78 39 CONTRACT RECORD DOCUMENTS

**1.4 DEFINITIONS:**

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Commissioning: A Total Quality Assurance process that includes checking the design and installation of equipment, as well as performing functional testing of the same to confirm that the installed equipment is operating and in conformance with the Contract Documents and the City's requirements.

**1.5 CONFLICTING REQUIREMENTS:**

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, the Contractor shall comply with the most stringent requirement as determined by the Commissioner. The Contractor shall refer any uncertainties and/or conflicting requirements to the Commissioner for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. The Contractor shall refer any uncertainties to the Commissioner for a decision before proceeding.

**1.6 QUALITY ASSURANCE:**

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required. Individual Specification Sections specify additional requirements.
- B. Installer Qualifications: Special Experience Requirements may apply to the firm that will install, erect or assemble specified work required for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- C. Manufacturer Qualifications: Special Experience Requirements may apply to the firm that will manufacture equipment, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.



- D. Fabricator Qualifications: Special Experience Requirements may apply to the firm that will fabricate material, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- E. Professional Engineer Qualifications: A professional engineer who is licensed to practice in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- F. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- G. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  - 1. Build mockups in location and of size indicated or, if not indicated, as directed by the Resident Engineer.
  - 2. Notify Resident Engineer seven (7) days in advance of dates and times when mockups will be constructed.
  - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
  - 4. Obtain Design Consultant's approval of mockups before starting work, fabrication, or construction.
  - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  - 6. Demolish and remove mockups when directed, unless otherwise directed or indicated.

## 1.7 QUALITY CONTROL:

- A. City's Responsibilities: Where quality-control services are indicated as the City's responsibility in the Specifications, the City will engage a qualified testing agency to perform these services.
  - 1. COST OF TESTS BORNE BY THE CITY: Where the City directs tests to be performed to determine compliance with the Specifications regarding materials or equipment, and where such compliance is ascertained as a result thereof, the City will bear the cost of such tests.
  - 2. The City will furnish the Contractor with names, addresses, and telephone numbers of testing entities engaged and a description of the types of testing and inspecting they are engaged to perform.
  - 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.
- B. Contractor's Responsibility: Tests and inspections not explicitly assigned to the City are the Contractor's responsibility. Unless otherwise indicated, the Contractor shall provide quality-control services as set forth in the Specifications and those required by Authorities having jurisdiction. The Contractor shall provide quality-control services required by Authorities having jurisdiction, whether specified or not.
  - 1. COST OF TESTS BORNE BY CONTRACTOR – In the case of tests which are specifically called for in the Specifications to be provided by the Contractor or tests which are required by any Authority having jurisdiction, but are not indicated as the responsibility of the City, the cost thereof shall be borne by the Contractor and shall be deemed to be included in the Contract price. The Contractor shall reimburse the City for expenditures incurred in providing tests on materials and equipment submitted by the Contractor as the equivalent of that specifically named in the Specifications and rejected for non-compliance.
  - 2. Where services are indicated as Contractor's responsibility, the Contractor shall engage a qualified testing agency to perform these quality-control services. Any testing agency engaged by the Contractor to perform quality control services is subject to prior approval by the Commissioner.



3. The Contractor shall not employ same entity engaged by the City, unless agreed to in writing by the Commissioner.
  4. The Contractor shall notify testing agencies and the Resident Engineer at least 72 hours in advance of the date and time for the performance of Work that requires testing or inspecting.
  5. Where quality-control services are indicated as Contractor's responsibility, the Contractor shall submit a certified written report, in triplicate to the Commissioner, of each quality-control service.
  6. Testing and inspecting requested by the Contractor and not required by the Contract Documents are Contractor's responsibility.
  7. The Contractor shall submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Manufacturer's Field Services:** Where indicated, the Contractor shall engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Results shall be submitted in writing as specified in Section 01 33 00 SUBMITTAL PROCEDURES.
- D. **Retesting/Re-inspecting:** Regardless of whether the original tests or inspections were the Contractor's responsibility, the Contractor shall provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. **Associated Services:** The Contractor shall cooperate with entities performing required tests, inspections, and similar quality-control services, and shall provide reasonable auxiliary services as requested. The Contractor shall notify the testing agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist testing entity in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing entities.
  6. Design mix proposed for use for material mixes that require control by the testing entity.
  7. Security and protection for samples and for testing and inspecting equipment at the Project site.
- F. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
  2. Coordinate and cooperate with the Commissioning Authority/Agent as applicable for start-up, inspection and functional testing in the implementation of the Commissioning Plan.
- G. **Manufacturer's Directions:** Where the Specifications provide that the manufacturer's directions are to be used, such printed directions shall be submitted to the Commissioner.
- H. **Inspection of Material:** In the event that the Specifications require the Contractor to engage the services of an entity to witness and inspect any material especially manufactured or prepared for use in or part of the permanent construction, such entity shall be subject to prior written approval by the Commissioner.
1. **NOTICE** - The Contractor shall give notice in writing to the Commissioner sufficiently in advance of its intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Commissioner will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials, or the Commissioner will notify the Contractor that the inspection will be made at a point



other than the point of manufacture, or the Commissioner will notify the Contractor that inspection will be waived.

- I. No Shipping Before Inspection: The Contractor shall comply with the foregoing before shipping any material.
- J. Certificate of Manufacture: When the Commissioner so requires, the Contractor shall furnish to the Commissioner authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the work have been manufactured and tested in conformity with the Specifications. These certificates shall include copies of the results of physical tests and chemical analyses where necessary, that have been made directly on the product, or on similar products being fabricated by the manufacturer. This may include such approvals as B.S.A., M.E.A., B.E.C. Advisory Board, etc.
- K. Acceptance: When materials or manufactured products shall comprise such quantity that it is not practical to make physical tests or chemical analyses directly on the product furnished, a certificate stating the results of such tests or analyses of similar materials which were concurrently produced may, at the discretion of the Commissioner, be considered as the basis for the acceptance of such material or manufactured product.
- L. Testing Compliance: The testing personnel shall make the necessary inspections and tests, and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Specifications, indicating thereon all analyses and/or test data and interpreted results thereof.
- M. Reports: Six (6) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the Commissioner as a prerequisite for the acceptance of any material or equipment.
- N. Rejections: If, in making any test, it is ascertained by the Commissioner that the material or equipment ~~does not comply with the Specifications, the Contractor will be notified thereof, and will be directed to~~ refrain from delivering said materials or equipment, or to promptly remove it from the site or from the work and replace it with acceptable material at no additional cost to the City.
- O. Furnish Designated Materials: Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Specifications, the Contractor shall immediately proceed to furnish the designated material or equipment.

#### 1.8 APPROVAL OF MATERIALS:

- A. Local Laws: All materials, appliances and types or methods of construction shall be in accordance with the Specifications and shall in no event be less than that necessary to conform to the requirements of the New York City Construction Codes, Administrative Code and Charter of the City of New York.
- B. Approval of Manufacturer: The names of proposed manufacturers, material suppliers, and dealers who are to furnish materials, fixtures, equipment, appliances or other fittings shall be submitted to the Commissioner for approval, as early as possible, to afford proper review and analysis. No manufacturer will be approved for any materials to be furnished under the Contract unless it shall have a plant of ample capacity and shall have successfully produced similar products. All approvals of materials or equipment that are legally required by the New York City Construction Codes and other governing Authorities must be obtained prior to installation.
- C. All Materials: Fixtures, fittings, supplies and equipment furnished under the Contract shall be new and unused, except as approved by the Commissioner, and of standard first-grade quality and of the best workmanship and design. The City of New York encourages the use of recycled products where practical.
- D. INFORMATION TO SUPPLIERS - In asking for prices on materials under any item of the Contract, the Contractor shall provide the manufacturer or dealer with such complete information from the



Specifications and Contract Drawings as may in any case be necessary, and in every case the Contractor shall inform the manufacturer or dealer of all the General Conditions and requirements herein contained.

#### 1.9 SPECIAL INSPECTIONS:

##### A. SPECIAL INSPECTIONS:

1. Inspection of selected materials, equipment, installation, fabrication, erection or placement of components and connections made during the progress of the Work to ensure compliance with the Contract Documents and provisions of the New York City Construction Codes, shall be made by a Special Inspector. The City of New York will retain the services of the Special Inspector and bear the costs for the performance of Special Inspections in compliance with NYC Construction Codes requirements or as additionally may be called for in the project specifications, except as noted below for Form TR-3: Technical Report for Concrete Design Mix. The Special Inspector shall be an entity compliant with the requirements of the New York City Construction Codes. The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the commencement of any work requiring special inspection.
2. Form TR3: Technical Report Concrete Design Mix: The contractor shall be responsible for, and bear all costs associated with the filing and securing of approvals, if any, for Form TR3: Technical Report Concrete Design Mix, including, but not limited to, engaging the services of a New York City licensed Concrete Testing Lab for the review and approval of concrete design mix, testing, signatures and professional seals, etc., compliant with NYC Department of Buildings requirements, for each concrete design mix.
3. The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the commencement of any work requiring Special Inspection. The contractor shall be responsible for, and bear related costs to assure that all construction or work shall remain accessible and exposed for inspection purposes until the required inspection is completed.
4. Inspections and tests performed under "Special Inspection" shall not relieve the Contractor of the responsibility to comply with the Contract Documents, and that there is no warranty given to the Contractor by the City of New York in connection with such inspection and tests or certifications made under "Special Inspections".
5. The contractor must coordinate with the Resident Engineer or DDC Project Manager to provide access and schedule the work for inspection by the Special Inspector.

#### 1.10 INSPECTIONS BY OTHER CITY AGENCIES:

- A. Letter of Completion: Just prior to substantial completion of this Project, the Commissioner will file with the Department of Buildings, an application for a Letter of Completion or a Certificate of Occupancy for the structure.
- B. Final Inspections: In connection with the above mentioned application for a Letter of Completion or a Certificate of Occupancy and before certificates of final payments are issued, the Contractor will be required to arrange for all final inspections by the inspection staff of the Department of Buildings, Fire Department or other Governmental Agencies having jurisdiction, and secure all reports, sign offs, certificates, etc., by such inspection staff or other governmental agencies, in order that a Letter of Completion or Certificate of Occupancy can be issued promptly.

#### 1.11 CERTIFICATES OF APPROVAL:

- A. Responsibility: The Contractor shall be responsible for and shall obtain all final approvals for the work installed under the Contract in the form of such certificates that are required by all governmental agencies having jurisdiction over the work of the Contract.
- B. Transmittal: All such certificates shall be forwarded to the Commissioner through the Resident Engineer.



### 1.12 ACCEPTANCE TESTS:

- A. Government Agencies: All equipment and appliances furnished and installed under the Contract shall conform to the requirements of the Specifications, and shall in no event be less than that necessary to comply with the minimum requirements of the law and all of the governmental agencies having jurisdiction.
- B. Notice of Tests: Whenever the Specifications and/or any governmental agency having jurisdiction requires the acceptance test, the Contractor shall give written notice to all concerned of the time when these tests will be conducted.
- C. Energy: The City will furnish all energy, fuel, water and light required for tests.
- D. Labor and Materials: The Contractor shall furnish labor and all other material and instruments necessary to conduct the acceptance tests at no additional cost to the City.
- E. Certificates: The final acceptance by the Commissioner shall be contingent upon the Contractor delivering to the Commissioner all necessary certificates evidencing compliance in every respect with the requirements of the regulatory agencies having jurisdiction.
- F. Results: If the results of tests and Special Inspections indicate that the material or procedures do not meet requirements as set forth on the Contract Drawings or in the Specifications or are otherwise unsatisfactory, the Contractor shall only proceed as directed by the Resident Engineer. Additional costs resulting from retesting, re-inspecting, replacing of material and/or damage to the work and any delay caused to the schedule shall be borne by the Contractor.

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## 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





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No Text



QUALITY REQUIREMENTS

01 40 00 - 8



**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



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
<del>AEIG</del>	<del>Association of Edison Illuminating Companies, Inc. (The)</del>
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AGC	Associated General Contractors of America (The)
AGMA	American Gear Manufacturer Association
AHA	American Hardboard Association (Now part of CPA)
AHAM	Association of Home Appliance Manufacturers
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALCA	Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network)



ALSc	American Lumber Standard Committee, Incorporated
ALI	Automotive Lift Institute
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts, Inc.
APA	APA - The Engineered Wood Association
APA	Architectural Precast Association
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASA	American Standards Association
ASAE	American Society of Agricultural Engineers
ASCE/SEI	American Society of Civil Engineers, Structural Engineering Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International (American Society for Testing and Materials International)
AWCI	AWCI International (Association of the Wall and Ceiling Industry International)
AWCMA	American Window Covering Manufacturers Association (Now WCSC)
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWSC	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)



BICSI	BICSI
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
BISSC	Baking Industry Sanitation Standards Committee
CIBSE	Chartered Institute of Building Services Engineers
CCC	Carpet Cushion Council
CDA	Copper Development Association
CEA	Canadian Electricity Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CGSB	Canadian General Standards Board
CIMA	Cellulose Insulation Manufacturers Association
CIPRA	Cast Iron Pipe Research Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CPPA	Corrugated Polyethylene Pipe Association
CPSC	Consumer Product Safety Commission
CRI	Carpet & Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSA	Canadian Standards Association
CSI	Cast Stone Institute
CSI	Construction Specifications Institute (The)
CSSB	Cedar Shake & Shingle Bureau
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)



DASMA	Door and Access Systems Manufacturer's Association International
DHI	Door and Hardware Institute
DOC	U.S. Department of Commerce – National Institute of Standards and Technology
EIA	Electronic Industries Alliance
DOJ	U.S. department of Justice
EIMA	EIFS Industry Members Association
DOL	U.S. Department of labor
EJCDC	Engineers Joint Contract Documents Committee
DOTn	U.S. Department of Transportation
EN	European Committee of Standards
EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association
EVO	Efficiency Valuation Organization
FEME	Federal Emergency Management Agency
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation)
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation)
FMG	FM Global (Formerly: FM - Factory Mutual System)
FMRC	Factory Mutual Research (Now FMG)
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
FSA	Fluid Sealing Association
FSC	Forest Stewardship Council
GA	Gypsum Association
GANA	Glass Association of North America
GRI	(Now GSI)
GS	Green Seal
GSI	Geosynthetic Institute



HI	Hydraulic Institute
HI	Hydronics Institute
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)
HPVA	Hardwood Plywood & Veneer Association
HPW	H. P. White Laboratory, Inc.
HUD	U.S. Department of Housing and Urban Development
IAPMO	International Association of Plumbing and Mechanical Officials
IAS	International Approval Services (Now CSA International)
IBF	International Badminton Federation
ICC	International Code Council, Inc.
ICEA	Insulated Cable Engineers Association, Inc.
ICRI	International Concrete Repair Institute, Inc.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
IESNA	Illuminating Engineering Society of North America
IEST	Institute of Environmental Sciences and Technology
IGCC	Insulating Glass Certification Council
IGMA	Insulating Glass Manufacturers Alliance
ILI	Indiana Limestone Institute of America, Inc.
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association
ITS	Intertek
ITU	International Telecommunication Union
KCMA	Kitchen Cabinet Manufacturers Association
LMA	Laminating Materials Association (Now part of CPA)
LPI	Lightning Protection Institute
MBMA	Metal Building Manufacturers Association





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MFMA	Maple Flooring Manufacturers Association, Inc.
MFMA	Metal Framing Manufacturers Association
MH	Material Handling (Now MHIA)
MHIA	Material Handling Industry of America
MIA	Marble Institute of America
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International (National Association of Corrosion Engineers International)
NADCA	National Air Duct Cleaners Association
NAGWS	National Association for Girls and Women in Sport
NAIMA	North American Insulation Manufacturers Association
NBGQA	National Building Granite Quarries Association, Inc.
NCAA	National Collegiate Athletic Association (The)
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFHS	National Federation of State High School Associations
NFPA	NFPA (National Fire Protection Association)
NFRC	National Fenestration Rating Council



NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NIS	National Institute of Standards and Technology
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association)
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation International)
NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc. (The)
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)
NWWDA	National Wood Window and Door Association (Now WDMA)
<del>OPL</del>	<del>Omega-Point-Laboratories, Inc. (Acquired by ITS--Intertek)</del>
PCI	Precast / Pre-stressed Concrete Institute
PDCA	Painting & Decorating Contractors of America
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PLANET	Professional Landcare Network (Formerly: ACLA - Associated Landscape Contractors of America)
PPS	Power Piping Society
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
RMI	Rack Manufacturers Institute
RTI	(Formerly: NTRMA - National Tile Roofing Manufacturers Association) (Now TRI)



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SAE	SAE International
SCAQMD	South Coast Air Quality Management District
SCS	Scientific Certification System
SDI	Steel Deck Institute
SDI	Steel Door Institute
SEFA	Scientific Equipment and Furniture Association
SGCC	Safety Glazing Certification Council
SHBI	Steel Heating Boiler Institute
SIA	Security Industry Association
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPTE	Society of Motion Picture and Television Engineers
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPRI	Single Ply Roofing Industry
SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
SWI	Steel Window Institute
SWRI	Sealant, Waterproofing, & Restoration Institute
TCA	Tile Council of America, Inc.
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance
TMS	The Masonry Society



TPI	Truss Plate Institute, Inc.
TPI	Turfgrass Producers International
TRI	Tile Roofing Institute (Formerly: RTI - Roof Tile Institute)
UL	Underwriters Laboratories Inc.
ULC	Underwriters Laboratories of Canada
UNI	Uni-Bell PVC Pipe Association
USAV	USA Volleyball
USC	United States Code
USGBC	U.S. Green Building Council
USITT	United States Institute for Theatre Technology, Inc.
WASTECC	Waste Equipment Technology Association
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association (Now WCSC)
WGSC	<b>Window-Covering-Safety-Council</b> (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**



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



**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:

<b>REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 A</b>
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- A. TEMPORARY WATER SYSTEM - NEW FACILITIES: During construction, the Contractor shall furnish a Temporary Water System as set forth below.
  - 1. Immediately after the Commissioner has issued an order to start work, the Contractor shall file an application with the Dept. of Environmental Protection for the schedule of charges for water use during construction. The Contractor will be responsible for payment of water charges.
  - 2. Immediately after the Commissioner has issued an order to start work, the Contractor shall file an application with the Department of Environmental Protection's Bureau of Water Supply and obtain a permit to install the temporary water supply system. The system shall be installed and maintained for the use of the Contractor and its subcontractors. A copy of the above mentioned permit shall be filed with the Commissioner. The Contractor shall provide temporary water main, risers and waste stacks as directed and install on each floor, outlets with two (2) 3/4" hose valve connections over a barrel installed on a steel pan. The Contractor shall provide drains from the pans to the stack and house sewer and hose bibs to drain the water supply





- risers and mains. During winter months, the Contractor shall take the necessary precautions to prevent the temporary water system from freezing. The Contractor shall provide repairs to the temporary water supply system for the duration of the project until said temporary system is dismantled and removed.
3. Disposition of Temporary Water System: The Contractor shall be responsible for dismantling the temporary water system when no longer required for the construction operations, or when replaced by the permanent water system installed for the project, or as otherwise directed by the Resident Engineer. All repair work resulting from the dismantling of the temporary water system shall be the responsibility of the Contractor.

**REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 B**

- B. TEMPORARY WATER SYSTEM – PROJECTS IN EXISTING FACILITIES:
  1. When approved by the Commissioner, use of existing water system will be permitted for temporary water service during construction, as long as the system is cleaned and maintained in a condition acceptable to the Commissioner. At Substantial Completion, the Contractor shall restore the existing water system to conditions existing before initial use.
  2. The Contractor shall be responsible for all repairs to the existing water system permitted to be used for temporary water service during construction. The Contractor shall be responsible to maintain the existing system in a clean condition on a daily basis, acceptable to the Commissioner.
  3. The Contractor will be responsible for payment of water charges as directed by the Commissioner. Billing will be in accordance with the Department of Environmental Protection schedule of charges for Building Purposes.
- C. WASH FACILITIES: The Contractor shall install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition.
  1. Dispose of drainage properly.
  2. Supply cleaning compounds appropriate for each condition.
  3. Include safety showers, eyewash fountains and similar facilities for the convenience, safety and sanitation of personnel.
- D. DRINKING WATER FACILITIES: The Contractor shall provide drinking water fountains or containerized tap-dispenser bottled-drinking water units, complete with paper cup supplies. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg. F (7 to 13 deg. C).

**3.3 TEMPORARY SANITARY FACILITIES:**

- A. The Contractor shall provide toilets, wash facilities and drinking water fixtures in compliance with regulations and health codes for type, number, location, operation and maintenance of fixtures and facilities. Provide toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility, and provide covered waste containers for used materials.

**REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3 B**

- B. SELF-CONTAINED TOILET UNITS:
  1. The Contractor shall provide temporary single-occupant toilet units of the chemical, aerated re-circulation, or combustion type for use by all construction personnel. Units shall be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Quantity of toilet units shall comply with the latest OSHA regulations.
  2. Toilets: Install separate self-contained toilet units for male and female personnel. Shield toilets to ensure privacy.



**REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3 C**

**C. EXISTING TOILETS:**

1. **TOILET FACILITIES:** When approved by the Commissioner, the Contractor shall arrange for the use of existing toilet facilities by all personnel during the execution of the work. The Contractor shall be responsible to clean and maintain facilities in a condition acceptable to the Resident Engineer and, at completion of construction, to restore facilities to their condition at the time of initial use.
2. **MAINTENANCE** - The Contractor shall maintain the temporary toilet facilities in a clean and sanitary manner and make all necessary repairs.
3. **NUISANCES** - The 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  $\frac{1}{4}$  horsepower may be taken from the existing electric distribution system if the existing system is of adequate capacity for the temporary power load. The 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  $\frac{1}{4}$  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 15<sup>th</sup> to April 15<sup>th</sup>.

Contract Duration	Full Heating Seasons Required
up to 360 ccds	1 full heating season
360 to 720 ccds	2 full heating seasons
more than 720 ccds	3 full heating seasons

E. METHOD OF TEMPORARY HEAT:

- 1. The method of temporary heat shall be in conformance with the New York City Fire Code and with all applicable laws, rules and regulations. Prior to implementation, such method shall be subject to the written approval of the Commissioner.
- 2. The method of temporary heat shall:
  - a. Not cause the deposition of dirt or smudges upon any finished work or cause any defacement or discoloration to the finished work.
  - b. Not be injurious or harmful to people or materials.



- c. Portable fueled heating devices or equipment SHALL NOT BE ALLOWED for use as temporary heat other than construction-related curing or drying in conformance with the NYC Fire Code.
3. No open fires will be permitted.

F. TEMPORARY HEATING SYSTEM:

1. The temporary system for the provision of Temporary Heat provided by the 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.



- 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 DIMMS
      - 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



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:

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**NO TRESPASSING**

**AUTHORIZED PERSONNEL ONLY**

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- ~~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



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  
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No Text



**SECTION 01 54 11**  
**TEMPORARY ELEVATORS AND HOISTS**

**PART I – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

**1.2 SUMMARY:**

- A. This section includes the following:
1. Temporary Use, Operation and Maintenance of Elevators during Construction
    - a. For New buildings up to 15 Stories
    - b. For New buildings over 15 Stories
    - c. For Existing Buildings
  2. Temporary Construction Hoists and Hoist ways (For Material and Personnel)

**1.3 RELATED SECTIONS:** include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 42 00 REFERENCES
- C. Section 01 50 00 TEMPORARY FACILITIES AND CONTROLS
- D. Section 01 54 23 TEMPORARY SCAFFOLDS AND SWING STAGING
- E. Section 01 77 00 CLOSE OUT PROCEDURES

**PART II – PRODUCTS (Not Used)**

**PART III – EXECUTION**

**REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.1**

**3.1 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR NEW BUILDINGS UP TO AND INCLUDING 15 STORIES:**

- A. **INSTALLATION:** The Contractor shall install, complete, operate, and maintain in good working order, as indicated herein, one (1) selected main elevator for the transport of employees of the Contractor and/or its subcontractors, and representatives of the DDC and other Governmental Agencies having jurisdiction of work at the project. The Contractor shall furnish, install, and maintain such elevator in good working order, including all necessary hoisting ropes, governor cables, traveling conductor cables; operating devices, temporary hand reset target annunciators, temporary signal devices, and all other permanent or temporary parts. The installation, operation and maintenance of the temporary elevator and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use.
- B. **RESPONSIBILITY:** The Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevator and all equipment and/or parts utilized in connection therewith.



- C. **COSTS:** The Contractor shall be responsible for all costs in connection with the temporary elevator, including without limitation: (1) installing and operating the temporary elevator, (2) maintaining the temporary elevator in clean, proper operating condition, including the cost of lubricants and/or parts for such maintenance, (3) performing all work in pits, shaft ways and machine rooms necessary for the operation of the temporary elevator, (4) replacing the temporary elevator or any equipment or parts utilized in connection therewith, if required, due to damage, destruction or excessive wear or corrosion, except for the replacement of hoisting ropes as set forth below, (5) performing all required electrical work in connection with the temporary elevator, (6) providing all electric power required to operate the temporary elevator, (7) providing all necessary conduit and wiring connections for the proper operation and signaling of the temporary elevator, and (8) providing all labor for the operation and maintenance of the temporary elevator, including on an overtime basis if necessary. The total Contract Price shall include all costs in connection with the temporary elevator, including without limitation, the costs specified herein.
- D. **COMMENCEMENT OF SERVICE:** The Contractor shall begin to provide temporary elevator service using the selected main passenger elevator no later than eight (8) weeks (40 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed. No later than three (3) weeks (15 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed the following work shall have been completed:
1. The shaft shall have been completely enclosed by either the permanent or a temporary enclosure meeting the requirements of the law.
  2. The machine room shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
  3. There shall have been installed on all floors at the shaft way entrances to the elevator, solid substantial frames and either sliding or swing doors with substantial hardware and door locks and any necessary approved wire mesh barricades for adjacent shaft ways.
  4. There shall have been furnished and installed solid substantial enclosures at front, back, sides and top of car platform enclosure, with emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- E. **ELECTRICAL INSTALLATION:** The Contractor, not later than 20 calendar days after the machine room roof slab or that portion of its surrounding the elevator has been placed, shall have furnished and installed temporary or permanent power and light feeders as required for the elevator used for temporary service and shall have connected such feeders to the terminals on the starter panels or controllers in the machine room to the low voltage transformers and car light outlets in the center of shaft way and for the car control and signal traveling cables. The Contractor shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.
- F. **REMOVAL:** When elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the Contractor shall remove the temporary enclosures and all temporary elevator equipment and promptly proceed with the installation of the permanent equipment as required under the Contract.
- G. **INSPECTION:** Before temporary elevator equipment is removed, a joint inspection of the equipment shall be made by the Contractor and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection deems it necessary, the Contractor shall furnish and install new governor and compensating ropes, new traveling cables and new controller parts, etc. The car and counterweight safeties shall be thoroughly cleaned of all dirt and all foreign matter, then properly lubricated and placed in good operating condition to the satisfaction of the Commissioner. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.



- H. **REPLACEMENT:** The Contractor shall furnish and install new equipment or parts for any equipment or parts of the temporary elevator installation that have been damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators shall be thoroughly cleaned. Where lubricated rails are used they shall be washed down. If roller guides are used, all rust, dirt, etc., must be moved from the rails. The full cost of parts replacement, cleaning, etc., shall be borne by the Contractor except for the replacement of hoisting ropes.
- I. **LIMITATIONS ON USE:** The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of the Contractor and/or its subcontractors, and representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the Contractor and/or its subcontractors to hoist materials, which in the Resident Engineer's opinion will not overload or damage the elevator installation, but only after such times as all plastering has been completed from the second floor up. In the event of any damage to the temporary elevator, the Contractor shall notify the Resident Engineer within 24 hours after such damage has occurred. As indicated above, the Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- J. **LIQUIDATED DAMAGES:** The Contractor will be charged at the rate of \$100 per day for each day it fails to provide the temporary elevator service described in this section beginning with the 41<sup>st</sup> working day after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. This charge will be deducted from any amount due and owing to the Contractor.

**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



**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.



- 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.

<b>REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.5 C</b>
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- 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](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](http://www.wastematch.org) Site of New York Waste Match, a materials exchange database and service  
[www.bignyc.org](http://www.bignyc.org) Site of Build It Green NYC, a non profit outlet for salvaged and surplus building materials  
[www.usgbc.org](http://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](http://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.



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

No Text





**SECTION 01 77 00  
CLOSEOUT PROCEDURES**

**PART I – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

**1.2 SUMMARY:**

- A. This Section includes administrative and general procedural requirements for Closeout Procedures, including without limitation the following:
1. Definitions
  2. Substantial Completion
  3. Final Acceptance
  4. Warranties
  5. Final Cleaning
  6. Repair of the Work
- B. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- C. COMMISSIONING: Refer to the Addendum to identify whether this project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED- NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

**1.3 RELATED SECTIONS:** include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 33 00 SUBMITTAL PROCEDURES
- C. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL
- D. Section 01 78 39 CONTRACT RECORD DOCUMENTS
- E. Section 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION

**1.4 DEFINITIONS:**

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or



combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

- C. Substantial Completion: shall mean the written determination by the Commissioner that the Work required under the Contract is substantially, but not entirely, complete.
- D. Final Acceptance: shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to the Contractor.

### 1.5 SUBSTANTIAL COMPLETION:

- A. Preliminary Procedures: Before requesting inspection to determine the date of Substantial Completion, the Contractor shall complete and supply all items required by the contract specifications, General Conditions, Addendum to the General Conditions, change orders or other directives from the Commissioner's representatives. The required items will include all contract requirements for substantial completion, including but not limited to items related to releases, regulatory approvals, warranties and guarantees, record documents, testing, demonstration and orientation, final clean up and repairs, and all specific checklist of items by the Resident Engineer. (See Attachment "A" at the end of this section for sample requirements for Substantial Completion).
- B. Prepare and submit a list to the Resident Engineer of incomplete items, the value of incomplete construction, and reasons the work is not complete.
- C. Inspection: The Contractor shall submit to the Resident Engineer a written request for inspection for Substantial Completion. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities having involvement with the Work to assist in the inspection of the Work. If the Resident Engineer makes a determination that the work is substantially complete and approves the Final Punch List and the date for Final Acceptance, he/she will so advise the Commissioner and recommend issuance of the Certificate of Substantial Completion. If the Resident Engineer determines that the work is not substantially complete, he/she will notify the Contractor of those items that must be completed or corrected before the Certificate of Substantial Completion will be issued.
  - 1 Re-inspection: Contractor shall request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
  - 2 Results of completed inspection will form the basis of requirements for Final Acceptance.

### 1.6 FINAL ACCEPTANCE:

- A. Preliminary Procedures: Before requesting final inspection for Final Acceptance of the Work, the Contractor shall complete the following. (Note that the following are to be completed, submitted as appropriate, and approved by the Commissioner, as applicable, prior to the final inspection and are not to be submitted for approval or otherwise at the final inspection unless specifically indicated). List exceptions in the request.
  - 1. Verify that all required submittals have been provided to the Commissioner including but not limited to the following:
    - a. Manufacturer's cleaning instructions
    - b. Posted instructions
    - c. As-built Record Documents (Drawings, specifications, and product data) as described in Section 01 78 39, CONTRACT RECORD DOCUMENTS, incorporating any changes required by the Commissioner as a result of the review of the submission prior to the pre-final inspection.
    - d. Operation and Maintenance Manuals, including Preventive Maintenance, Special Tools, Repair Requirements, Parts List, Spare Parts List, and Operating Instructions.



- e. Completion of required Demonstration and Orientation, as applicable, of designated personnel in operation and maintenance of systems, sub-systems and equipment.
  - f. Applicable LEED Building submittals as described in Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.
  - g. Construction progress photographs as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.
2. Submit a certified copy of the final approved Punch List of items to be completed or corrected. The certified copy of the Punch List shall state that each item has been completed or otherwise resolved for acceptance, and shall be endorsed and dated by the Contractor.
  3. Submit pest-control final inspection report and survey as required in Section 01 50 00, TEMPORARY FACILITIES AND CONTROLS.
  4. Submit record documents and similar final record information.
  5. Deliver tools, spare parts, extra stock and similar items.
  6. Complete final clean-up requirements including touch-up painting of marred surfaces.
  7. Submit final meter readings for utilities, as applicable, a measured record of stored fuel, and similar data as of the date when the City took possession of and assumed responsibility for corresponding elements of the work.
- B. Final Inspection: The Contractor shall submit to the Resident Engineer a written request for inspection for Final Acceptance of the Work. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify the Contractor of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities having involvement with the Work to assist in the inspection of the Work. If the Resident Engineer finds that all items on the Final Approved Punch List are complete and no further work remains to be done, he/she will so advise the Commissioner and recommend the issuance of the determination of Final Acceptance. If the Resident Engineer determines that the work is not complete, he/she will notify the Contractor of those items that must be completed or corrected before the determination of Final Acceptance will be issued.
- C. Final Acceptance: The Work will be accepted as final and complete as of the date of the Resident Engineer's inspection if, upon such inspection, the Resident Engineer finds that all items on the Punch List are complete and no further Work remains to be done. The Commissioner will then issue a written determination of Final Acceptance.

#### 1.7 WARRANTIES:

- A. The items of materials and/or equipment for which manufacturer warranties are required are listed in Schedule B of the Addendum. For each item of material and/or equipment listed in Schedule B, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth in Schedule B and will be replaced or repaired within such specified period. The contractor shall deliver all required warranties to the Commissioner.
- B. Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.
- C. Submittal Time: Submit written Warranties on request of the Commissioner for designated portions of the Work where commencement of Warranties other than date of Substantial Completion is indicated.
- D. Partial Occupancy: Submit properly executed Warranties to the Commissioner within 15 days of completion of designated portions of the Work that are completed and occupied or used by the City.
- E. Organize the Warranty documents into an orderly sequence based on the Project Specification Divisions and Section Numbers.





1. Bind Warranties in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES;" name and location of Project; Capitol Budget Project Number (FMS ID); and Contractor's and applicable subcontractor's name and address.
  3. Provide heavy paper dividers with plastic-covered tabs for each separate Warranty. Mark tab to identify the product or installation.
  4. Provide a typed description of each product or installation being warranted, including the name of the product, and the name, address, and telephone number of the Installer.
- F. When warranted materials and/or equipment require operation and maintenance manuals, provide additional copies of each required Warranty in each required manual. Refer to Section 01 78 39, CONTRACT RECORD DOCUMENTS, for requirements of Operation and Maintenance Manuals.

## PART II – PRODUCTS

### 2.1 MATERIALS:

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## PART III – EXECUTION

### 3.1 FINAL CLEANING:

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations, as applicable, before requesting inspection for Final Acceptance of the Work for entire Project or for a portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Remove snow and ice to provide safe access to building.
    - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - h. Sweep concrete floors broom clean in unoccupied spaces.
    - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.



- j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
- k. Remove labels that are not permanent.
- l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
  - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
- m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
- n. Replace parts subject to unusual operating conditions.
- o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- q. Clean ducts, blowers, and coils if units were operated without filters during construction.
- r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
- s. Leave Project clean and ready for occupancy.
- t. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests, as required in Section 01 50 00, TEMPORARY FACILITIES, SERVICES AND CONTROLS. Prepare and submit a Pest Control report to the Commissioner.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on City's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

### 3.2 REPAIR OF THE WORK:

- A. Subject to the terms of the Contract the Contractor shall complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Contractor shall repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
  - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that 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.



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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

**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.



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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.



- 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.
-



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### GUARANTY

DDC PROJECT # \_\_\_\_\_

PROJECT DESCRIPTION \_\_\_\_\_

CONTRACT # \_\_\_\_\_

SPECIFICATION SECTION # AND TITLE \_\_\_\_\_

GUARANTY TO BE IN EFFECT FROM \_\_\_\_\_

TO \_\_\_\_\_

The Contractor hereby guarantees that the work specified under the above section of the aforesaid Contract will be free from defects of material and/or workmanship, for the period indicated above.

The Contractor also guarantees that it will promptly repair, restore, rebuild or replace whichever may be deemed necessary by the City, any or all defective material or workmanship of the aforementioned section, that may appear within the guaranty period and any finished work to which damage may occur because of such defects, to the satisfaction of the City and without any cost or expense to the City.

The Contractor hereby agrees to pay to the City the cost of the repairs or replacements should the City make the same because of the failure of the Contractor to do so.

Contractor: \_\_\_\_\_

By: \_\_\_\_\_  
Signature of Partner or Corporate Officer

Print Name: \_\_\_\_\_

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

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



## 2.8 WASTE DISPOSAL DOCUMENTATION:

- A. Certify and deliver to the Commissioner all documentation including reports, receipts, certificates, records etc. for the collection, handling, storage, classification, testing, transportation, recycling and/or disposal of all Non-Hazardous Construction Waste as required by Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, and Hazardous Waste as required by other Project Specification Sections. Certify compliance with all applicable governing laws, codes, rules and regulations.

## 2.9 MISCELLANEOUS RECORD DOCUMENTS:

- A. Refer to other Project Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Prior to Final Acceptance, complete miscellaneous records and place in good order, properly identified and bound or otherwise organized to allow for use and reference.
- B. Submit three (3) copies of each document to the Commissioner or as otherwise directed by the Commissioner.

## PART III – EXECUTION

### 3.1 RECORDING AND MAINTENANCE:

- A. ~~Recording: Maintain one copy of each submittal during the construction period for Contract Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.~~
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Contract Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to the Contract Record Documents for the Resident Engineer's reference during normal working hours.

END OF SECTION 01 79 39



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No Text



**SECTION 01 79 00**  
**DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION**

**REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 79 00**

**PART I – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

**1.2 SUMMARY:**

- A. This Section includes administrative and procedural requirements, when set forth in sections of the Project Specifications, for instructing facility's personnel, including the following:
1. Demonstration of operation of systems, subsystems, and equipment.
  2. Owner's Pre-Acceptance Orientation in operation and maintenance of systems, subsystems, and equipment.
  3. Demonstration and Orientation videotapes. (Non-Commissioned Projects)
- B. The Contractor shall provide the services of equipment manufacturers orientation specialists ~~experienced in the type of equipment to be demonstrated.~~
- C. Separate Orientation sessions shall be conducted for mechanical operations and maintenance personnel and for electronic and electrical maintenance personnel.
- D. Commissioning: Refer to the Addendum to identify whether this project is to be Commissioned. For Commissioned projects the Contractor shall provide Demonstration and Orientation as described in this section and cooperate with the Commissioning Authority/Agent (CxA) to implement Commissioning requirements as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.

**1.3 RELATED SECTIONS: include without limitation the following:**

- A. Section 01 10 00 SUMMARY
- B. Section 01 33 00 SUBMITTAL PROCEDURES
- C. Section 01 77 00 CLOSEOUT PROCEDURES
- D. Section 01 78 39 CONTRACT RECORD DOCUMENTS
- E. Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS
- F. Specific requirements for demonstration and training indicated in other sections of the Project Specifications

**1.4 DEFINITIONS:**

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.





- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

## 1.5 SUBMITTALS:

- A. Instruction Program: Submit three (3) copies of outline of instructional program for demonstration and orientation, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each orientation module to the Commissioner for approval no less than thirty (30) days prior to the date the proposed orientation is to take place. Include learning objectives and outline for each orientation module.
1. At completion of training, submit three (3) complete training manual(s) and three (3) applicable DVD recording(s) to the Commissioner for the facility's and City's use.
- B. Qualification Data: For facilitator, instructor and Videographer.
- C. Attendance Record: For each orientation module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each orientation module, submit results and documentation of performance-based test.
- E. Submit all final orientation material to the Resident Engineer a minimum of fourteen (14) days prior to the scheduled training.
- F. Demonstration and Orientation Recordings:
1. Non-Commissioned Projects:
    - a. The Contractor shall submit to the Commissioner three (3) copies of Demonstration and Orientation DVD (Digital Video Disk) recordings within seven (7) days of end of each training module.
    - b. Identification: On each copy, provide an applied label with the following information:
      - 1) Project Contract I.D. Number
      - 2) Project Contract Name
      - 3) Name of Contractor
      - 4) Name of Subcontractor as applicable
      - 5) Name of Design Consultant
      - 6) Name of Construction Manager as applicable
      - 7) Date recorded.
      - 8) Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
      - 9) Table of Contents including list of systems covered.
    - c. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding DVD recording. Include name of Project and date of recording on each page.
  2. Commissioned Projects:
    - a. Demonstration and Orientation DVD recordings for Commissioned projects will be recorded by the Commissioning Authority/Agent (CxA) under separate contract with the City of New



York. The Contractor performing Demonstration and Orientation shall cooperate with the CxA in the recording of each Demonstration and Orientation module.

#### 1.6 QUALITY ASSURANCE:

- A. Facilitator Qualifications: A firm or individual experienced in orientation or educating maintenance personnel in an orientation program similar in content and extent to that indicated for this Project.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 40 00, QUALITY REQUIREMENTS, experienced in operation and maintenance procedures and orientation.
- C. Videographer Qualifications: A professional Videographer who has experience with orientation and construction projects.
- D. Pre-instruction Conference: Schedule with the Resident Engineer a conference at Project site to comply with requirements in Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION. Review methods and procedures related to demonstration and orientation including, but not limited to, the following:
  - 1. Inspect and discuss locations and other facilities required for instruction.
  - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
  - 3. Review required content of instruction.
  - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

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#### 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.



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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 (1<sup>st</sup> edition, May 1993)~~
  - b. Anti-corrosive and Anti-rust paints: refer to Green Seal standard GC-03 (2<sup>nd</sup> Edition, January 1997)
  - c. Aerosol Adhesives: refer to Green Seal standard GS-36 (1<sup>st</sup> 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:
- Carbon dioxide monitoring systems, if any, installed to measure outside air delivery.
  - 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:
- Equipment type.
  - 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.
  - Refrigerant type.
  - Refrigerant charge in pounds of refrigerant per ton of gross cooling capacity.
  - Tested refrigerant leakage rate, in percent per year. A default rate of 2% will be used unless otherwise demonstrated by test data.
  - 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:
- 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.
  - The Plan shall be submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
  - Detailed requirements: ESC Plan
    - Include the Stormwater Pollution Prevention Plan, if required.
    - Identify the party responsible for Plan monitoring and documentation. The party must be regularly on site.
    - Describe all site work that will be implemented on the project.
    - 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.
    - Describe the inspection and maintenance of the ESC measures. Provide a construction schedule indicating weekly site review.
    - Describe reporting and documentation measures.
  - 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 <sup>4</sup>		Rapidly Renewable <sup>7</sup>		VOC content <sup>8</sup>		Flooring <sup>9</sup>		Wood		
	Material Cost <sup>1</sup>	Pre-Consumer (% by wt) <sup>2</sup>	Post-Consumer (% by wt) <sup>3</sup>	Total % (1/2 Pre + Post)	Location & Distance to Extraction <sup>5</sup>	Location & Distance to Manufacture <sup>6</sup>	Extracted & Manuf. (% by wt)	Material % by wt	*VOC content listed	*VOC content allowed	*Green Label or FloorScore	*Added urea formaldehyde (Yes/No) <sup>10</sup>	FSC Certified <sup>11</sup> (% by wt)

<sup>1</sup> 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.  
<sup>2</sup> 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.  
<sup>3</sup> 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.  
<sup>4</sup> 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.  
<sup>5</sup> Extraction: Refers to the location from which the raw resources used in a building product are extracted, harvested, or recovered.  
<sup>6</sup> Manufacture: Refers to the location of the final assembly of components into a building product that is furnished and installed by the Contractor.  
<sup>7</sup> Rapidly Renewable: Refers to materials/products derived from agricultural products that are typically harvested within a ten-year or shorter cycle.  
<sup>8</sup> 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.  
<sup>9</sup> Flooring: For carpet, indicate Carpet and Rug Institute (CRI) Green Label Plus certification. For carpet cushion, indicate CRI Green Label certification. For all flooring except unfinished/untreated wood and mineral-based flooring (tile, masonry, terrazzo, cut stone) without organic-based coatings or sealants, indicate Resilient Floor Covering Institute FloorScore rating. VOC limits for adhesives, sealants, etc. still apply.  
<sup>10</sup> 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.  
<sup>11</sup> 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: \_\_\_\_\_ (the Contractor) hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by the Contractor as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Commissioner.  
 Signature of Authorized Representative: \_\_\_\_\_ Date: \_\_\_\_\_

NO TEXT





**SECTION 01 81 13.13**  
**VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS**

**REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.13**

**PART I – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

**1.2 SUMMARY:**

- A. This Section includes requirements for volatile organic compound (VOC) content in adhesives, sealants, paints and coatings used for the project.
- B. All sections in the Project Specifications with adhesives, sealant or sealant primer applications, paints and coatings shall follow all requirements of this section. In the event of any conflict or inconsistency between this section and the Specifications regarding adhesives, sealant or sealant applications, paints and coatings, the requirements set forth in this Section shall prevail.

C. This Section includes:

1. General Requirements
2. References
3. VOC Requirements for Interior Adhesives
4. VOC Requirements for Interior Sealants
5. VOC requirements for Interior Paints
6. VOC requirements for Interior Coatings
7. Submittals

**1.3 RELATED SECTIONS:** Include without limitation the following:

- |    |                  |  |
|----|------------------|--|
| A. | Section 01 10 00 | SUMMARY  |
| B. | Section 01 31 00 | PROJECT MANAGEMENT AND COORDINATION                |
| C. | Section 01 32 00 | CONSTRUCTION PROGRESS DOCUMENTATION                |
| D. | Section 01 33 00 | SUBMITTAL PROCEDURES                               |
| E. | Section 01 73 00 | EXECUTION  |
| F. | Section 01 77 00 | CLOSEOUT PROCEDURES                                |
| G. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS                          |
| H. | Section 01 81 13 | SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS |
| I. | Section 01 81 19 | INDOOR AIR QUALITY FOR LEED BUILDINGS              |

**1.4 DEFINITIONS:**

- A. **ADHESIVE:** Any substance used to bond one surface to another by attachment. Includes adhesive primers and adhesive bonding primers.
1. **Aerosol Adhesive:** Any adhesive packaged as an aerosol with a spray mechanism permanently housed in a non-refillable can designed for hand-held application without the need for ancillary equipment.
- B. **CARCINOGEN:** A chemical listed as a known, probable, reasonably anticipated, or possible human





carcinogen by the International Agency for Research on Cancer (IARC) (Groups 1, 2A, and 2B), the National Toxicology Program (NTP) (Groups 1 and 2), the U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS) (weight-of-evidence classifications A, B1, B2, and C, carcinogenic, likely to be carcinogenic, and suggestive evidence of carcinogenicity or carcinogen potential), or the Occupational Safety and Health Administration (OSHA).

- C. **CLEAR WOOD FINISH:** Clear/semi-transparent coating applied to wood substrates to provide a transparent or translucent solid film.
  - 1. **Lacquer:** Clear/semi-transparent coating formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and provide a solid, protective film.
  - 2. **Sanding Sealer:** A sanding sealer that also meets the definition of a lacquer.
  - 3. **Varnish:** Clear/semi-transparent coating, excluding lacquers and shellacs, formulated to dry by chemical reaction on exposure to air. May contain small amounts of pigment.
- D. **COATING:** Liquid, liquefiable, or mastic composition that is converted to a solid adherent film after application to a substrate as a thin layer; and is used for decorating, protecting, identifying or to serve some functional purpose such as the filling or concealing of surface irregularities or the modification of light and heat radiation characteristics; and is intended for on-site application to interior or exterior surfaces of buildings. Does not include stains, clear finishes, recycled latex paint, specialty (industrial, marine or automotive) coatings or paint sold in aerosol cans.
- E. **FLOOR COATING:** Opaque coating applied to flooring. Excludes industrial maintenance coatings.
- F. **HAZARDOUS AIR POLLUTANT:** Any compound listed by the U.S. EPA in the Clean Air Act Section 112(b)(1) as a hazardous air pollutant.
- G. **MUTAGEN:** A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification of Chemicals Which Cause Mutations in Germ Cells (United Nations Economic Commission for Europe, Globally Harmonized System of Classification and Labeling of Chemicals).
- H. **OZONE-DEPLETING COMPOUNDS:** A compound with an ozone-depletion potential greater than 0.1 (CFC 11=1) according to the U.S. EPA list of Class I and Class II Ozone-Depleting Substances.
- I. **PAINT:** A pigmented coating. For the purposes of this specification, paint primers are considered to be paints.
  - 1. **Flat Coating or Paint:** Has a gloss of less than 15 (using an 85-degree meter) or less than 5 (using a 60-degree meter).
  - 2. **Non-Flat Coating or Paint:** Has a gloss of greater than or equal to 15 (using an 85-degree meter) or greater than or equal to 5 (using a 60-degree meter).
  - 3. **Non-Flat High-Gloss Coating or Paint:** Has a gloss of greater than or equal to 70 (using a 60-degree meter).
  - 4. **Anti-Corrosive / Rust Preventative Paint:** Coating formulated and recommended for use in preventing the corrosion of ferrous metal substrates.
- J. **PRIMER:** Coating that is formulated and recommended for one or more of the following purposes: to provide a firm bond between the substrate and a subsequent coating; to prevent a subsequent coating from being absorbed into the substrate; to prevent harm to a subsequent coating from materials in the substrate; or to provide a smooth surface for application of a subsequent coating.
- K. **REPRODUCTIVE TOXIN:** A chemical listed as a reproductive toxin (including developmental, female, and male toxins) by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Code of Regulations, Title 22, Division 2, Subdivision 1, Chapter 3, Sections 1200, et. Seq.).
- L. **SANDING SEALER:** Clear/semi-transparent coating formulated to seal bare wood. Can be abraded to create a smooth surface for subsequent coatings. Does not include sanding sealers that are lacquers (see Clear Wood Finish above).
- M. **SEALANT:** Any material with adhesive properties, formulated primarily to fill, seal, or waterproof gaps or joints



between surfaces. Includes sealant primers and caulks.

- N. SHELLAC: Clear or pigmented coating formulated solely with the resinous secretions of the lac beetle, thinned with alcohol and formulated to dry by evaporation without chemical reaction. Excludes floor applications.
- O. STAIN: Clear semi-transparent/opaque coating formulated to change the color but not conceal the grain pattern or texture of the substrate.
- P. VOLATILE AROMATIC COMPOUND: Any hydrocarbon compound containing one or more 6-carbone benzene rings, and having an initial boiling point less than or equal to 280 degrees Celsius measured at standard conditions of temperature and pressure.
- Q. VOLATILE ORGANIC COMPOUND: Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.
- R. WATERPROOFING SEALER: A coating that prevents the penetration of water into porous substrates.

#### 1.5 GENERAL REQUIREMENTS:

- A. The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED Green building rating. Specific project requirements related to this goal which may impact this area of work are listed in the applicable paragraphs of this specification section. 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](http://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](http://www.aqmd.gov)
- C. Green Seal Standard GS-11- “Paints”, of Green Seal, Inc., Washington, DC, [www.greenseal.org](http://www.greenseal.org)
- D. Green Seal Standard GC-03- “Anti-Corrosive Paints”, of Green Seal, Inc., Washington, DC, [www.greenseal.org](http://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**



**SECTION 01 81 19  
INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS**

**REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 19**

**PART I – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

**1.2 CONSTRUCTION IAQ MANAGEMENT GOALS FOR THE PROJECT:**

- A. The City of New York has determined that this Project shall minimize the detrimental impacts on Indoor Air Quality (IAQ) resulting from construction activities. Factors that contaminate indoor air, such as dust entering HVAC systems and ductwork, improper storage of materials on-site, poor housekeeping, shall be minimized.

**1.3 RELATED SECTIONS:**

- A. All sections of the Specifications related to interior construction, MEP systems, and items affecting indoor air quality.
- B. Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS
- C. Section 01 81 13.13, VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
- D. Division 9 (of the Specifications): Finishes.

**1.4 DEFINITIONS:**

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products, including solvents in paints, coatings, adhesives and sealants, wood preservatives, composite wood binder, and foam insulations. Not all VOC's are harmful, but many of those contained within building products contribute to the formation of smog and may irritate building occupants by their smell and/or health impact.



- D. Materials that act as “sinks” for VOC contamination: Absorptive materials, typically dry and soft materials (such as textiles, carpeting, acoustical ceiling tiles and gypsum board) that readily absorb VOC's emitted by “source” materials and release them over a prolonged period of time.
- E. Materials that act as “sources” for VOC contamination: Products with high VOC contents that emit VOC's either rapidly during application and curing (typically “wet” products, such as paints, sealants, adhesives, caulks and sealers) or over a prolonged period (typically “dry” products such as flooring coverings with plasticizers and engineered wood with formaldehyde).

#### 1.5 REFERENCES, RESOURCES:

- A. “IAQ Guidelines for Occupied Buildings Under Construction”, First Edition, November 1995, The Sheet Metal and Air Conditioner Contractors National Association (SMACNA). (703) 803-2980, [www.smacna.org](http://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](http://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

### 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



FMS ID: SANDELEC5



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 ELECTRICAL WORK

NYPD 100th Precinct Power Recovery  
and Upgrade

LOCATION: 9224 Rockaway Beach Blvd  
BOROUGH: Rockaway Beach 11693  
CITY OF NEW YORK

GRYPHON CONSTRUCTION INC  
Contractor

Dated May 22nd, 2019

Approved as to Form  
Certified as to Legal Authority

[Signature]  
Acting Corporation Counsel

K.T. 8/13/18

Dated August 13, 2018

Entered in the Comptroller's Office

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

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



8-018



Department of  
Design and  
Construction

PROJECT ID:

SANDELEC5

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

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

**VOLUME 3 OF 3**

**ADDENDUM TO THE GENERAL  
CONDITIONS**

**SPECIFICATIONS**

FOR FURNISHING ALL LABOR AND MATERIALS  
NECESSARY AND REQUIRED FOR:

**NYPD 100th Precinct Power  
Recovery and Upgrade**

LOCATION:  
BOROUGH:  
CITY OF NEW YORK

9224 Rockaway Beach Blvd  
Rockaway Beach 11693

CONTRACT NO. 1

ELECTRICAL WORK

NYPD

Syska Hennessy

Date: October 13, 2017



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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 #: SANDELEC 5  
PROJECT NAME: NYPD 100<sup>th</sup> Precinct Power Recovery and Upgrade

PROJECT DESCRIPTION: This Project consists of providing a new generator for the facility, in a room constructed above the garage level floor. New distribution boards and ATS's are being provided for separation and support of standby and life-safety loads in the facility. Additional receptacle loads on the ground floor level that were flooded during Sandy are being replaced and re-circuited. New lighting is being provided for the new garage layout. Additionally, since the generator is indoors, a new ductwork exhaust system will be put in place.

PROJECT LOCATION: 100<sup>th</sup> Precinct, 9224 Rockaway Beach Blvd. Rockaway Beach, NY  
BOROUGH: Queens  
CITY OF NEW YORK  
ZIP CODE: 11693  
COMMUNITY BOARD #: 14

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: NO  
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>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 1000	1.4 (B)	Scope and Intent / LEED		X	
	1.4(C)	Scope and Intent / Commissioning		X	
01 3233		Photographic Documentation		X	
01 3300	1.7 (A-D)	LEED Submittals		X	
01 3503		General Mechanical Requirements	X		
01 3506	3.2 (A-B)	Electrical Conduit System Including Boxes (Pull, Junction and Outlet)	X		
	3.3 (A-E)	Electrical Wiring Devices	X		
	3.4 (A-I)	Electrical Conductors and Terminations	X		
	3.5 (A-B)	Circuit Protective Devices	X		
	3.6 (A-J)	Distribution Centers	X		
	3.7 (A-I)	Motors	X		
	3.8 (A-I)	Motor Control Equipment	X		
01 3591		Historic Treatment Procedures		X	
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water		X	
	3.2 (B)	Temporary Water Facilities / Temporary Water – Work in Existing Facilities	X		
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained Toilet Units	X		
	3.3 (C)	Temporary Sanitary Facilities / Existing Toilets		X	
	3.4 (B) 1	Temporary Power, Lighting, and Site Lighting / Connection to Utility Lines		X	

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 5000	3.4 (B) 2	Temporary Power, Lighting, and Site Lighting / Connection to Existing Electrical Power Service	X		
	3.4 (B) 3	Temporary Power, Lighting, and Site Lighting / Electrical Generator Power Service	X		
	3.4 (D)	Temporary Power, Lighting, and Site Lighting / Temporary Lighting	X		
	3.4 (E)	Temporary Power, Lighting, and Site Lighting / Site Security Lighting (for New Construction Only)		X	
	3.5 (A-J)	Temporary Heat	X		
	3.8 (A)	DDC Field Office / Office Space in Existing Building		X	
	3.8 (B)	DDC Field Office / DDC Field Office Trailer	X		
	3.8 (B-3a)	DDC Field Office / DDC Managed Field Office Trailer	X		
	3.8 (B-3b)	DDC Field Office / CM Managed Field Office Trailer		X	
	3.8 (D)	DDC Field Office / Additional Equipment for the DDC Field Office	X		
	3.13(A-D)	Work Fence Enclosure	X		
	3.17(B)	Project Rendering		X	
	3.18 (A-C)	Security Guards / Fire Guards on Site		X	
01 5411	3.1 (A-J)	Temporary-Use, Operation and Maintenance of Elevators During Construction for New Buildings Up To and Including 15 Stories		X	
	3.2 (A-M)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Over 15 Stories		X	
	3.3 (A-E)	Temporary Use, Operation and Maintenance of Elevators During Construction for Existing Buildings		X	
01 7300	3.3 (A-I)	Surveys	X		
	3.4 (A-B)	Borings	X		
	3.12 (A-D)	Sleeves and Hangers	X		
	3.13 (A)	Sleeve and Penetration Drawings	X		
	3.15 (A)	Location of Partitions	X		
01 7419	1.5 (C)	Waste Management Performance Requirements / LEED Certification		X	
01 7900		Demonstration and Owner's Pre-Acceptance Orientation	X		
01 8113		Sustainable Design Requirements for LEED Buildings		X	
01 8113.13		VOC Limits for Adhesives, Sealants, Paints and Coatings for LEED Buildings		X	
01 8119		Indoor Air Quality Requirements for LEED Buildings		X	
01 9113		General Commissioning Requirements		X	

### VIII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT

- (1) **GENERAL:** Special Experience Requirements for the Project are set forth below. Such Special Experience Requirements may apply to either or both of the following entities: (a) the contractor or subcontractor that will perform specific areas of work, and/or (b) the manufacturer that will provide specific material or equipment.
- (2) **REVISION OF SPECIFICATIONS AND DRAWINGS:** In the event the Specifications and/or the Contract Drawings contain any Special Experience Requirements that are not set forth below, such Special Experience Requirements are deemed deleted, except as otherwise expressly provided in Section VIII of this Addendum.
- (3) **SPECIAL EXPERIENCE REQUIREMENTS FOR SPECIFIC AREAS OF WORK:** The Special Experience Requirements set forth below apply to the contractor or subcontractor that will perform specific areas of work. Compliance with such Special Experience Requirements will be evaluated after an award of contract. Within two (2) weeks of such award, the contractor will be required to submit the qualifications of the contractor or subcontractor that will perform these specific areas of work. If the contractor intends to perform any specific area of work with its own forces, it must demonstrate compliance with the Special Experience Requirements. If the contractor intends to subcontract any specific area of work, the proposed subcontractor(s) must demonstrate compliance with the Special Experience Requirements. Once approved, no substitution will be permitted, unless the qualifications of the proposed replacement have been approved in writing in advance by the City.
  - (a) **Special Experience Requirement #1:** The contractor or subcontractor performing the work of this section must, within the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope, size and type to the required work. In addition, for section 071470, the contractor or subcontractor must be certified by the manufacturer.

General Construction:

- Section 071210: Liquid Applied Waterproofing
- Section 071470: Crystalline Waterproofing

- (b) **Special Experience Requirement #2:** The contractor or subcontractor performing the work of this section must be a company regularly engaged in performing roofing projects with its own workforce and have successfully completed in a timely fashion at least three (3) roofing projects similar in scope, size and type to the required work within the last three (3) consecutive years prior to the bid opening. At least one of those projects must have been performed within the last twelve (12) months. The three (3) qualifying projects must have utilized the Johns Manville roof system, been installed by the contractor's or subcontractor's company utilizing its own workforce and must have qualified for, and have been issued, the warranty provided by Johns Manville. In addition, the contractor or subcontractor must be a certified or authorized installer for Johns Manville specified herein and shall submit proof of same.

General Construction:

- Section 075100: Built-up Bituminous Roofing Repair

### 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	533
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	\$400
Article 17 Contract	Sub-Contracts	Not to exceed Percent of Contract Price	60%
Article 21 Contract	Retainage	Percent of Voucher	If 100% bonds are required 5% If 100% bonds are not required, and Contract Price is \$1,000,000 or less 5% If 100% bonds are not required, and Contract Price is more than \$1,000,000 10%
Article 24 Contract	Deposit Guarantee	Percent of Contract Price	1%
Article 24 Contract	Period of Guarantee		See Schedule B of the Addendum to the General Conditions
Article 74 Contract	Statement of Work		Addenda, numbered: <u>3</u>
Article 75 Contract	Compensation to be Paid to Contractor		Amount for which the Contract was Awarded: <u>Two Million, Seven hundred eighty-four thousand six hundred sixty-four</u> Dollars ( <u>\$2,784,664.00</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
<p>■ Commercial General Liability      Art. 22.1.1</p>	<p>The minimum limits shall be \$1,000,000.00 per occurrence and \$2,000,000.00 per project aggregate applicable to this Contract.</p> <p>Additional Insureds:</p> <p>1. City of New York, including its officials and employees, with coverage at least as broad as ISO Forms CG 20 10 and CG 20 37, and</p> <p>2. All person(s) or organization(s), if any, that Article 22.1.1(b) of the Contract requires to be named as Additional Insured(s), with coverage at least as broad as ISO Form CG 20 26. The Additional Insured endorsement shall either specify the entity's name, if known, or the entity's title (e.g., Project Manager).</p> <p>3. NYPD</p>
<p>■ Workers' Compensation              Art. 22.1.2</p> <p>■ Disability Benefits Insurance      Art. 22.1.2</p> <p>■ Employers' Liability                  Art. 22.1.2</p> <p><input type="checkbox"/> Jones Act                                  Art. 22.1.3</p> <p><input type="checkbox"/> U.S. Longshoremen's and Harbor Workers Compensation Act      Art. 22.1.3</p>	<p>Workers' Compensation, Employers' Liability, and Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction.</p> <p><b>Note:</b> The following forms are acceptable: (1) New York State Workers' Compensation Board Form No. C-105.2, (2) State Insurance Fund Form No. U-26.3, (3) New York State Workers' Compensation Board Form No. DB-120.1 and (3) Request for WC/DB Exemption Form No. CE-200. The City will not accept an ACORD form as proof of Workers' Compensation or Disability Insurance.</p> <p>Jones Act and U.S. Longshoremen's and Harbor Workers' Compensation Act: Statutory per U.S. law.</p>

**SCHEDULE A (FOR PUBLICLY BID PROJECTS)**

**Relating to Article 22 - Insurance**

**PART II. Types of Insurance, Minimum Limits and Special Conditions**

Insurance indicated by a blackened box (■) or by (X) in the  to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<input checked="" type="checkbox"/> Builders' Risk Art. 22.1.4	100 % of total value of <b>Work</b>  <b>Contractor</b> the Named Insured; the <b>City</b> both an Additional Insured and one of the loss payees as its interests may appear.  If the <b>Work</b> does not involve construction of a new building or gut renovation work, the <b>Contractor</b> may provide an installation floater in lieu of Builders Risk insurance.  Note: Builders Risk Insurance may terminate upon <b>Substantial Completion</b> of the <b>Work</b> in its entirety.
<input checked="" type="checkbox"/> Commercial Auto Liability Art. 22.1.5	\$1,000,000.00 per accident combined single limit  If vehicles are used for transporting hazardous materials, the <b>Contractor</b> 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><input type="checkbox"/> Asbestos Liability _____</p>	<p>Only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>\$1,000,000 each occurrence, \$2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____</p>
<p>[OTHER] Art. 22.1.8</p> <p><input type="checkbox"/> Boiler Insurance _____</p>	<p>\$200,000</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Professional Liability</p> <p>In the event any section of the Specifications requires the Contractor to engage a Professional Engineer to provide design and/or engineering services, the Engineer engaged by the Contractor, as well as any sub consultant(s) performing professional services, shall provide Professional Liability Insurance.</p>	<p>\$1,000,000 per occurrence</p> <p>The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of \$1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer.</p> <p>Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a retroactive date, including at least the last policy year.</p>

**SCHEDULE A (FOR PUBLICLY BID PROJECTS)**

**Relating to Article 22 - Insurance**

**PART III. Certificates of Insurance**

All certificates of insurance (except certificates of insurance solely evidencing Workers' Compensation Insurance, Employer's Liability Insurance, and/or Disability Benefits Insurance) must be accompanied by one of the following:

- (1) the Certification by Insurance Broker or Agent on the following page setting forth the required information and signatures;

-- OR --

- (2) copies of all policies as certified by an authorized representative of the issuing insurance carrier that are referenced in such certificate of insurance. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

**SCHEDULE A (FOR PUBLICLY BID PROJECTS)**

**Relating to Article 22 - Insurance**

**PART III. Certification by Insurance Broker or Agent**

The undersigned insurance broker or agent represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects.

\_\_\_\_\_  
[Name of broker or agent (typewritten)]

\_\_\_\_\_  
[Address of broker or agent (typewritten)]

\_\_\_\_\_  
[Email address of broker or agent (typewritten)]

\_\_\_\_\_  
[Phone number/Fax number of broker or agent (typewritten)]

\_\_\_\_\_  
[Signature of authorized official or broker or agent]

\_\_\_\_\_  
[Name and title of authorized official, broker or agent (typewritten)]

State of ..... )  
   ) ss:  
County of ..... )

Sworn to before me this  
\_\_\_\_ day of \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
NOTARY PUBLIC FOR THE STATE OF \_\_\_\_\_

**SCHEDULE A (FOR PUBLICLY BID PROJECTS)**

**Relating to Article 22 - Insurance**

**PART IV. Address of Commissioner**

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit

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30-30 Thomson Avenue, 4<sup>th</sup> Floor

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Long Island City, New York 11101

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**SCHEDULE B**

**Guarantees and Warranties**

(Reference: 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.

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**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 (Years)
07 12 10	LIQUID APPLIED WATERPROOFING	20
07 14 70	CRYSTALLINE WATERPROOFING	5
08 11 00	STEEL DOORS AND FRAMES	1
08 71 00	FINISH HARDWARE	1 (balance) 1 (locksets) 5 (hinges) 10 (closers)
08 90 00	METAL WALL LOUVERS: FINISH	20
09 24 23	STUCCO	15
23 11 13	FACILITY FUEL-OIL PIPING: TANK PUMP AND BALANCE OF SYSTEM	30 1
23 51 00	BREECHINGS, CHIMNEYS, AND STACKS	15
26 24 13	SWITCHBOARDS	1.5
26 32 13	ENGINE GENERATORS	2
26 36 00	TRANSFER SWITCHES	2

(3) **Application:** The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.

(4) **Other Provisions:** The warranty requirements set forth in this Schedule B are also included in the Specifications.

- (a) In the event of any conflict between a warranty requirement set forth in the Specifications and a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall take precedence.
- (b) In the event a warranty requirement set forth in the Specifications is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications, shall remain in full force and effect
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from both Schedule B and the Specifications, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (d) In the event a warranty requirement is provided for a particular item of material or equipment, and such requirement specifies a warranty period that is longer than that which is actually provided by any of the specified manufacturers, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by any of the specified manufacturers, unless otherwise directed in writing by the Commissioner.
- (e) Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.

SCHEDULE C

Contract Drawings

(Reference: Section 01 1000, Article 1.5 (A) of the DDC Standard General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

1. T-001 COVER SHEET
2. G-101 GENERAL NOTES, ABBREVIATIONS AND SYMBOLS LIST/LEGEND
3. G-102 EXISTING SURVEY
4. G-103 FLOOD MAPS
5. DM-101 FIRST FLOOR PLAN AND EXTERIOR ELEVATION DEMOLITION
6. DM-201 REFLECTED CEILING PLAN DEMOLITION
7. A-101 FIRST FLOOR PLANS
8. A-102 SECOND FLOOR PLAN
9. A-201 REFLECTED CEILING PLAN AND DETAILS
10. A-301 SECTION AND ELEVATIONS
11. A-302 STAIR DRAWINGS
12. A-501 DETAILS
13. A-601 SCHEDULES, DOOR AND LOUVER ELEVATIONS WALL TYPES
14. A-602 EXTERIOR LOUVER ELEVATION AND DETAILS
15. S-101 FIRST FLOOR AND GENERATOR MEZZANINE PLAN
16. S-201 SECTIONS
17. S-301 SECTIONS AND DETAILS
18. E-001 ELECTRICAL SYMBOLS, NOTES AND ABBREVIATIONS
19. ED-101 ELECTRICAL 1<sup>ST</sup> FLOOR DEMOLITION PLAN
20. ED-102 ELECTRICAL 2<sup>ND</sup> FLOOR DEMOLITION PLAN

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21. ~~E-101 ELECTRICAL 1<sup>ST</sup> FLOOR PLAN~~
22. E-102 ELECTRICAL 2<sup>ND</sup> FLOOR PLAN
23. E-103 ELECTRICAL ROOF PLAN
24. E-201 ELECTRICAL 1<sup>ST</sup> FLOOR LIGHTING PLAN
25. E-202 ELECTRICAL 2<sup>ND</sup> FLOOR LIGHTING PLAN
26. E-501 ELECTRICAL DETAILS
27. E-601 ELECTRICAL PARTIAL SINGLE LINE DIAGRAM
28. E-701 ELECTRICAL PANEL SCHEDULES
29. E-702 ELECTRICAL PANEL SCHEDULES
30. FA-301 FIRE ALARM PARTIAL FLOOR PLANS
31. FA-601 FIRE ALARM RISER DIAGRAM
32. M-001 MECHANICAL SYMBOLS, NOTES AND ABBREVIATIONS
33. M-002 EMERGENCY GENERATOR BACK PRESSURE CALCULATIONS
34. MD-101 MECHANICAL 1<sup>ST</sup> FLOOR DEMOLITION PLAN
35. MD-102 MECHANICAL 2<sup>ND</sup> FLOOR DEMOLITION PLAN
36. M-101 MECHANICAL 1<sup>ST</sup> FLOOR PLAN
37. M-102 MECHANICAL 2<sup>ND</sup> FLOOR PLAN
38. M-103 MECHANICAL ROOF PLAN
39. M-501 MECHANICAL DETAILS
40. M-502 MECHANICAL DETAILS
41. M-503 MECHANICAL DETAILS
42. M-601 MECAHNICAL SCEDULES



**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.

<b>DB</b> Disconnect Circuit Breaker (Switch)	<b>P</b> Pilot Light	<b>BG</b> Break Glass Station
<b>TS</b> Thermal Switch	<b>F</b> Firestat	<b>HOA</b> Hand-Off Auto.
<b>MS</b> Magnetic Starter	<b>T</b> Thermostat	<b>PB</b> Push Button Station
<b>CMS</b> Comb. Mag. Starter	<b>AL</b> Alternator	<b>RO</b> Remote "off"

Equip. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
EX-G-1	Grd floor toilet ceiling	1	1/4	120/1	TS	
EX-R-1	Roof	1	1/3	120/1	TS	
FOP-1	Gen Room	1	1/3	120/1	TS	
FOP-2	Gen Room	1	1/3	120/1	TS	

SCHEDULE E  
Separation of Trades

*NOT USED FOR SINGLE CONTRACTS*







232213	Steam and Condensate Heating Piping	X										X							
233113	Metal Ducts	X										X							
233300	Air Duct Accessories	X										X							
233423	HVAC Power Ventilators	X										X							
235100	Breechings Chimneys Stacks	X										X							
238239	Units Heaters	X										X							
260500	Common Work Results for Electrical	X										X							
260519	Low Voltage Electrical Power Conductors and Cables	X																	X
260526	Grounding and Bonding for Electrical Systems	X										X							
260529	Hangers and Supports for Electrical Systems	X										X							
260533	Raceways and Boxes for Electrical Systems	X										X							X
260543	Underground Ducts and Raceways for Electrical Systems	X										X							X
260553	Identification for Electrical Systems	X																	X





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23 33 00	Air Duct Accessories
23 34 23	HVAC Power Ventilators
23 51 00	Breechings, Chimneys, and Stacks
23 82 39	Unit Heaters

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**ELECTRICAL WORK**

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**SECTION 02 41 13  
SELECTIVE REMOVALS & DEMOLITION**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Removal and demolition of selected items from selected areas of the building as indicated on the Drawings; items to be removed include, but are not limited to, the following:
1. Existing concrete slab at portion of first and second floors.
  2. Existing exterior windows and surrounding masonry at first floor.
  3. Selective interior finishes.
  4. Interior roof slab and roofing for flue.
- 
3. Existing mechanical, electrical and plumbing items.

**1.03 SUBMITTALS**

- A. Submit details and procedures for dust and noise control.  
B. Submit detailed plan for protection of the public during the work  
C. Submit detailed weather and physical protection plan for the vault interior space and utilities located in the vault that are to be maintained during the work.  
D. Shoring plan for vault walls.

**1.04 RESPONSIBILITY, PROTECTION, DAMAGES, RESTRICTIONS**

- A. Condition of Space

The Commissioner assumes no responsibility for actual condition of the space in which removals and demolition Work is performed.

- B. Protections

Provide temporary barricades and other forms of protection required to protect City of New York and neighboring personnel and general public from injury due to selective removals and demolition work.

- C. Damages



Promptly repair any and all damages to all property and finishes caused by the removals and demolition work; to the Commissioner's satisfaction and at no extra cost.

**PART 2 - PRODUCTS - NOT APPLICABLE**

**PART 3 - EXECUTION**

**3.01 INSPECTION**

- A. Prior to commencement of the selective removals and demolition work, inspect the areas in which the Work will be performed. Determine and list the existing conditions of rooms or area surfaces and equipment. After the work in each respective area is completed, determine if adjacent surfaces or equipment have been damaged as a result of the work; if so, the damage shall be corrected at the Contractor's expense.

**3.02 REMOVALS AND DEMOLITION WORK**

- A. Perform selective demolition work in a systematic manner and use such methods as are required to complete the work indicated, and in accordance with the Specifications and governing City, State, and Federal regulations.
- B. When walls, partitions, floors, and ceilings (or portions thereof) are indicated to be removed; unless indicated otherwise:
  - 1. Refer to the drawings for items to be removed and/or temporarily re-located.

**3.03 DISPOSAL OF DEMOLISHED MATERIALS**

- A. Remove debris, rubbish and other materials resulting from the removals and demolitions from the building immediately; transport and legally dispose of materials off-site. Disposal method shall be in accordance with City of New York, State, and Federal regulations.
- B. Burning of removed materials is not permitted on the job site.

**3.04 CLEAN-UP AND REPAIR**

- A. Upon completion of removals and demolition work, remove tools, equipment and all remaining demolished materials from the site.
- B. Repair all damaged areas caused by the removals and demolition Work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work. Repair materials shall match the existing construction. New and adjacent surfaces shall be painted to match the existing. Paint shall extend to include the entire surface in which the repair has been made.
- C. All areas in which Work was performed under this Section shall be left "broom-clean."



**3.05 OWNERSHIP OF MATERIALS**

- A. All equipment, materials, and items removed shall remain the property of the Contractor and shall be removed from the site by the Contractor.

**END OF SECTION 02 41 13**



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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 **\$15,000.00** for the **General Contractor** is herein established for this incidental work when so ordered and authorized by the Commissioner.
- C. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE RULES AND REGULATIONS OF THE ASBESTOS CONTROL PROGRAM AS PROMULGATED BY TITLE 15 CHAPTER 1 OF RCNY AND NEW YORK STATE DEPARTMENT OF LABOR INDUSTRIAL CODE RULE 56 CITED AS 12 NYCRR, PART 56 ~~WHICHEVER IS MORE STRINGENT AS PER LATEST AMENDMENTS TO THESE LAWS AND AS MODIFIED HEREIN BY THESE SPECIFICATIONS.~~
- D. ALL DISPOSAL OF ASBESTOS CONTAMINATED MATERIAL SHALL BE PER LOCAL LAW 70/85.
- E. THE ASBESTOS ABATEMENT CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT CERTAIN METHODS OF ASBESTOS ABATEMENT ARE PROTECTED BY PATENTS. TO DATE, PATENTS HAVE BEEN ISSUED WITH RESPECT TO "NEGATIVE PRESSURE ENCLOSURE" OR "NEGATIVE-AIR" OR "REDUCED PRESSURE" AND "GLOVE BAG".
- F. THE ASBESTOS ABATEMENT CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND SHALL HOLD THE DEPARTMENT OF DESIGN AND CONSTRUCTION AND THE CITY HARMLESS FROM ANY AND ALL DAMAGES, LOSSES AND EXPENSES RESULTING FROM ANY INFRINGEMENT BY THE ASBESTOS ABATEMENT CONTRACTOR OF ANY PATENT, INCLUDING BUT NOT LIMITED TO THE PATENTS DESCRIBED ABOVE, USED BY THE ASBESTOS ABATEMENT CONTRACTOR DURING PERFORMANCE OF THIS AGREEMENT.
- G. "Asbestos" shall mean any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite





(cumingtonite-grunerite), crocidolite (riebeckite), tremolite, anthrophyllite and actinolite.

- H. Prior to starting, the Asbestos abatement contractor must notify the Commissioner of the Department of Design and Construction if he/she anticipates any difficulty in performing the Work as required by these Specifications. The Asbestos abatement contractor is responsible to prepare and submit all filings, notifications, etc. required by all City, State and Federal regulatory agencies having jurisdiction.

The Asbestos abatement contractor is responsible for submitting the Asbestos Project Notification Form (ACP-7 Form) to the Department of Environmental Protection, Asbestos Control Program, as per Title 15, Chapter 1 of RCNY and to the NYSDOL as per Industrial Code Rule 56.

The Asbestos abatement contractor is responsible for preparing, and submitting Asbestos Variance Application (ACP-9). If a Variance is required, the Asbestos abatement contractor is responsible to retain a NYSDOL Asbestos Project Designer, as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required variance.

The General contractor is responsible for preparing and submitting an Asbestos Abatement Permit and/or Work Place Safety Plans (WPSP) that may be required for the completion of the Contract or incidental work. If such plans are required, the Asbestos abatement contractor is responsible to retain a NYSDOL Licensed Design Professional as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required plans.

The Asbestos abatement contractor is responsible for the submission of all required documents to the NYCDEP to acquire the appropriate Asbestos Project Conditional Closeout (ACP-20) and/or Asbestos Project Completion Forms (ACP-21) on a timely basis for the completion of the incidental work encountered under this contract.

The Asbestos abatement contractor will be required to attend an on-site job meeting with the Construction Project Manager prior to the start of work to examine conditions and plan the sequence of operations, etc.

The Asbestos abatement contractor shall have a NYSDOL/NYCDEP Asbestos Supervisor onsite to oversee the work and conduct a final visual inspection as required by both Title 15, Chapter 1 of the RCNY and NYSDOL Industrial Code Rule 56.

- I. All work shall be done during regular working hours unless the Asbestos abatement contractor requests authorization to work in other than regular working hours and such authorization is granted by the Commissioner. (Regular work hours are those hours during which any given facility, in which work is to be done, is customarily open and functioning, normally between the hours of 8:00



A.M. and 4:00 P.M. Monday - Friday.) If such work schedule is authorized by the Commissioner, the work shall be done at no additional cost to the City.

- J. The Commissioner may order that work be done in other than regular working hours as herein by defined and this order may require the Asbestos abatement contractor to pay premium or overtime wages to complete the work. If the Commissioner orders work in other than regular working hours, the Asbestos abatement contractor shall multiply the unit price for that portion of the work requiring premium wages by 1.50 when computing payment in accordance with Paragraph 1.09. All requests for premium payment must be supported by certified payroll sheets and field sheets approved by the Construction Project Manager.

## 1.02 QUALIFICATIONS OF ASBESTOS ABATEMENT CONTRACTOR

- A. Requirements: The asbestos abatement contractor must demonstrate compliance with the special experience requirements set forth in subparagraphs (1) through (5) below. The asbestos abatement contractor must, submit documentation demonstrating compliance with all listed requirements. Such documentation shall include without limitation, all required licenses, certificates, and documentation.
1. The asbestos abatement contractor must, whether an individual, corporation, partnership, joint venture or other legal entity, must demonstrate for the three year period prior to the work, that it has been licensed by the New York State Department of Labor, as an "Asbestos abatement contractor".
  2. The asbestos abatement contractor must, for the three year period prior to the work, have been in the business of providing asbestos abatement services as a routine part of its daily operations.
  3. The asbestos abatement contractor proposing to do asbestos abatement work must be thoroughly experienced in such work and must provide evidence of having successfully performed and completed in a timely fashion at least five (5) asbestos abatement projects of similar size and complexity. The aggregate cost of these projects must be at least \$250,000.00 in each of the three years.
  4. For each project submitted to meet the experience requirements set forth above, the asbestos abatement contractor must submit the following information for the project; name and location of the project; name title and telephone number of the owner or the owner's representative who is familiar with the asbestos abatement contractor's work, brief description of the work completed as a prime or sub-asbestos abatement contractor; amount of contract or subcontract and the date of completion.



5. The asbestos abatement contractor must demonstrate that it has the financial resources, supervisory personnel and equipment necessary to carry out the work and to comply with the required performance schedule, taking into consideration other business commitments. The asbestos abatement contractor must submit such documentation as may be required by the Department of Design and Construction to demonstrate that it has the requisite capacity to perform the required services of this contract.
- B. Insurance Requirements: The asbestos abatement contractor must provide asbestos liability insurance in the following amount: 1 million dollars per occurrence, 2 million dollars aggregate (combined single limit). The City of New York shall be named as an additional insured on such insurance policy.
- C. Throughout the specifications, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics thereof.

### 1.03 ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITIES

The Asbestos abatement contractor will visit the subject location within one (1) working day of notification to ascertain actual work required. If the project is identified as being "urgent", then work shall commence no later than 48 hours from the time of notification. In this event, the asbestos abatement contractor shall immediately notify when applicable EPA NESHAPS Coordinator, NYSDOL Asbestos Control Bureau and NYCDEP Asbestos Control Program of start of the work and file the necessary Asbestos Notifications and any applicable Variance Applications with the regulatory agencies cited above.

In the event that the project is not classified as "urgent" the Asbestos abatement contractor shall notify the EPA NESHAPS Coordinator, NYSDOL and NYCDEP by submitting the requisite asbestos project notification forms, postmarked 10 days before activity begins if 260 linear feet or more and/or 160 square feet or more of asbestos containing material will be disturbed.

The following information must be included in the notification:

- A. Name and address of building City or operator;
- B. Project description:
  1. Size - square feet, number of linear feet, etc;
  2. Age - date of construction and renovations (if known);
  3. Use - i.e., office, school, industrial, etc.
  4. Scope - repair, demolition, cleaning, etc.



- C. Amount of asbestos involved in work and an explanation of techniques used to determine the amount;
- 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.

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**1.05 AIR MONITORING – ASBESTOS ABATEMENT CONTRACTOR**

- A. "Air Sampling" shall mean the process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Standard and Technology which are utilized for lower detectability and specific fiber identification.

- B. Air monitoring of Asbestos abatement contractor's personnel will be performed in conformance with OSHA requirements, (All costs associated with this work are deemed included in the unit price.).

- C. Qualifications of Testing Laboratory:

The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).

Note: Work area air testing and analysis before, during and upon completion of work (clearance testing) will be performed by a Third Party Air Monitor under separate Contract with the City.

**1.06 THIRD PARTY MONITORING AND LABORATORY**

- A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.
- B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM).
- C. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the Asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.
- D. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the Asbestos abatement contractor.

**1.07 PAYMENT REQUEST DOCUMENTATION**

- B. The following information shall be included for each payment request:
  - 1. Description of work performed.
  - 2. Linear footage and pipe sizes involved.
  - 3. Square footage for boiler & breaching insulation removed.
  - 4. Square footage of non pipe and boiler areas removed, patched, enclosed, sealed, or painted.
  - 5. Square footage of encapsulation, sealing, patching, and painting involved.
  - 6. Total cost associated with compliance with the assigned task.
  - 7. Architectural, Electrical, HVAC, Plumbing, etc. work incidental to the Asbestos Abatement Work.
  - 8. A certified copy (in form 4312-39) to the Comptroller or Financial Officer of the New York City to the effect that the financial statement is true.
  - 9. A signed copy (in form 6506q-6) of certificate of compliance with non-discriminatory provisions of the Contract.



- 10. Attach a copy of valid workmen compensation insurance.
  - 11. Valid asbestos insurance per occurrence.
  - 12. General liability insurance when required.
- C. Each payment request shall include a grand total for all work completed that billing period, the landfill waste manifests and a copy of waste transporter permit. The Department of Design and Construction will inspect the work performed, review the cost and approve or disapprove requests for payment.
- D. EXPOSURE LOG: With this final payment, the Asbestos abatement contractor shall submit a listing of the names and social security numbers of all employees actively engaged in the abatement work of this Contract. This list shall include a summary showing each part of the abatement work in which the employee was engaged and the dates thereof.

**1.08 QUANTITY CALCULATIONS**

In order to determine the square footage involved for the various pipe sizes of pipe insulation that might be encountered, the following table is to be used.

PIPE INSULATION SIZE O.D.	PIPE SIZE O.D.	SQUARE FOOTAGE PER LINEAR FOOT
2-1/2"	1/2"	0.65
2-3/4"	3/4"	0.72
3"	1"	0.79
3-1/4"	1-1/4"	0.85
3-1/2"	1-1/2"	0.92
4"	2"	1.05
4-1/2"	2-1/2"	1.18
5"	3"	1.31
6"	3-1/4"	1.57
7"	3-1/2"	1.83
8"	4"	2.09
9"	5"	2.36
10"	6"	2.62
12"	8"	3.14
14"	10"	3.67
16"	12"	4.19
18"	14"	4.71



**1.09 METHOD OF PAYMENT**

Payment shall be made in accordance with Items A through R below. Payment shall be calculated based on the actual quantity of the item performed by the asbestos abatement 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 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 1 of RCNY.

**1.12 SUBMITTALS**

**A. Pre-Construction Submittals:**

1. Attend a pre-construction meeting scheduled by the City of New York Department of Design and Construction. This meeting shall also be attended by a designated representative of the City of New York third party air monitoring firm, facility manager and the Construction Project Manager. At this meeting, the Asbestos abatement contractor shall present three copies of the following items:
  - a. Asbestos abatement contractor's scope of work, work plan and schedule.
  - b. Asbestos project notifications, approved variances and plans to Government Agencies.
  - c. Copies of Permits, clearance and licenses if required.
  - d. Schedules: the Asbestos abatement contractor shall provide to the Construction Project Manager a copy of the following schedules for approval. Once approved, schedules shall be maintained and updated as received. Asbestos abatement contractor shall post a copy of all schedules at the site:
    - (1) A construction schedule stating critical dates of the project including, but not limited to, mobilization, Work Area preparation, demolition, gross removal, fine cleaning, encapsulation, inspections, clearance monitoring, and phase of refinishing and final inspections. The schedule shall be updated biweekly, at a minimum.
    - (2) A schedule of staffing stating number of workers per shift per activity, name and number of supervisor(s) per shift, shifts per day, and total days to be worked.
    - (3) Submit all changes in schedule or staffing to the Construction Project Manager prior to implementation.



- e. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance (name and telephone number to nearest hospital) and procedures to be used for access by medical personnel (examples: first aid squad and physician). NOTE: Necessary Emergency Procedures Shall Take Priority Over All Other Requirements of These Specifications.
- f. 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 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:

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Upon completion of the project and as a condition of acceptance, the Asbestos abatement contractor shall present two copies of the following items, bound and indexed:

1. Lien Waivers from Asbestos abatement contractor, Sub-Asbestos abatement contractors and Suppliers,
2. Daily OSHA air monitoring results,
3. All Waste Manifests (Asbestos and Construction Debris), seals and disposal logs,
4. Field Sign-In/Sign-Out Logs for every shift,
5. Copies of all Building Department Forms and Permits,
6. A Letter of Compliance stating that all the work on this project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations,



7. All Warranties as stated in the Specifications,
  - a. Fully executed disposal certificates and transportation manifest.
  
8. Project Record: The Asbestos abatement contractor shall maintain a project record for all small and large asbestos projects. During the project, the project record shall be kept on site at all times. Upon completion of the project, the project record shall be maintained by the building owner. The project record shall be submitted to DDC as part of the close out documents. The project record shall consist of:
  - a. Copies of licenses of all asbestos abatement contractors involved in the project;
  - b. Copies of NYCDEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;
  - c. Copies of all project notifications and reports filed with NYCDEP, NYSDOL and USEPA for the project, with any amendments or variances;
  - d. Copies of all asbestos abatement permits, including associated approved plans and work place safety plan;
  - e. A copy of the air sampling log and all air sampling results;
  - f. A copy of the abatement asbestos abatement contractor's daily log book;
  - g. Copies of all asbestos waste manifests;
  - h. A copy of all Project Monitor's Reports (ACP-15).
  - i. A copy of each ATR-1 Form completed for the asbestos project (if required).
  - j. A copy of each Asbestos Project Conditional Closeout Report (ACP-20) if required.
  - k. A copy of the Asbestos Project Completion Form (ACP-21).

**1.13 PROTECTION OF FURNITURE AND EQUIPMENT**

Cover all furniture and equipment that cannot be removed from Work Areas. Movable furniture and equipment will be removed from Work Areas by the Asbestos abatement contractor prior to start of work. At the conclusion of the work (after final air testing), the Asbestos abatement contractor will remove all plastic covering on walls, floors, furniture, equipment and reinstall furniture and equipment. He shall remove and store all sheaths, curtains and drapes, and reinstall same following final clean up.

**1.14 UTILITIES**

A. General:

All temporary facilities shall be subject to the approval of the Commissioner. Prior to starting work at any site, locations and/or sketches (if required) of temporary facilities must be submitted to the Construction Project Manager for the required approval.

B. Water:

The Department of Design and Construction will furnish all water needed for construction, at no cost to the Asbestos abatement contractor in buildings under their jurisdiction. However, it is the responsibility of the Asbestos abatement contractor to ensure that hot water is provided for showering in the decontamination unit. The Asbestos abatement contractor shall furnish, install and maintain any needed equipment to meet these requirements at his own expense.

C. Electricity:

The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the Asbestos abatement contractor in a building, under their jurisdiction. The Asbestos abatement contractor is responsible for routing the electric power to the abatement Work Area.

All temporary lighting and temporary electrical service for Work Area shall be in weatherproof enclosures and be ground fault protected.

D. In leased spaces, arrangements for water supplies and electricity must be made with the landlord. However, all such arrangements must be made through and are subject to approval of the Department of Design and Construction. Utilities will be provided at no cost to the Asbestos abatement contractor. However, it is the Asbestos abatement contractor's (or the General contractor's) responsibility to furnish and install a suitable distribution system to the Work Area. This system will be provided at no cost to the City.



**1.15 FEES**

The Asbestos abatement contractor shall be responsible for any and all fees or charges imposed by Local, State or Federal Law, Rule and Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the date of the Bid opening.

**END OF SECTION**



**SECTION 03 00 50  
CONCRETE WORK**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Furnish material, equipment, labor, services required to provide floor slabs, and other concrete indicated. Work includes the installation of formwork, reinforcement, waterstops, and other items listed herein. Allow ample time and facility for the Work of other Divisions to be installed.

**1.03 REFERENCES**

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society of Testing and Materials (ASTM) standards, latest editions.
- B. American Concrete Institute (ACI) standards, latest editions.
- C. "Placing Reinforcing Bars - CRSI-WCRSI Recommended Practices", latest edition. Concrete Reinforcing Steel Institute.

**1.04 DEFINITIONS**

- A. Exposed to view: Situated so that it can be seen from eye level from a public location as stated in ACI 301.
- B. Normal weight concrete: Concrete for which density is not a controlling attribute, made with aggregates of the types covered by ASTM C33 and usually having unit weights in the range of 135 to 160 lb/ft<sup>3</sup>.

**1.05 DESIGN REQUIREMENTS**

- A. Performance Characteristics:
1. The minimum compressive strength of concrete shall be 4000psi.





2. For normal weight concrete, the maximum water to cement ratio shall be 0.40.

## **1.06 SUBMITTALS**

### **A. Product Data**

Submit manufacturers' information for the following:

1. Admixtures: Including Micro-crystalline waterproofing additive
2. Curing compounds
3. Bonding Agent
4. Welded Wire Fabric
5. Reinforcing bars
6. Rapid Expansion Waterstops

### **B. Shop Drawings**

1. Immediately after award of Contract, prepare shop drawings showing all fabrication dimensions and locations for placing of the reinforcing steel and accessories. Follow detailing recommendations of ACI 315. Shop Drawings are to be prepared by a rebar detailer and shall be signed and sealed by an engineer licensed in the State of New York.
2. Shop drawings will be checked for size of material and spacing by the Commissioner, which shall not render the Commissioner responsible for any errors in construction dimensions, quantities, bends, etc. that have been made in preparation of the shop drawings. The Contractor shall assume full responsibility for the correctness of quantities, dimensions and fit.
3. Do not order or deliver reinforcement to job site prior to approval of drawings.

### **C. Quality Control Submittals**

1. Design Data: Submit design mixes for concrete, including list of admixtures to be used to the Commissioner. Design mix for lightweight concrete shall include both the dry and saturated (SSD) weights of the aggregate. After approval and prior to placement, send the approved mix to the City of New York's laboratory.



2. Certificates

- a. Building Department form TR3, signed and sealed by the licensed concrete laboratory and concrete producer.
- b. Admixture manufacturer's certificate stating that the chloride content of the admixture will not exceed 0.05% by weight.
- c. Concrete laboratory license number and certification of meeting ASTM E329 standards.
- d. Concrete producer's certificate stating the plant and trucks are NYSDOT approved.
- e. Concrete producer's Computer Batch Ticket in accordance with Section BC 1905.8.2 of the 2008 NYC Building Code must be presented at site before concrete is placed for every load of concrete delivered.

3. Contractor Qualifications

Provide proof of Installer, Producer, and Rebar Detailer qualifications specified under "Quality Assurance".

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1.07 QUALITY ASSURANCE

A. Qualifications

1. Concrete Installer: Company specializing in performing the Work of this Section shall have three years minimum experience on successful projects of similar size.
2. Concrete Producer: Company specializing in the production of concrete shall be certified by the National Ready Mixed Concrete Association (NRMCA) and shall have certification by NYS Department of Transportation. The plant shall use NYSDOT approved trucks and drivers shall be certified by the NRMCA.
3. Rebar Detailer: Company shall be specialized in the detailing of reinforcing bar shop drawings with a minimum of three years experience.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.
2. Industry Standards: The ACI Standards contained in the ACI Manual of Concrete Practice apply to Work of this Section. Where more severe requirements than



those contained in the Standards are given in this Section or the Building Code, requirements of this Section or the Building Code shall govern. The Contractor shall keep a copy of ACI SP-15 - "Field Reference Manual" at the site.

C. Certifications

Cement and aggregate shall be acquired from the same source for all work. If a change in suppliers is required, a new mix submittal must be produced with the new material and submitted for approval.

D. Coordination

Coordinate this work with the work of other Divisions so that items to be installed are done so correctly and in proper sequence.

**1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Protect material from the elements and from other damage on the site before, during, and after installation. Store reinforcement in location to prevent rusting, etc.
- B. Insure proper identification of reinforcement after bundles are broken.
- C. Replace and pay for material and work damaged to the satisfaction of the City of New York.

**1.09 ENVIRONMENTAL REQUIREMENTS**

- A. Adequately protect concrete placed during rain, sleet, or snow, or when the mean daily temperature falls below 40°F or rises above 90°F as provided in "Mixing and Placing Concrete".

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

- A. Rough Formwork: Commercial Douglas Fir, DFPA: 5/8" thick minimum.
- B. Release Agent: VOC compliant material such as those of the Cresset Chemical Company or approved equal for coating forms.
- C. Form Ties: Wire ties not permitted. Form ties for exposed concrete shall be adjustable, leave no metal closer than 1<sup>1</sup>/<sub>2</sub>" to the surface, and free of devices that leave holes or depressions larger than 7/8" back of exposed surface.
- D. Reinforcing Bars: All reinforcing bars shall be of deformed type of new billet steel conforming to current requirements of ASTM A615 Grade 60. No rail or re-rolled steel



will be permitted. Reinforcing bars are to be epoxy coated in accordance with ASTM A775.

- E. Welded Steel Wire Fabric: Wire Fabric shall conform to the requirements of ASTM A185. Wire mesh shall be epoxy coated in accordance with ASTM A884.
- F. Supports for Reinforcement: Metal bolsters and chairs of adequate strength, size, and number. Provide CRSI Class C supports (plastic tipped) for formed concrete surfaces and Class A (bright basic) for other conditions. Plastic supports may be used if submitted for approval. Wire bar supports shall be coated with dielectric material for a minimum distance of 2" from the point of contact with the epoxy-coated reinforcing bars.
- G. Cementitious Materials:
  - 1. Portland cement: Shall conform to ASTM C150 Type II (Maximum 8% C<sub>3</sub>A) unless otherwise permitted by the Commissioner and shall be of the non air-entrained type. Provide Type II for exterior pavements.
  - 2. Slag cement: Shall conform to ASTM C989, Grade 100 or 120.
  - 3. No other alternate cementitious materials may be utilized.

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H. Admixtures

- 1. The use of admixtures shall comply with the requirements of Section BC 1903.6 of the 2014 NYC Building Code. The final soluble chloride content in concrete, percent by weight of cement, due to the addition of admixtures and other ingredients shall not exceed .05 at 28 days.
  - 2. Air-entraining admixtures shall conform to ASTM C260.
  - 3. Chemical admixtures shall conform to ASTM C494.
- I. Water: Clean potable water free of injurious foreign matter conforming to the requirements of Section BC 1903.4 of the Building Code.
  - J. Aggregate: Maximum size of coarse aggregate shall conform to paragraph 3.3.2 of ACI 318.
    - 1. Aggregates for normal weight concrete shall conform to ASTM C33 and be of Size No.57, No.67 and/or No.8.
    - 2. Aggregates for lightweight concrete shall conform to ASTM C330 and be of sizes 3/4" to No.4, 1/2" to No.4, and/or 3/8" to No.8.



K. Curing Compounds

1. Non-strippable

- a. Clear Curing and Sealing Compound (A.I.M. Regulations - VOC Compliant, 350 g/l): Liquid type membrane-forming curing compound, clear styrene acrylate type, complying with ASTM C1315, Type I, Class A, 25% solids content minimum. Moisture loss shall be not more than 0.40 Kg/m<sup>2</sup> when applied at 300 sq. ft./gal. Manufacturer's certification is required.
- b. Curing Compounds shall be "Super Diamond Clear VOX" by The Euclid Chemical Company or "Masterkure 100W" by Master Builders or approved equal.

2. Strippable

- a. Clear Curing Compound: Liquid type membrane-forming curing compound, complying with ASTM C309.
- b. Curing Compounds shall be "Kurez DR Vox, Kurez W Vox by The Euclid Chemical Company or "Masterkure N-Seal VOC" by Master Builders or approved equal.

L. Bonding Agent

1. Epoxy/acrylic resin that will not form a vapor barrier with the concrete with the following properties:
  - a. Bond strength of 1800 psi in 2 hours when tested in accordance with ASTM C882.
  - b. Flexural strength of 2000 psi in 28 days when tested in accordance with ASTM C78.
  - c. Tensile strength of 600 psi in 28 days when tested in accordance with ASTM C496.
2. Bonding agent shall be "CR246 Sto Bonding and Anti-corrosion Agent" by Sto Concrete Restoration Division, Armatec 110 by Sika Corp, or Corr-bond by Euclid Chemical Company or approved equal.

- M. Rapid Expansion Waterstops: Waterstops shall be CS-235 as manufactured by ConSeal Concrete Sealant, Inc., or approved equal. Waterstops shall be installed where concrete masonry units rest on concrete and shall be installed in accordance with the manufacturer's recommendations.



## 2.02 MIXES

- A. General: Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.
- B. Strength: Strength requirements given in Part 1 of this Specification are based on 28-day compressive strength, unless high early strength is specified, in which case required strengths are based on 7-day compressive strength. Mixes with slag will have a slower initial set time, which must be taken into account when finishing.
- C. Method of Proportioning
1. Proportion, batch, and mix concrete in accordance with Section BC 1905. The licensed concrete laboratory is responsible running the mix and signing the TR3 for filing with the Building Department. Proportion concrete mix in accordance with Section BC 1905.3. Form TR-3: Technical report Concrete Design Mix. The Contractor shall be responsible for, and bear all the costs associated with the filing and securing of approval, 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. Mix designs are specific to material used, concrete producer, and method of placement. Each mix design must be reviewed by the Commissioner and accepted prior to placement along with accompanying TR3 signed by the lab and concrete producer.
- D. Normal Weight Concrete
1. Unless otherwise specified, proportion and produce normal weight concrete to have a maximum slump of 4" or less. A tolerance of up to 1" above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. The slump shall be determined by ASTM C143. Concrete containing High Range Water Reducer shall have a slump not exceeding 9", unless otherwise approved by the Commissioner. The concrete shall arrive at the job site at a slump of 2" to 3", be verified by the Commissioner, and the HRWR admixture added to increase the slump to the approved level.
- E. Microcrystalline waterproofing admixture
1. Tank room floor slab, foundation and stub walls shall include microcrystalline waterproofing additive in the poured concrete mix. Additive shall be proportioned and mixed per the additive manufacturer's written directions.



### **2.03 SOURCE QUALITY CONTROL**

- A. Tests
  - 1. The testing laboratory will review and/or check test proposed materials for compliance with the Specifications prior to construction.
  - 2. The Testing Laboratory will perform field tests as work progresses as listed in "Field Quality Control".

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Prior to placement of concrete, verify that the concrete cover over the reinforcement is that specified on Drawings and that reinforcement and all other embedded items are provided and held securely, positioned accurately, and will not be a detriment to concrete placement.
- B. Examine all adjoining work on which this Work is in anyway dependent for proper installation and workmanship. Report to the City of New York any condition that prevents the performance of this Work.

### **3.02 PROTECTION**

- A. Protect concrete members on grade and the subgrade from freezing before and after installation. Provide blankets and other items necessary.
- B. Protect adjacent finish materials and previously poured concrete against spatter during concrete placement.
- C. Provide and maintain barricades and safeguards around openings, etc. to protect workmen from injury and to comply with all Building Code and OSHA regulations.

### **3.03 FORMWORK**

- A. Provide formwork wherever necessary to confine concrete to the required shapes shown on Drawings. Follow all procedures of Section 2 of ACI 301, ACI 347, and Section BC 1906 of the 2014 NYC Building Code. Formwork, reinforcement, and embedded items shall be clean of all accumulated mortar from previous concreting and other foreign material. Repair or replace any formwork as required.
- B. Cover the surfaces of the rough with an approved form release agent that will effectively prevent absorption of moisture, prevent bond with the concrete, and which will not stain the concrete surfaces. Do not apply oil or release agents on formwork for concrete to receive additional concrete (such as at construction joints). Apply at a rate that will help achieve the finish specified below. Follow manufacturer's recommendations.



- C. Adequately support and substantially brace formwork to hold lines and shape. Securely brace forms against lateral deflection. Formwork shall be tight jointed to prevent leakage of concrete.
- D. Place chamfer strips in the corners of forms to produce beveled edges (chamfers) on permanently exposed surfaces and wherever else shown on Drawings.
- E. Provide "Rough Form Finish" for surfaces not exposed to view. Use plywood or metal forms coated with a release agent.
- F. Remove forms in such a manner as to assure the complete safety of the structure as required by Section BC 1906.5 of the 2014 NYC Building Code. Formwork not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations and as required by G below.
- G. When repair of surface defects or finishing is required at an early age, remove forms as soon as the concrete has hardened sufficiently to resist damage from removal operations.

#### **3.04 REINFORCEMENT**

- A. Place reinforcement in accordance with CRSI "Placing Reinforcement Bars", Section 3 of ACI 301, and Section BC 1907.5 of the 2014 NYC Building Code.
- B. Unless otherwise permitted, welding of crossing bars (tack welding) for assembly of reinforcement is prohibited.
- C. Support and fasten together all reinforcement to prevent displacement by construction loads or placing of concrete.
- D. Lifting of bars and welded wire fabric into position during placement of concrete is not permitted.
- E. Where the concrete surface will be exposed to the weather in the finished structure, the portions of all accessories within 1/2" of the concrete surface shall be non-corrosive or protected against corrosion.
- F. Provide minimum protective cover given in Section BC 1907.7 of the 2014 NYC Building Code if not indicated on Drawings.
- G. All splices not shown on the Project Drawings shall be shown on the shop drawings and approved by the Commissioner.
- H. All embedment lengths not shown on the Project Drawings shall be shown on the shop drawings and approved by the Commissioner.





### **3.05 PREPARATION**

- A. Remove ice, excess water, trash, and rubbish from forms.
- B. Remove hardened concrete from inner surfaces of conveying equipment and all formwork, reinforcement, and dowels.
- C. Prepare previously placed concrete to be in contact with new concrete in the manner described under "Construction Joints".
- D. Prepare existing concrete to be in contact with new concrete by roughening and cleaning the surface and applying a bonding agent. Surface must be free of laitance. Concrete must be placed after agent cures and within 20 hours of applying bonding agent. If time elapses, apply a new application in accordance with the directions of the manufacturer.
- E. Do not place concrete on frozen ground.

### **3.06 JOINTS AND EMBEDDED ITEMS**

- A. Construction Joints
  - 1. Make joints not shown on Drawings at locations that will least impair the strength of the structure and comply with requirements of Section BC 1906.8 of the 2014 NYC Building Code. Such location is subject to the approval of the Commissioner
  - 2. Continue reinforcement across joints. Provide longitudinal keys at least 1½" deep in walls and provide other keys as required. Drawings indicate keys or roughened surface at interface of walls and footings.
  - 3. Thoroughly clean concrete surface of oil, grease, and other contaminants and remove all laitance prior to placement of adjoining concrete. Roughen surface of the concrete in an approved manner that will expose the aggregate uniformly to a 1/4" amplitude and will not leave laitance, loosened particles of aggregate, or damaged concrete at the surface. Dampen surface immediately prior to placement.
- B. Expansion Joints
  - 1. Do not extend reinforcement or other embedded metal items bonded to concrete continuously through expansion joint. Provide smooth dowels greased on one end at the joints with end cap or insert into pvc sleeve of length greater than the dowel length by .75" minimum.
  - 2. Provide joint filler of type specified in Section 079000 at the expansion joint of the sizes indicated on the Drawings or specified herein.
- C. Other embedded items



1. Place all sleeves, anchors, and other embedded items required for the Work of other Divisions or for their support prior to concreting.
2. Provide ample notice and opportunity for items of other Division to be introduced and/or furnished for installation before concrete is placed. Coordinate the Work of the other Divisions so all items are placed in their proper location.

### 3.07 MIXING AND PLACING CONCRETE

#### A. General

1. Notify the City of New York at least 48 hours in advance of each concrete placement. Do not place concrete without approval of the City of New York.
  2. Do not allow rainwater to increase mixing water nor damage surface finish.
  3. When placing concrete in cold weather (air temperature below 40°F), concrete shall contain either an accelerating admixture or use Type III cement.
  4. Production of concrete, including batching and mixing, shall be done in accordance with the requirements of Section 4 of ACI 301 and Section BC 1905.8 of the Building Code.
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5. Placement of concrete shall be done in accordance with the requirements of Section 5 of ACI 301 and Sections BC 1905.9 through 1905.13 of the Building Code. All consolidation shall be done by vibration.

#### B. Mixing

1. Batch, mix, and transport ready-mixed concrete in accordance with the appropriate sections of ASTM C94 and Section BC 1905.8.2 of the 2014 NYC Building Code. Truck mixers and agitators shall meet the requirements of the Truck Mixers Manufacturer's Bureau or shall comply with Section 8.1.2 of ASTM C94 and shall be NYSDOT approved. All trucks shall have working revolution counters and site gages.
2. Batch and mix other concrete in accordance with subsection 4.3.1 of ACI 301.
3. Use of chemical admixtures must be approved by the Commissioner.
4. Unless otherwise approved by the Commissioner, concrete shall be deposited within 1½ hours or 300 revolutions of the mixing drum, whichever comes first, after introduction of water to the cement or cement to the aggregate. When the ambient temperature rises above 90°F, the time shall be decreased to 1 hour.



5. Batch lightweight concrete using the saturated weight of aggregate, which shall take into account the internal and surface moisture content.
  6. Tempering and control of mixing water
    - a. Mix concrete only in quantities for immediate use. Concrete which has started to set shall not be retempered, but shall be discarded. Water shall not be added at the site.
    - b. For concrete containing HRWR (Superplasticizer), if loss of slump occurs, HRWR may be redosed at the site as long as a "flash set" has not occurred. Redosage procedures must be discussed and approved by the Commissioner and the admixture manufacturer.
- C. Placing: Place concrete in accordance with ACI 304R, ACI 318, and Sections BC 1905.9 and BC 1905.10 of the 2014 NYC Building Code.
1. Consolidate all concrete by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items and into corners of forms, eliminating all air or stone pocket or weakness. Internal vibrators shall be the largest size and most powerful that can be used in the Work, as described in Table 5.1.5 of ACI 309R, with a minimum frequency of 7000 revolutions per minute and shall be operated by competent workmen. Over-vibrating and use of vibrators to transport concrete within forms is not permitted. Insert and withdraw vibrators at many points, from 18" to 30" apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not sufficient to cause segregation, generally from 5 to 15 sec duration. Keep a spare vibrator on the job site during all concrete placing operations.
  2. Cold Weather Concrete Protection
    - a. When the mean daily temperature of the atmosphere is less than 40°F during concreting, or within 24 hours thereafter, follow the procedures outlined in ACI 306R to protect the concrete. Temperature of the plastic concrete shall be no lower than 55°F. Heat all forms, reinforcing steel, and surfaces to receive concrete above the freezing point and keep them completely free of frost, snow, and ice.
  3. Hot Weather Protection: When the mean daily temperature of the atmosphere is over 90°F during concreting, follow the procedures outlined in ACI 305R to protect the concrete.
  4. As per NYC Building Code requirements, all concrete washout water, if washed out on site, shall be collected in water tight containers placed on the site for holding prior to legal disposal off site. Wash water is not permitted to be disposed of in storm, sanitary, or combined sewers.



### 3.08 FINISHING OF FORMED SURFACES AND REPAIR OF SURFACE DEFECTS

#### A. General

1. Remove forms as soon as practicable.
2. Repair surface defects, including tie holes and cracks, immediately after form removal. Patches shall be of quality to match the specified finish.
3. Remove oil, grease, compounds, and other contaminants from surfaces and areas to be repaired.
4. Provide finishes specified below immediately after form removal.
5. Provide curing and protection.

#### B. Repair of Surface Defects

Repair surface defects in accordance with subsection 5.3.6 of ACI 301. At the City of New York's discretion, repair mortars and coatings shall be employed to rectify defects. Materials shall be as selected by the City of New York.

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#### C. Tie Holes and Other Repairs

1. Remove ties, nails, and other form accessories below the concrete surface when the surface is exposed to view and/or the elements. For surfaces not exposed to view or the above mentioned conditions, remove metal to the surface.
2. Undercut surfaces of holes. After cleaning and thoroughly dampening the holes, fill them solid with the patching mortar. The mortar shall match the color of the existing concrete for concrete exposed to view as specified in paragraph B above.

#### D. Formed Finishes

1. Rough Form Finish: Provide for concrete not exposed to view.
  - a. Repair concrete surface as indicated above.
  - b. Chip or rub off fins exceeding 1/4" in height.

#### E. Acceptance of Concrete Finish

If the finish produced is not acceptable to the City of New York, the Contractor shall be responsible for all costs incurred to produce an acceptable finish by whatever means determined by the City of New York. Remove stains, rust, efflorescence, and other surface deposits to the satisfaction of the City of New York.

### 3.09 SLABS

#### A. Placement

1. Mixing and placing shall be carefully coordinated with finishing. Do not place concrete on the subgrade or forms more rapidly than it can be spread, straightedged, and darbied or bull floated. Provide leveling, floating, troweling, etc. at the correct time interval after pouring to prevent dusting and a non-durable surface as specified in ACI 302.1R. These operations must be performed before bleeding water has an opportunity to collect on the surface.
2. To obtain good surfaces and avoid cold joints, the size of finishing crews shall be planned with due regard for the effects of concrete temperature and atmospheric conditions on the rate of hardening of the concrete.

#### B. Leveling and Finishing

##### 1. General

- a. Unless otherwise indicated on the Drawings or specified herein, make all slabs even and uniform in appearance and, where no slope is required, level.
  - 1) Floor Levelness:
    - a) Slabs on formed slabs shall be placed shall be placed level to an  $F_L=35$ .
    - b) Slabs placed on metal deck shall be placed level to an  $F_L=20$
  - 2) Floor Flatness
    - a) Slabs formed slabs shall be finished flat to an  $F_F=50$  based on 3/16".
    - b) Slabs placed on metal deck shall be finished flat to an  $F_F=25$  based on 3/16".
  - 3) Floor flatness and levelness shall be measured in accordance with ASTM E1155 within 72 hours of placement.
- b. Where floor drains or floor slopes are indicated, slope slabs uniformly to provide even fall for drainage.



- c. Follow detailed recommendations for finishing given in ACI 301, Section 5, and ACI 302.1R.
- d. Protect finishes from contamination from time of placing until time of acceptance, placement of topping, etc.
- e. Remove defects of sufficient magnitude to show through floor coverings or that do not meet tolerances by grinding.

2. Finishes

- a. Exposed or painted slabs are to have a "hard trowel" finish. Apply an approved densifier/sealer to slabs exposed or painted, except for those specified below to have no finish. Apply two coats in accordance with the manufacturer's instructions at the proper time.

### 3.10 PATCHING AND BONDING TO EXISTING CONCRETE

- A. Provide bonding agent whenever new concrete is to be poured against existing concrete, whenever the time between concrete pours is longer than that allowed for proper bond, and wherever bonding agent is indicated on the Drawings to be applied.
- ~~B. Remove loose concrete from surface to be bonded with new concrete and clean. Remove rust from reinforcement and structural steel by power chipping and power driven brushes.~~
- C. Apply bonding agent in accordance with manufacturer's specifications. Pour concrete as soon as bonding agent has cured and within 20 hours after application. If the 20-hour period has elapsed, then the bonding agent must be reapplied.

### 3.11 CURING AND PROTECTION

A. General

1. Begin curing concrete immediately after placement and finishing. Protect all freshly deposited concrete from premature drying and excessively hot or cold temperatures and maintain it with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete. Detailed procedures are given in ACI 308.
2. Do not apply curing compounds to surfaces receiving waterproofing, adhesives, or additional concrete unless approved by adhesive or material manufacturer or compound is removed in an approved manner. As an alternate, provide wet curing.

B. Procedure

1. Concrete surfaces not in contact with forms:



- a. Ponding or continuous non-manual sprinkling.
  - b. Absorptive mat or fabric, sand, or other covering kept continuously wet.
  - c. Curing compounds conforming to ASTM C1315 or strippable curing compound conforming to ASTM C309.
2. Concrete surfaces in contact with forms:
- a. Minimize moisture loss from forms exposed to heating by the sun by keeping forms wet until they are removed.
  - b. After form removal, cure with one of the methods listed in 1 above.
3. Continue curing until a total of 7 days has elapsed during which the temperature of the air in contact with concrete has remained above 50°F. Prevent rapid drying during and at the end of the curing period.
4. Remove all curing compounds completely with cleaners recommended by curing compound manufacturer.

C. Cold Weather Curing

Concrete must be protected from water loss. This shall be accomplished by the application as soon as possible without harm to the concrete surfaces of either (a) exhaust steam, or vapor-resistant paper or polyethylene film, or (b) curing compounds. In all other respects, curing shall conform to applicable provisions of this Section. Concrete temperature shall be maintained between 50°F and 70°F.

D. Hot Weather Curing

1. During the period June 1 to October 1 or when hot weather conditions require it, maintain continuous water curing for a minimum period of twenty-four hours. Provide for wind breaks, shading, and other necessary provisions.
2. After 24 hours, curing shall be by one of the methods specified under B above. In all other respects, curing shall conform to applicable provisions of this Specification. Upon termination of the specified moist curing, every effort should be made to reduce the rate of drying by avoiding air circulation.

- E. Protection from mechanical injury: Protect concrete from mechanical disturbances during curing period as described under "Protection and Cleaning".

**3.12 TOLERANCES**

- A. Construct formwork so that concrete surfaces will conform to the tolerance limits listed in ACI 117.



- B. Establish and maintain in an undisturbed condition and until final completion and acceptance of the project sufficient control points and bench marks to be used for reference purposes to check tolerances.
- C. Place reinforcing bars in accordance with the tolerances given in Section BC 1907.5.2 of the 2014 NYC Building Code.
- D. Move bars as necessary to avoid interference with other reinforcement, conduits, or imbedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangements are subject to approval by the Commissioner.
- E. Place concrete to meet tolerances specified in ACI 117, unless specified otherwise herein.

### 3.13 FIELD QUALITY CONTROL

#### A. Tests

Tests to be performed by the City of New York's Testing Laboratory during construction are as follows:

1. Compliance of materials to Specifications tested from production samples.
2. Determination of the slump of the concrete for each sample taken and whenever consistency of the concrete appears to vary using ASTM C143. The Special Inspector will reject any concrete that does not meet the slump requirements.
3. Determination of water content of freshly mixed normal weight concrete utilizing the procedure of AASHTO T318. Concrete that does not meet the maximum water to cement ratio or the proportions given in the approved design mix will be immediately rejected regardless of slump.
4. Strength tests on the specimens in accordance with ASTM C39:
  - a. The frequency of conducting strength tests of concrete shall be in accordance with Section BC 1905.6.2 of the 2014 NYC Building Code, with additional cylinders taken for an additional strength test and one cylinder for a 7-day break. Strength tests shall be performed for each 50 cubic yards, or portions thereof, of concrete placed in any one day's concreting. Specimens will be stored at the site in the insulated curing box provided by the Contractor. Each group of specimens is considered one strength test. One cylinder will be broken at 7 days for information. A strength test shall be performed at 28 days for acceptance. The remaining cylinders for the additional strength test will be tested only if the 28-day breaks are low or durability of the concrete is in question.







water content of the concrete to secure the required strength for the remaining portion of the structure, all at the Contractor's expense. It is the Contractor's complete responsibility to modify the concrete mix design, material controls, and/or concrete operations where necessary to obtain the compressive strength required by the design and Specification.

3. When the average strength of test cylinders for any portion of the structure is less than that required by the design or Specification, or where there is other evidence that the quality of the concrete is below Specification requirements, the adequacy of the concrete will be checked according to the requirements of Section BC 1906.6 either by structural analysis or by core or load tests or by any combination of these procedures. The Commissioner will determine which procedures to use:
  - a. Structural Analysis Computations (Section BC 1905.6.5.5), which will be performed by the Commissioner.
  - b. Core Tests (Section BC 1905.6.5.2) - Performed in accordance with ASTM C42.
  - c. Load Tests (AC1318 Paragraph 20.3 or Section BC 1713 of the Building Code).

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4. Low Strength Tests of Concrete or evidence of poor durability - Results

- a. Pay for additional costs of labor and materials required at the job for all damages resulting from load tests and the taking of cores. Remove and replace concrete work that is not of adequate strength or durability and cannot be made to work by remedial methods acceptable to the City of New York at own cost. The Contractor shall be held responsible for all delays and damages to the work of other Divisions that occur as a result of non-conformance.
- b. Pay for all expenses resulting from low strength test procedures or evidence of poor durability (such as high slump) specified above.

D. Contractor's Surveys

Provide surveys of finished concrete elevations for all building slabs. Provide elevations taken on a 15-foot grid pattern. Indicate discrepancies between contract elevation and actual. Interpolate sloped areas such as roof slabs. Do not proceed with finish work until slabs are repaired.

**3.14 PROTECTION AND CLEANING**

- A. During the curing period, and thereafter as conditions may require, protect the concrete from damaging mechanical disturbances, particularly excessive load stresses, heavy shock,

and excess vibration. Protect all finished concrete surfaces from damage caused by construction equipment, materials or methods, and by rain or running water.

**3.15 ACCEPTANCE OF CONCRETE WORK**

- A. The provisions of Subchapter 1.6 of ACI 301 apply to the acceptance of the concrete work.
- B. Concrete work judged inadequate by structural analysis, core test, results of load test or deemed unacceptable due to appearance or durability concerns shall be repaired, reinforced with additional construction if so directed by the Commissioner, or be replaced if so directed by the Commissioner at the Contractor's expense.

**END OF SECTION 03 00 50**



**SECTION 04 20 00  
UNIT MASONRY**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. This Section includes, but is not limited to, the following:

Provide load-bearing concrete unit masonry, and other masonry Work as specified herein, as shown on the Drawings, and as needed for a complete and proper installation. The terms Concrete Masonry Unit (CMU) and Concrete Block are inter-changeable.

- B. Related Work includes, but is not limited to, Division 7 Section "Fluid-Applied Membrane Air Barrier, Vapor Retarding", for air barrier system at masonry cavity walls.

**1.03 DESIGN REQUIREMENTS**

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- A. No air-entraining admixtures or material containing such shall be permitted in the mortar. Also, no anti-freeze compounds, calcium chloride, or other compounds, unless expressly permitted otherwise, shall be permitted in the mortar.

- B. Mortar types to be used at the following locations, unless otherwise stated:

1. Load bearing masonry, - Type S

**1.04 REFERENCES**

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society of Testing and Materials (ASTM) standards, latest editions.

A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Products.

A240 Standard Specification for Heat-Resisting Chromium and Chromium Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.

A615 Standard Specification for Deformed and Plain Billet - Steel Bars for Concrete Reinforcement.



A706	Standard Specifications for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
A951	Standard Specification for Steel Wire for Joint Reinforcement.
C33	Standard Specification for Concrete Aggregates.
C43	Standard Definitions of Terms Relating to Structural Clay Products.
C55	Standard Specification for Concrete Building Brick.
C67	Standard Methods of Sampling and Testing Brick and Structural Clay Tile.
C90	Standard Specification for Hollow, Load-Bearing Concrete Masonry Units.
C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch or 50 MM Cube Specimens).
C140	Standard Methods of Sampling and Testing Concrete Masonry Units.
C144	Standard Specifications for Aggregate for Masonry Mortar.
C145	Standard Specification for Solid Load-Bearing Concrete Masonry Units.
C150	Standard Specification for Portland Cement.
C207	Standard Specification for Hydrated Lime for Masonry Purposes.
C216	Standard Specification for Facing Brick (Solid Masonry Units made from Clay or Shale).
C270	Standard Specification for Mortar for Unit Masonry.
C331	Standard Specification for Lightweight Aggregates for Concrete Masonry Units.
C404	Standard Specifications for Aggregates for Masonry Grout.
C476	Standard Specification for Grout for Reinforced and Nonreinforced Masonry.
C595	Standard Specifications for Blended Hydraulic Cements.
C780	Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
C979	Standard Specification for Pigments for Integrally Colored Concrete.
C1019	Method of Sampling and Testing Grout



B. Industry Standards.

1. "Standard for Concrete Masonry Units" - UL 618- Underwriters Laboratory.
2. American Welding Society – AWS D1.4 – Structural Welding Code – Reinforcing Steel

**1.05 SUBMITTALS**

A. Submittals for Specified Items

1. For items that are specified herein by manufacturer's name and model number, submit a Product Schedule indicating the item description, manufacturer name, model number and any other identifying nomenclature. The Schedule will be accepted by the City of New York for record purposes only. Product Data when submitting items that are not specified herein by manufacturer's name and model number, provide complete Product Data for each item for review and approval.

B. Product Data

Submit Product Data to show compliance with specified requirements.

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1. Submit complete data for masonry units. Laboratory test reports for brick shall be no more than two years old. Submit a list indicating the maximum dry weight of each type and size of CMU to be used in the project.
  2. Submit complete data for reinforcement and ties, of each type.
  3. Portland Cement: Brand and manufacturer's name.
  4. Lime: Brand and manufacturer's name.
  5. Mortar Pigments: Brand and manufacturer's name.
  6. Packaged Products: Manufacturer's specifications and application instructions.
  7. Sand: Location of pit, name of owner, and previous test data.
  8. Masonry reinforcement, anchors
  9. Masonry cleaner, including specific masonry manufacturer's recommended cleaning procedure for the product selected.

C. Shop Drawings

1. Submit plans and sections of the load-bearing CMU walls.



D. Quality Control Submittals

1. Schedule of Uses: By mortar type.
2. Certificates
  - a. Submit the lightweight CMU producer's certificate stating that the minimum equivalent thickness and mix design are in conformance with UL 618 for the indicated fire rating.
  - b. Submit lightweight CMU producer's certificate stating aggregate used is 100% lightweight, expanded shale, clay, or slate (rotary kiln) aggregate, in accordance with ASTM C331. To provide the required recycled content, it is acceptable to provide up to 20% lightweight recycled aggregate that will maintain the same fire resistance equivalent thickness of 100% expanded shale, clay, or slate without a decrease in block strength.
  - c. Furnish notarized Building Department affidavit from masonry manufacturer (Form 10H) stating materials delivered to project comply with the Specification requirements.
  - d. Furnish notarized Building Department affidavit from masonry supplier (Form 10J) stating materials delivered to project comply with the Specification requirements.

**1.06 QUALITY ASSURANCE**

A. Qualifications

Company specializing in the Work of this Section shall have a minimum of three years experience with similar quantity of materials.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations, including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.
2. UL 618: Fire rating of CMU and assemblies shall conform to the requirements UL 618 and Section BC 621 of the 2014 NYC Building Code.
3. NYC Board of Standards and Appeals (BSA) approvals, NYC Materials and Equipment Acceptance (MEA) approvals or Office of Technical Certification and Research (OTCR)



C. Certifications

Masonry construction shall conform to the material acceptance, certification and inspection requirements of Section BC 1701 of the 2014 NYC Building Code.

**1.07 DELIVERY, STORAGE, AND HANDLING**

A. Deliver materials to project site in undamaged condition per ASTM guidelines. Store in an enclosed location or off the ground with waterproof covering as needed to protect all materials from moisture, contaminants, corrosion, deleterious temperature changes, and other harmful conditions.

B. Packaged Products

1. Deliver materials to the site in manufacturer's original, sealed containers. Do not deliver materials which have exceeded shelf life limitation set forth by the manufacturer. Material containers shall bear the manufacturer's label indicating manufacturer's name, trade name of product, lot number, shelf life of product, and mix ratio (if applicable). This includes individual bags of pre-bagged mortar mixes.

2. Comply with manufacturer's printed instructions for storing and protecting materials.

**1.08 ENVIRONMENTAL REQUIREMENTS**

A. Cold Weather Construction Requirements

1. Salt or other chemicals for lowering the freezing temperature of the mortar shall not be used.

2. Masonry units, mortar, and grout shall be preconditioned and masonry protected for the following cold weather conditions per Section 2104.3 of the 2014 NYC Building Code:

3. Air temperature 40°F to 32°F:

a. Heat mixing water or sand to minimum of 70°F and to maximum of 140°F.

b. Mortar and grout temperature shall be between 40°F and 120°F at the time of mixing.

4. Air temperature 32°F to 25°F:

a. Heat mixing water and sand to minimum of 70°F and to maximum of 140°F.

b. Mortar and grout temperature shall be between 70°F and 120°F at the time of mixing. Grout temperature shall be maintained above 70°F at the time of grout placement.





- c. Provide heat source to maintain a minimum air temperature 32°F on each side of masonry construction.
5. Air temperature 25°F to 20°F:
- a. Heat mixing water and sand to minimum of 70°F and to maximum of 120°F.
  - b. Provide heat source to maintain a minimum air temperature of 32° on each side of masonry construction.
  - c. Provide wind breaks for wind in excess of 15 miles per hour.
  - d. Keep temperature of masonry units a minimum of 40°F when laid and prior to grout placement.
6. Air temperature 20°F and below:
- a. Heat mixing water and sand to a minimum of 70°F and to maximum of 120°F.
  - b. Provide enclosures and heat source to maintain a minimum air temperature of 32°F on each side of masonry construction during construction.
  - c. Keep temperature of masonry units a minimum of 40°F when laid and prior to grout placement.

**B. Cold Weather Protection Requirements**

1. Mean Daily Air Temperature of 40°F to 32°F:
  - a. Protect masonry with weather resistive membrane from rain or snow for 24 hours.
2. Mean Daily Air Temperature of 32°F and Below:
  - a. Protect masonry with weather resistive membrane from rain or snow for 24 hours.
  - b. An air temperature of at least 32°F shall be maintained on each side of masonry for a period of at least 48 hours if Type M or S mortar is used and at least 72 hours if Type N or O mortar is used.

**C. Hot Weather Construction**

Follow the requirements of BC 2104.4. When temperatures exceed 100°F, or 90°F with a wind speed of 8 mph, provide necessary conditions and equipment to produce mortar having a temperature below 120°F and to maintain the mortar and grout below 120°F.



D. Wetting of Clay Masonry Units

Provide prewetting of masonry for units with initial rates of absorption that require their wetting before laying (21.42 grams per 30 square inches or 0.025 ounce psi). In cold weather requirements, follow the following requirements:

1. If surface temperatures are above 32°F, use water heated to about 70°F.
2. If surface temperatures are below 32°F, use water heated to about 120°F.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURERS**

A. Aggregate for Concrete Masonry Units (CMU)

1. Northeast Solite Corporation, Mt. Marion, N.Y.
2. Norlite Corporation, Cohoes, N.Y.
3. Or approved equal

B. Reinforcement and Ties

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1. Hohmann & Barnard, Inc., Hauppauge, N.Y.
2. Dur-O-Wall, Arlington Heights, IL.
3. Wire-Bond, Charlotte, NC
4. Or approved equal

C. Mortar Additives

1. ACM Chemistries, Norcross, GA 30010
2. Master Builders, Inc., Cleveland, OH 44122
3. Sika Corp., Lyndhurst, NJ 07071
4. Or approved equal

**2.02 MATERIALS**

A. Base Materials

1. Portland Cement



- a. Type I ASTM C150
- b. Type II (for manholes) ASTM C150
2. Slag cement (only use for Manufacture of concrete block) ASTM C989, Grade 100 or 120.
3. Sand for Mortar Mix  
Sand shall be washed natural sand with 100% passing the No. 8 sieve.  
Mix shall not contain chlorides. ASTM C144
4. Aggregate for CMU - 100% light-weight aggregate, expanded clay shale or slate (rotary kiln process). To meet recycled content, lightweight recycled aggregate of up to 20% of total material that will maintain the same fire resistance equivalent thickness of 100% expanded shale, clay, or slate without a decrease in block strength may be used. ASTM C331
5. Aggregate for Masonry Grout ASTM C404
6. Hydrated Lime ASTM C207 Type "S"
7. Water: Shall be clean potable water free of injurious foreign matter conforming to the requirements of Section BC 1903.4 of the 2014 NYC Building Code.
8. Premixed sand and lime for mortar mixes is not permitted. The use of batched material by Spec-Mix and factory-packaged cement-lime-pigment by major mortar manufacturers is permitted. Each individual bag of material shall have the manufacturer's label identifying the mortar type.

B. Concrete Masonry Units (CMU)

1. Types
  - a. Hollow Load-Bearing: ASTM C90. Aggregate shall conform to ASTM C331.
  - b. Solid Load-Bearing (units with 75% or more net area), including Bond Beam Units: ASTM C90. Aggregate shall conform to ASTM C331.
  - c. High Strength CMU: Compressive strength shall be 3500 psi. Provide only where indicated on Drawings. Aggregate shall conform to ASTM C331.



2. Size
  - a. Nominal face dimension 8" x 16" or 8"x18", except as noted otherwise.
  - b. Provide half units, corner units, half-high units, "U" shaped lintel/bond beam units, and units of special size and shape or with multiple grinds, e.g., two faces, two ends, or any faces as required by the Drawings to accomplish the work.
3. Unit weight: Unit weight of concrete for CMU not to exceed 90 pcf when tested in accordance with ASTM C140 (105 pcf for the high strength CMU).
4. Fire ratings: Units manufactured with equivalent solid thicknesses, face shell thicknesses, web thicknesses, and other characteristics to obtain fire ratings as indicated on the Drawings.
5. Concrete masonry units shall be manufactured with a minimum of 3% pre-consumer content materials. A maximum ratio of 40% slag to Portland cement is permitted for cementitious materials and 20% recycled lightweight material to expanded clay shale, or slate for aggregate, as long as the required strength to meet ASTM C90 is met, the weights are the same, and the equivalent thickness to meet fire-resistance ratings is the same as block with 100% expanded clay, shale, or slate.

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C. Joint Reinforcement and Ties

1. Material
  - a. Reinforcement and Ties for Exterior Walls (includes back-up walls of cavity wall systems): Formed from stainless steel, 18-8, type 304.
    - 1) Sheet steel: (No. 2B Finish), cold-rolled, annealed, ASTM A240.
    - 2) Wire steel: ASTM A951.
  - b. Provide factory-fabricated corners and tees at corners and intersecting walls for continuous type reinforcing, such as truss type, except as indicated otherwise.
  - c. Width of truss and mesh reinforcement to place edge of reinforcement 1" from each face of masonry.
2. Manufactured Units. Units are listed by Hohmann & Barnard model number in order to establish a standard for comparison. For some units model numbers are also listed for products by Wire-Bond, Charlotte, NC; and product descriptions shall be the same as for the Hohmann & Barnard products. Deliver all units with manufacturer's printed installation instructions.



- a. Interior Concrete Masonry Unit Walls – All items to be stainless steel: LOX-ALL #120 Truss-Mesh, 9 gage, of proper width for wall thickness or approved equal. Deformations along each longitudinal rod for mortar bonding. Wire-Bond Truss Type Series 300 or approved equal.

D. Reinforcing Steel

1. Deformed bars conforming to ASTM A615, Grade 60. Reinforcement to be welded shall conform to the requirements of ASTM A706, Grade 60.
2. Reinforcement in interior construction, shall be epoxy coated in accordance with ASTM A775. Touch-up damaged epoxy coating in accordance with coating manufacturer's instructions.

E. Masonry Cleaner

Masonry cleaner capable of cleaning masonry without degrading the masonry material or mortar. Cleaner must be approved by the masonry manufacturer.

2.03 MIXES

A. Mortar (basic)

Shall conform to ASTM C270 and BIA M1-88. Provide Type I Portland cement (Type II Portland Cement when used for manholes). Masonry cement shall not be used as a substitute. Preconstruction testing with the proportions carefully monitored is to be used to establish the upper end of the strength range, which should generally be near the minimum strength of the next higher strength mortar.

1. Type S: 1 part gray cement, 1/2 part lime, 4<sup>1/2</sup> parts dry sand. Minimum compressive strength shall be 1800 psi at 28 days.

B. Grout for Masonry

1. Mixes

- a. Fine Grout: 1 part Portland Cement, 0-1/10 part Hydrated Lime, 2<sup>1/4</sup>-3 times the sum of volumes of cementitious materials of fine aggregate (Proportions by volumes).
- b. Coarse Grout: 1 part Portland Cement, 0-1/10 part Hydrated Lime, 2<sup>1/4</sup>-3 times the sum of volumes of cementitious materials of fine aggregate, and 1-2 times the sum of the volumes of cementitious materials of coarse aggregate (Portions by volume).
- c. Aggregates for Mixes: ASTM C 404.



- d. Slump: 8" minimum, 11" maximum.
- e. Compressive Strength: At least equal to the strength of the masonry, and not less than 2000 psi as determined by ASTM C1019 - Method of Sampling and Testing Grout.

2. Location

- a. For spaces less than 2" in any direction, use fine grout.
- b. For spaces 2" and more in any direction, use coarse grout.

**2.04 SOURCE QUALITY CONTROL**

- A. The City of New York will assign a Special Inspector who will inspect the masonry construction under the requirements of Section BC 1704.5 of the 2014 NYC Building Code.

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Examine all adjoining Work on which this Work is in anyway dependent for proper installation and workmanship. Report to the City of New York any conditions that prevent the performance of this Work.

**3.02 PROTECTION**

- A. Cover top of masonry wall with waterproof plastic membrane at the end of the work period, when work is not in progress. Extend cover down sides as needed to thoroughly protect the Work.
- B. During cold weather, do not use wet masonry units and frozen masonry units.
- C. Do not use frozen materials or lay masonry on frozen materials; remove frozen materials from wall. Refer to Part 1 of this Section, "Environmental Requirements" for temperature restrictions.
- D. Remove excess mortar from walls as soon after laying units as practicable to prevent staining and to facilitate cleaning of wall.
- E. Brace walls as needed until sufficiently set, or until intersecting walls provide lateral support.
- F. Prevent masonry cleaners from coming in contact with adjacent glass, metal, and other masonry surfaces. Protect adjoining metal surfaces and all other adjacent materials and property from masonry operations.



### 3.03 MIXING PROCEDURES FOR MORTAR

- A. Measure material by volume or equivalent weight. In measuring by volume, measure ingredients by container. Do not measure by shovel.
- B. Mix ingredients in a clean mechanical mixer for a minimum of 3 minutes, maximum of 5, with the minimum amount of water to produce a workable consistency. Water retentivity must be appropriate for the IRA of the brick. Bricks of 3 grams per minute per 30 sq in require a lower water retentivity property to maintain production by allowing the mortar to give up the water easier to the brick.
- C. Mortar that has stiffened because of evaporation of water from the mortar may be retempered only once, and only during the first hour of placement to restore the required consistency. Do not over water to make mortar "soupy" as water retentivity must be appropriate for the IRA of the brick. Mortar shall be used within 2<sup>1</sup>/<sub>2</sub> hours after initial mixing. Limit amount of mortar batched at one time to stay within these requirements.

### 3.04 LAYING - GENERAL

- A. Lay units true to dimensions, plumb and level, square; exterior and interior bond work in bond indicated on the Drawings or specified herein. Lay courses level and in plane with joints uniform; vertical joints spaced properly for plumb alignment. Provide masonry lines, plumb bobs, and utilize a 4 foot level to maintain wall within 1/4" of theoretical dimensions. Adjoining faces of brickwork sections, such as expansion joints, relieving angles, etc, shall be flush with each other, unless specifically indicated otherwise on drawings.
- B. Fill bed joints and cross joints solid with mortar. Furrowed bed and spotted cross joints not permitted. For hollow block units, apply mortar full length on all bearing surfaces.
- C. "Tooth" temporary openings in exposed masonry walls, to maintain proper bond when closed.
- D. Tool joints in exposed masonry with a concave jointer to provide a neat, smooth, compacted surface.
- E. Rough cut joints in masonry that are to receive plaster, to provide good plaster bond.
- F. Remove excess mortar, leaving masonry surface clean.
- G. Cut concrete masonry units with circular masonry wet saw.
- H. Build-in miscellaneous metal inserts and other items not furnished under this Section but specified to be installed under this Section.

### 3.05 CONCRETE MASONRY UNITS (CMU)

- A. General
  - 1. Lay blocks with cells vertical. Provide running bond unless shown otherwise on the



Drawings or as indicated below, bonded at corner angles. Fill cores containing vertical reinforcement with masonry grout for full height, as the wall is erected.

2. Provide grout in cores of blocks at jambs, under lintels, and where indicated on the Drawings.
3. Bond beam units shall be filled with lightweight concrete having a minimum compressive strength of 3000 psi and reinforced as shown on details.

B. Horizontal and Vertical Face Joints

1. Make joints uniform and 3/8" thick, unless otherwise indicated.
2. Shove vertical joints tight.
3. Tool joints with a concave smooth, non-staining tool, when thumb print hard, at surfaces to be painted or exposed.
4. Point joints tight with a trowel, in unparged masonry below grade.
5. Strike mortar joints flush in surfaces to be plastered, stuccoed, covered with other masonry, or which are otherwise concealed from view. Prepare masonry for application of fluid applied membrane air/vapor barrier.

C. Exposed and Painted Surfaces

1. Smooth, even texture, free of chips, cracks, or other imperfections and free from any material that will stain paint.
2. External corners in all rooms and spaces, except for utility and service areas, shall be formed with bull-nose blocks. Bull-nose blocks shall be factory fabricated.

**3.06 GENERAL - CUTTING, FITTING AND LAYING (CMU)**

- A. Cut units with motor-driven carborundum wet-saw; provide smooth, straight edges.
- B. Provide necessary cuts to fit tightly in and around mechanical installations.
- C. Drill holes neatly for attachment of handrail brackets and for other items to be attached.
- D. Reinforce first two courses above all door openings with a layer of truss type reinforcement extending 12" beyond jambs, in addition to the rebars required for seismic reinforcement.
- E. Remove mortar protrusions that extend into cells or cavities which are to be reinforced and filled.





- F. Set block up with special care for plane, jointing, pattern, and cutting.
- G. Keep faces of units clean; clean off mortar droppings on block face immediately.
- H. Defective units will be rejected. Replace defective units with perfect units at no extra cost to the City of New York.
- I. At exposed surfaces tool joints with a smooth, non-staining tool to produce a smooth and slightly concave surface.
- K. See Drawings for thickness and sizes of block.
- L. Maintain the rating of fire-rated partitions. Provide openings of minimal size to limit the amount of required firestopping. Firestopping systems shall be provided under Section 07270.
- M. Where units meet metal door frames, leave vertical joint open to receive caulking.

### 3.07 REINFORCEMENT

- A. General
  - 1. Block ties: Shall be embedded a minimum of 2/3 the block width
- B. Interior Concrete Masonry Units:
  - 1. Provide mesh continuous at every third block course.
  - 2. Provide ties at 24" o.c. vertical spacing. Embed in masonry 4" minimum each wall.
  - 3. Provide straps at 48" o.c. vertical spacing.
- C. Structural Reinforcement Installation
  - 1. Where reinforcement is anchored to slab, drill hole 1/8" larger than bar diameter and set in epoxy similar to Sikadur 31 by Sika Corp. Holes are to be brushed and air-blown clean prior to pouring of epoxy. Hole depths to be 3" minimum unless indicated otherwise in Contract Documents.
  - 2. Provide a minimum 20" lap at splices, tying bars together or using mechanical fasteners.
  - 3. Cells of hollow masonry units containing reinforcing bars are to be filled completely with masonry grout.
  - 4. Install reinforcing bars in bond beam units at depths indicated on drawings. Bars are to be continuous lengths in bond beams over masonry openings.



5. Where indicated, weld reinforcement to steel in accordance with AWS D1.4 and the manufacturer's written instructions. Keep electrode dry. Oven dry electrode after exposing it for more than 6 hours. Touch-up damaged coatings and weld area upon completion.

### 3.08 FIELD QUALITY CONTROL

- A. The City of New York will assign under the requirements of Section 1704.5 of the 2014 NYC Building Code a Special Inspector who will inspect the masonry construction.
- B. The Special Inspector will make inspections and any testing deemed necessary. Testing of mortar properties shall be in accordance with ASTM C780. Mortar suspected or tested to be too strong or too weak will be subject to petrographic analysis or other methods deemed necessary by the Commissioner and Special Inspector. Testing of masonry grout shall be in accordance with ASTM C1019. The Contractor shall pay for all tests if they verify improper work. Inspections will include, but not be limited to, the following:
  1. Proper installation of mortar, including proportioning and mixing. Those mortar properties listed in the Appendix of ASTM C780 are to be tested at the discretion of the Special Inspector or the Commissioner. Mortar strengths, when tested, will be determined in accordance with ASTM C780 using cylinders.
- C. ~~If any results are found to be not in conformance with the applicable ASTM, industry practice, and the Specifications the masonry in question shall be removed and redone. Pay for testing if results of testing verify improper workmanship or proportions not in conformance with the specifications and ASTM standards.~~

### 3.09 CLEANING

- A. Before cleaning masonry walls, examine faces for holes, cracks, and other defects. If corrections cannot be made to provide an appearance acceptable to the Commissioner, replace defective units.
- B. Concrete Masonry Units
  1. Clean wall surfaces to be painted; rub with carborundum stone: remove mortar from surfaces; remove rough edges from joints.
  2. Point up holes and joints. Brush with stiff bristle brush. Leave surface in condition to receive paint.
  3. Clean other wall surfaces with stiff-bristle brush.
  4. Do not use wire brush.

END OF SECTION 04 20 00



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**SECTION 05 17 00  
SUPPORT SYSTEM FOR SUSPENDED CEILINGS**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide structural ceiling suspension system as indicated on the Drawings and as specified herein, for all suspended ceiling systems.
- B. This suspension system shall include the attachment to overhead slab (or slab on metal deck), steel angle, plate hanger, and running (carrying) channels.
- C. Optional Method (to that in Par. B., above): Use steel eyelet in lieu of steel angle.
- D. Provide supports for furred areas, and for opening frames, lighting fixtures, furred ceilings, hoods and other items.
- E. Furring members and other attachments for the various ceiling materials and systems shall be as specified in the respective Section.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. American Society for Testing and Materials (ASTM)
  - 1. A36 - Specification for Structural Steel
  - 2. A307 - Specification for low Carbon Steel Externally Threaded Standard Fasteners.
  - 3. A446 - Standard Specifications for Steel sheet, Zinc-Coated by the Hot-Dip Process, Structural Quality.
  - 4. A525 - Standard Spec. for General Requirements for Steel Sheet, Zinc-Coated by the Hot-dip Process.



5. A568 - Standard Spec. for Steel, Sheet, Carbon, and High Strength, Low-alloy, Hot-rolled and Cold-rolled, General Requirements for.

#### 1.04 SUBMITTALS

- A. Submit Shop Drawings showing suspension assembly, indicating all components, connections and anchorages.
- B. Submit product data for all components, connections and anchorages.
- C. Submit three (3) samples of each component of the assembly.
- D. Submit sample of anchor and descriptive literature indicating its characteristics; submit laboratory report certifying pullout and shear capabilities for the anchor embedded in the materials to be used in this Project.
- E. "Coordination Drawings" per Part 3 of this Specification Section.

#### 1.05 REGULATORY REQUIREMENTS

- A. New York City Building Code.
- B. New York City Board of Standards and Appeals (BSA) approval, or New York City Materials Equipment Acceptance (MEA).

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Hangers and Clips

- 1. Steel Angle and Plate Hanger

ASTM A36. Provide angle 3"x3"x3/16"x1" wide, with 1<sup>3/8</sup>" long slot for 3/8" bolt. Provide plate hanger 1" wide x 1/8" minimum thickness, with 1<sup>3/8</sup>" long slot for 3/8" bolt. Increase thickness of plate hanger where required to support all loads suspended therefrom plus an additional 200 pounds located at midspan between hangers. Provide galvanized units for kitchen ceilings, and painted units at other locations unless indicated otherwise.

- 2. Optional Method



Use steel eyelet with safe working load of 300 pounds, in lieu of steel angle. Attach eyelet to threaded stud sleeve anchor. Attach plate hanger to eyelet with 3/8" bolt. Provide plate hanger 1" wide x 1/8" minimum thickness. Increase thickness of plate hanger where required to support all loads suspended therefrom plus an additional 200 pounds located at midspan between hangers. Provide galvanized units for kitchen ceilings, and painted units at other locations unless indicated otherwise.

**B. Bolts**

ASTM A307, 3/8" diameter, with lock washers and nuts. Provide shop coat of paint.

**C. Running (Carrying) Channels**

1. Minimum dimensions: 1 1/2" deep x 7/16" wide flanges;  $S(\text{in.}^3) = .0538$ ,  $I(\text{in.}^4) = .0404$ ; 475 lbs. per 1000' painted; 508 lbs. per 1000' galvanized; and as indicated on the Drawings. Provide shop painted channels at other locations unless indicated otherwise on the Drawings.

2. Increase size of channels where required such that midspan deflection, under all loads supported therefrom, shall not exceed 1/360 of the span, in accordance with the New York City Building Code. Loads shall include all ceiling materials, lighting fixtures, and other equipment and items supported by the channels.

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3. ASTM A568 for painted channels.  
ASTM A446 for galvanized channels: ASTM A525 - G-60 galvanized coating.

**D. Anchors (hanger assembly to deck) - Installed after deck in place:**

1. Manufacturers

- a. Hilti Fastening Systems.
- b. Illinois Tool Works, Inc.
- c. ITW Ramset
- d. Simpson Strong-Tie Co., Inc.
- e. Or approved equal

2. Stainless Steel or Galvanized

3. Anchors

- a. Expansion bolt or powder actuated fastener of capacity indicated below.
- b. Threaded stud or internally threaded sleeve anchor of capacity indicated below.

4. Safe working loads: For pullout 300 lbs. (minimum); for shear 300 lbs. (minimum); for strength of concrete (minimum 3,000 p.s.i. lightweight concrete).



Provide increased pullout capacity as required to ensure that each hanger is capable of carrying all loads suspended therefrom plus additional 200 pounds loads located at midspan of running channels.

## 2.02 PAINTING

- A. All steel members and accessories of the support system unless galvanized or of stainless steel, shall be dipped or painted with one coat approved asphaltum paint.

## PART 3 - EXECUTION

### 3.01 COORDINATION WITH OTHER TRADES

- A. Coordinate this Work with the various trades who may have ducts, pipes, conduits, or other Work in the spaces above the suspended ceilings, in order that anchors, hangers and running channels may be properly placed to avoid such ducts, pipes, conduits, and other obstructions. Any changes required to be made in the locations of anchors, hangers, and running channels by reason of the Contractor's failure to observe this requirement shall be made by the Contractor without additional cost to the Commissioner.
- B. Coordinate Work with ceiling systems work.
- C. Provide "Coordination Drawings" of all Work above suspended ceilings. Such "Coordination Drawings" shall overlay ceiling grids with all other Work above the ceiling so as to assure sufficient clearance for all building components in the ceiling cavity.
  - 1. The "Coordination Drawings" shall be drawn at a scale of no less than 3/8" = 1'-0" and shall represent the coordinated Work of all the following building elements:
    - a. structure
    - b. ceiling construction
    - c. mechanical
    - d. electrical
    - e. plumbing
    - f. fire protection

### 3.02 SUPPORT SYSTEM LOCATIONS

- A. Provide support system: for all suspended ceiling systems and for enclosures or furring systems indicated on the Drawings or specified herein.

### 3.03 INSTALLATION

- A. Secure 3" x 3" steel angle to structural concrete deck with **approved** anchors. To accommodate the running channel layout space anchors at 48" o.c. maximum in each direction, and as indicated on the Drawings.



- B. Attach steel plate hangers to angle with 3/8" diameter bolt, lock washer, and nut.
- C. Attach running channels to plate hangers with 3/8" diameter bolt, lock washer and nut.
- D. Install channels level, true to grid layout, at proper height, ready to receive the ceiling system: furring members for lath and plaster or gypsum board; or for drop clips or direct attachment clips for acoustical ceiling tees. Provide type of clip required to maintain indicated ceiling height in coordination with clearances required for equipment above the ceiling.
- E. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

#### **3.04 CEILING OPENINGS**

- A. Provision shall be made for the installation of lighting fixtures, ventilating or air conditioning equipment, access openings, and other ceiling openings.
- B. ~~Rigid frames of furring members shall be provided around openings, adequately braced and reinforced.~~

**END OF SECTION 05 17 00**





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**SECTION 05 30 00  
METAL DECK**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Furnish material, labor, equipment, services necessary to erect all metal deck, including connections, welding and accessories required for installation of Work. Field cut and fit deck as required and cut all openings.

**1.03 REFERENCES**

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society Testing and Materials (ASTM) standards, latest editions.
- A29 Standard Specification for Steel Bars, Carbon and Alloy, Hot-Wrought, General Requirements for
  - A36 Standard Specification for Carbon Structural Steel.
  - A108 Standard Specification for Steel Bars, Carbon, Cold-finished, Standard Quality.
  - A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coating.
  - A992 Standard Specification for Steel for Structural Shapes for Use in Building Framing
  - B633 Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
- B. "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", 9th edition including supplements. - American Institute of Steel Constructors (AISC 335).



- C. "Load and Resistance Factor Design Specification for Structural Steel Buildings" 2nd edition, including supplements. - American Institute of Steel Constructors (AISC LRFD 1999).
- D. International Code Council Evaluation Service (ICC-ES):
  - 1. International Building Code
  - 2. Acceptance Criteria for Steel Deck Roof and Floor Systems (AC43)
  - 3. Steel Deck Diaphragms (ESR-2199)
- E. "Structural Welding Code - AWS D1.1" - American Welding Society (AWS).
- F. "Specifications for Mild Steel Covered Arc - Welding Electrodes - AWS A5.1" - AWS.
- G. "Diaphragm Design Manual for Floor Decks and Roof Decks" 3<sup>rd</sup> Edition - Steel Deck Institute (SDI).
- H. "Fire Resistance Directory" - Underwriters Laboratory (UL).

#### **1.04 DESIGN REQUIREMENTS**

- A. Design of metal deck is governed by Section BC 2209 of the 2014 NYC Building Code. Structural integrity requirements of the Section BC 2213.3 shall be met.
- B. Metal deck unit sizes and gages are indicated on the Drawings.
- C. Units shall be of three-span length except where framing layout does not permit. Deck sheets shall be butted over supports.
- D. Use of integral and non-piercing hanger tabs to support ceiling systems is not permitted. Piercing hanger tabs with a safe working loading of 250 lbs or greater are permitted for ceilings weights below the hanger tab capacity. Integral hanger tabs are to be used for venting purposes only.
- E. Units included in a fire rated assembly must be classified in appropriate UL designs or have MEA, BSA, or OTCR approval.
- F. Use fasteners or welds for decking attachment that provide adequate diaphragm shear strength, uplift resistance and stiffness for imposed load combinations.

#### **1.05 SUBMITTALS**

- A. Product Data



Submit manufacturer's specifications for

1. Metal Deck
2. Deck Fasteners, if used
3. Primer Paint

**B. Shop Drawings**

1. Prepare metal deck shop drawings immediately after award of Contract.
2. Shop drawings shall include, but not be limited to the following:
  - a. Type and gage of metal deck.
  - b. Metal deck layout and orientation, including clear indication where shoring is required.
  - c. Welding or fastener types, sizes and pattern.
  - d. Side and end details of metal deck.
  - e. Supplementary framing details.
  - f. Location of all openings and fittings.
  - g. Shop finish.
  - h. Size, location, and spacing of stud shear connectors, where required, for each beam.
  - i. Designation of welding electrode strength to be used.
3. Shop drawings reviewed by the Commissioner for general conformity with the Drawings shall not relieve the Contractor or the metal deck supplier of responsibility for correctness of fit, quantities of materials, and adequacy of attachment details of deck and accessories to the structural steel. Deck must have UL or OTCR approval as part of the fire rated assembly. Approval of shop drawings does not absolve the Contractor of this requirement.
4. Calculations in accordance with ICC-ES AC 43 or SDI Design Method verifying diaphragm shear strength and stiffness: Submit calculations for the load tables of the metal deck supplied. Calculations shall be signed and sealed by a Professional Engineer licensed in the State of New York.



C. Quality Control Submittals

1. Certificates

- a. Submit notarized certificates from the manufacturers of the specified materials stating compliance with the applicable requirements set forth for all materials specified in this Section.
- b. Furnish steel manufacturer's certificate certifying welders employed on the Work have met AWS qualifications within the previous twelve months, and for work performed in the field are NYC licensed welders as per §28-407.1 of the Administrative Code.
- c. Furnish proof that deck to be used is part of a UL, MEA, BSA, or OTCR approved fire-rated assembly if other than deck shown on Drawings.
- d. Submit certificate stating deck manufacturer is a member producer of SDI.

2. Manufacturers' Instructions: Furnish manufacturers' printed material, specifications and installation instructions for each type of decking and accessories.

3. Contractor Qualifications

Provide proof of Manufacturer, Erector, welder, and mechanical fastener technician qualifications specified under "Quality Assurance".

**1.06 QUALITY ASSURANCE**

A. Qualifications

1. Manufacturer: Company specializing in the manufacture of metal deck as used in this Contract shall have a minimum of three years experience and is a member producer of SDI.
2. Erector: Company specializing in performing the Work of this Section shall have a minimum of three years experience with similar quantity of material.
3. Welders: All steel roof deck welders shall be AWS certified for welding of sheet steel and NYC licensed.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations. Where more severe



requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern. The City of New York shall hire a Professional Engineer licensed in the State of New York to conduct all Special Inspections require by the New York City Building Code; any corrections to the installed Work shall be done at no cost to the City of New York.

2. New York City Board of Standards and Appeals (BSA): Rules for Arc and Gas Welding and Oxygen Cutting and Steel Covering the Specifications for Design, Fabrication, and Inspection of Arc and Gas Welded Steel Structures and Qualification of Welders and Supervisors.
3. Industry Standards: Standards specified herein shall apply to Work of this Section. Where more severe requirements then those contained in the standards are given in this section or the Building Code, requirements of this Section or the Building Code shall govern.
  - a. AISC 335-89 or LRFD (1999) as modified by the 2014 NYC Building Code.
  - b. Seismic Provisions for Structural Steel Buildings AISC 341-05.
  - c. Section BC 2209 of the 2014 NYC Building Code
  - d. "Rules for Design of Composite Construction with Metal Decks or Lightweight Concrete" - Department of Buildings.
  - e. Fire Resistance Directory - UL.
    - 1) Composite metal deck shall have UL approval with respect to the following:
      - a) As a component part of a floor construction of specified fire resistance rating without need for sprayed fireproofing on underside of deck.
      - b) As a component part of a three-hour fire resistive floor construction with use of sprayed fireproofing on underside of deck.
    - 2) Roof deck shall have UL approval as a component part of the specified fire resistive roof construction.
4. Recommendations or suggestions in the codes and references listed in this Article and under "References" shall be deemed to be mandatory unless they are in violation of the Building Code.

C. Certifications



1. Structural metal deck and stud shear connectors shall conform to the material acceptance, certification and inspection requirements of Section BC 1701 of the 2014 NYC Building Code.
2. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver deck to site undamaged. With each deck unit bearing the UL label and marking for specific system detailed.
- B. Store deck units off the ground with one end elevated to provide drainage. Protect units from the elements with a waterproof covering.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURERS**

- A. Metal Deck
  1. Vulcraft Model 3C 18 Conform
  2. Wheeling Corrugating Co.
  3. United Steel Deck, Inc.
  4. Or approved equal

**2.02 MATERIALS**

- A. Steel for Composite Metal Deck
  1. Formed from galvanic steel sheets conforming to ASTM A653. Size of deck is to follow SDI requirements for thickness and tolerances.
  2. Minimum yield strength of 33,000 psi.
  3. Formed with integral locking lugs.
  4. Formed with deformations to provide bond with concrete.
- B. Miscellaneous Steel Shapes



Shall conform to the requirements of ASTM A36 or A992. Members to receive sprayed fireproofing shall be unprimed and free of lubricants or oils that would impair the adhesion of the fireproofing material.

C. Shop Finish

1. Metal deck: Steel sheet shall receive before being formed a coating of zinc conforming to ASTM A653 coating class G60 (both sides). Salt spray resistance of paint shall be 100+ hours when tested in accordance with ASTM B117.

D. Metal Deck Accessories (cants, pour stops, closure pieces, etc.)

Shall conform to the requirements of ASTM A653, coating class G60. Unless a thicker gage is required by design considerations, such as at cantilever edge conditions, minimum thickness shall be same gage as metal deck.

E. Welds

1. Welds:

a. Material: Welding electrodes shall conform to either E60XX or E70XX classification of AWS A5.1 as selected by the licensed welder depending on the gauge of steel deck and strength of steel member being welded to and is subject to approval by the Commissioner.

F. Galvanizing Repair Paint

Shall conform to the requirements of ASTM A780.

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

A. Do not begin placement of metal deck until all surfaces and members are deemed acceptable to receive the deck. Do not proceed with Work until any unsatisfactory conditions have been corrected to the satisfaction of the deck installer.

**3.02 ERECTION**

A. General

1. Care should be taken to avoid overloading the supporting structural elements when placing bundles of metal deck or other construction loads on floors.
2. Do not use floor deck units for storage or working platforms until they are permanently secured.





B. Metal Deck and Accessories Installation

1. Lay units in strict accordance with manufacturer's instructions and requirements and as shown on Drawings.
2. Adjust units in place before permanent fastening and accurately align end to end. Rectify inaccuracies in alignment and level of bearing before units are finally placed.
3. Provide proper bearing at all supports. Metal deck must be placed to bear fully on surface of beam flanges.
4. Fasten side laps of adjacent units between supports by crimping or mechanically fastening with sheet metal screws of size and spacing required by manufacturer. In no case shall fasteners exceed two feet.
5. Furnish, install, and weld in position all accessories, including pour stops, closures, cant strips, etc., where required.
  - a. Furnish sheet metal pour stops and closures for open ends of walls, and openings shown on Drawings. Pour stop gage is to be selected by manufacturer based on overhang. Revise gage if survey shows overhang exceeds that designed. Provide additional supports to strengthen pour stop at wedge inserts if required.
  - b. Provide welding hole cover, with friction fastening, to close welding access holes when required.

C. Cutting, Drilling, and Reinforcing of Openings

1. Where predetermined openings are framed by structural steel beams on all sides (shown on the Drawings), the metal deck shall be engineered by the manufacturer to fit these conditions.
2. Any opening which is not framed by structural steel beams on all sides, and which is required in steel decking, shall be cut by the respective trades requiring it.
3. Reinforcing of Openings in Steel Deck
  - a. Holes 6" or less in dimension need not be reinforced.
  - b. Holes greater than 6" but less than 30" in any dimension shall be reinforced by the General Contractor as shown on the Structural Contract Drawings.



D. Field Touch Up

Clean scarred and rusted areas in galvanizing after deck installation is completed and paint welds and the scarred and rusted areas with the galvanizing repair paint. Apply in accordance with the manufacturer's instructions.

**3.03 CLEANING**

- A. Metal deck and accessories to receive sprayed fireproofing shall be clean of dust, grease, excessive oils, loose materials, and any other matter which would impair the adhesion of the fireproofing material to the deck and accessories.

**END OF SECTION 05 30 00**



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**SECTION 05 50 00  
METAL FABRICATIONS**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide metal fabrications and miscellaneous metals as indicated on the Drawings and as specified herein, including, but not limited to the following:
1. Galvanized steel stairs
  2. Apparatus supports, miscellaneous hangers and accessories
  3. I-Beam, channel, angle, and other miscellaneous iron work
  4. Galvanized steel louver support angles, clips and hangers.
- 
5. Galvanized steel pipe railings and handrails
  6. Steel pipe bollards
  7. Miscellaneous bolts, anchors and inserts to be set in concrete and masonry

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. American Society for Testing and Materials (ASTM)
- C. American Welding Society (AWS).
- D. American National Standards Institute (ANSI)
- E. Society for Protective Coatings (SSPC)
- F. Federal Specifications (FS)



- G. National Association of Architectural Metals Manufacturers (NAAMM)
- H. The Building Code of the City of New York, latest edition.

#### 1.04 SUBMITTALS

- A. Shop Drawings, for each item specified.
  - 1. Show all locations, markings, quantities, materials, sizes and shapes.
  - 2. Indicate all methods of connecting, anchoring, fastening, bracing and attaching to work of other trades.
- B. Calculations
  - 1. Where metal fabrications 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.
- C. Product Data, for each item specified.
  - 1. Submit product data sheets for products used in metal fabrications, including anchoring devices. Instructions for installation of anchorage devices built into other work.
  - 2. Submit product data sheets for painting materials.
  - 3. Submit product data sheets for grouts and sealants.
- D. Welder certificates signed by the Contractor certifying that welders comply with requirements specified under Article titled "Quality Assurance".
- E. Qualification data for firms 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".

#### 1.05 QUALITY ASSURANCE

- A. Items provided in this Section shall be manufactured and fabricated by firms experienced in the type of Work specified.
- B. Installation shall be by installers experienced in the type of Work specified for the respective item.
- C. Qualify welding processes and welding operators in accordance with AWS D1.1 "Structural Welding Code – Steel", D1.3 "Structural Welding Code – Sheet Steel", and D1.2 "Structural Welding Code – Aluminum".
  - 1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.
- D. Engineer Qualifications: Professional engineer licensed to practice in New York State and experienced in providing engineering services of the kind indicated that have resulted in the successful installation of metal fabrications similar in material, design, and extent to that indicated for this project.
- E. Zinc metallizer: The company 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).

#### 1.06 PRODUCT HANDLING

- A. Before shipment to the job, all finishes shall be adequately protected for transporting and erecting periods.
- B. Replace damaged items, with the approval of the Commissioner, and at no additional cost to the City of New York.

#### 1.07 PROJECT CONDITIONS

- A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress and work of other trades to avoid delay of work.



## 1.08 SYSTEM PERFORMANCE REQUIREMENTS

- A. Definitions in ASTM E985 for railing-related terms apply to this Section.
- B. Structural Performance: Fabricate, and install the following metal fabrications 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 metal fabrication. 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 on intermediate rail of 50 lb/ft applied vertically.
    - c. Infill loads and other loads need not be assumed to act concurrently.
  - 4. Treads and platforms of Steel Stairs: Capable of withstanding a uniform load of 200 lb/foot squared and a concentrated load of 300 lbs/4 sq. in. so located as to produce maximum stress conditions.
  - 5. Exterior louver mounting angles



- a. Design for wind load (note coastal location of site) per New York City Building Code 2014.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

#### A. Metals

1. Metal Surfaces, General: For metal fabrications exposed to view upon completion of the Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet.
2. Ferrous Metals
  - a. Steel Plates, Shapes, and Bars: ASTM A36
  - b. Rolled Steel Floor Plates: ASTM A786
  - c. Steel Bars for Gratings: ASTM A569 or ASTM A36
  - d. Wire Rod for Grating Cross Bars: ASTM A510
  - e. Cold-Formed Steel Tubing: ASTM A500
  - f. Hot-formed Steel Tubing: ASTM A501
  - g. Cold-Rolled Structural Steel Sheet: ASTM A611
  - h. Hot-Rolled Structural Steel Sheet: ASTM A570
  - i. Cold-Rolled Steel Sheet: ASTM A366
  - j. Galvanized Structural Steel Sheet: ASTM A446
  - k. Galvanized Commercial Quality Steel Sheet: ASTM A526
  - l. Steel Pipe: ASTM A53; finish, type, and weight class as follows:
    - 1) Black finish, unless otherwise indicated.
    - 2) Galvanized finish for exterior installations and where indicated.
    - 3) Type S, Grade A, standard weight (schedule 40), unless otherwise indicated, or another grade or weight or both required by structural loads.
  - m. Gray Iron Castings: ASTM A48, Class 30
  - n. Malleable Iron Castings: ASTM A47, Grade 32510
  - o. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
  - p. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for the metal alloy to be welded.





B. Grout and Anchoring Cement

1. 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.
2. 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.
3. 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.
4. Products: Subject to compliance with requirements, provide one of the following or an approved equal:
  - a. Nonshrink Metallic Grouts:

“Hi Mod Grout”, Euclid Chemical Co.  
“Embeco 885 and 636”, Master Builders  
“Ferrolith G Red-Mix and G-NC”, Sonneborn Building Products Div.,  
Rexnord Chemical
  - b. Nonshrink Nonmetallic Grouts:

“Euco N-S Grout”, Euclid Chemical Co.  
“Crystex”, L & M Construction Chemicals, Inc.  
“Masterflow 713”, Master Builders  
“SonogROUT”, Sonneborn Building Products Div., Rexnord Chemical  
Products, Inc.  
“Five Star Grout”, U.S. Grout Corp.
  - c. Erosion-Resistant Anchoring Cement:

“Super Por-Rok”, Miniwax Construction Products Division

C. Fasteners

1. General: Provide galvanized or type 304/316 SS fasteners where built into exterior walls. Select fasteners for the type, grade, and class required.
2. Bolts and Nuts: Regular hexagon head type, ASTM A307, Grade A



3. Lag Bolts: Square head type, FS FF-B-561
4. Machine Screws: Cadmium plated steel, FS FF-S-92
5. Wood Screws: Flat head carbon steel, FS FF-S-111
6. Plain Washers: Round, carbon steel, FS FF-WS-92
7. Drilled-In Expansion Anchors: Anchors installed in concrete shall have current ICC-ES listing for performance in cracked concrete as per Section BC 1913 of the 2014 NYC Building Code.
8. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class, and style as required.
9. Lock Washers: Helical spring type carbon steel, FS FF-W-84
10. Vandle resistant fasteners: Torx with pin, or as otherwise indicated. Corrosion resistant.

D. Galvanizing by the Hot-dip Method

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.

E. Galvanizing by the Zinc Metallizing Process

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.
2. Galvanizing repair paint for regalvanizing welds and damaged areas shall conform to ASTM A780 and comply with ZRC Cold Galvanizing Compound.

## 2.02 FINISHES

A. General

1. Comply with NAAM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.
2. Finish metal fabrications after assembly.



## 2.03 FABRICATIONS

### A. General

1. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
2. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
3. 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 nighttime sky heat loss.

Temperature Change (Range): 180°F

4. Shear and punch metals cleanly and accurately. Remove burrs.
5. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
6. Remove sharp or rough areas on exposed traffic surfaces.
7. Weld corners and seams continuously to comply with AWS recommendations and the following:
  - a. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - b. Obtain fusion without undercut or overlap.
  - c. Remove welding flux immediately.
  - d. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
8. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flathead (countersunk) screws or bolts. Locate joints where least conspicuous.



9. 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. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Apparatus Supports, Miscellaneous Hangers and Accessories

1. Provide bolts, stud bolts, for all proprietary bolts and fasteners for the support of apparatus and other items as indicated on the Drawings. Secure to steel beams or concrete floor slabs above. Where exposed to view in interior, provide finish paint in addition to shop paint.

C. Galvanized Steel Stairs

1. Provide galvanized steel stairs of components as detailed on the Drawings.
2. Galvanized steel OSHA type treads shall be as manufactured by Fs Industries, McNicols, Grainger or approved equal.

D. I-Beam, Channel, Angle, T-Framing, and Miscellaneous Iron Work

1. Provide all I-beams, channels, angles, T's, bent plates, steel plates, bent angle frames and all other miscellaneous iron work as required to install the Works.

E. Steel Pipe Railings and Handrails

1. Fabricate pipe railings and handrails of galvanized components as indicated on the Drawings
2. Interconnect railing and handrail members by butt-welding or welding with internal connectors, at fabricator's option, unless otherwise indicated.
  - a. At tee and cross intersections, notch ends of intersecting members to fit contour of pipe to which end is joined and weld all around.
3. Form changes in direction of railing members as follows:
  - a. By radius bends of radius indicated.
4. Form simple and compound curves by bending pipe in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross-section of pipe throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of pipe.



5. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated.
6. Close exposed ends of pipe by welding 3/16 inch thick steel plate in place or by use of prefabricated fittings. All welds shall be ground smooth.
7. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnections of pipe and attachment of railings and handrails to other work. Furnish inserts and other anchorage devices for connecting railings and handrails to concrete or masonry work.
8. For interior steel railings form from galvanized steel pipe. Provide galvanized ferrous metal fittings, brackets, fasteners, and sleeves.

**F. Miscellaneous**

1. Provide all other miscellaneous galvanized metal work. All Work to be embedded in concrete or masonry work or in connection with bolts, anchors, and inserts shall be furnished at the proper time for setting.

**PART 3 - EXECUTION**

**3.01 INSPECTION**

- A. Make all required measurements in the field to ensure proper and adequate fit.

**3.02 DISCREPANCIES**

- A. Immediately notify Commissioner.
- B. Do not proceed until fully corrected.

**3.03 ERECTION/INSTALLATION**

- A. Provide anchorage devices and fasteners where necessary for securing metal fabrications 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.
- B. Perform cutting, drilling, and fitting required for installation of metal fabrications. 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 metal fabrications 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.



- D. 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.
- E. Adjust metal fabrications prior to anchoring to ensure matching alignment at abutting joints.
- F. Install items as detailed in the drawings; for manufactured items, install as recommended by the Manufacturer, unless indicated otherwise.
- G. Coordinate with other trades involved.
- H. Field Touch-Up
  - 1. 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.

**3.04 PROTECTION**

- A. Protect finishes of 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 05 50 00**



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**SECTION 06 10 00  
ROUGH CARPENTRY**

**PART 1 – GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide rough carpentry Work as indicated on the Drawings, as required for the completed Work of this Contract, and as specified herein, including, but not limited to, the following:
1. Blocking and cants for roofing work
  2. Preservative treatment for wood.
  3. Miscellaneous Lumber.

**1.03 REFERENCES**

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- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
1. U.S. Department of Commerce.  
American Softwood Lumber Standard PS 20  
Product Standard PS 1 for Softwood Plywood
  2. APA Engineered Wood Association. APA Design/Construction Guide
  3. Western Wood Product Association (WWPA).  
Grading Rules
  4. Southern Pine Inspection Bureau (SPIB).  
Grading Rules
  5. Redwood Inspection Service (RIS).  
Grading Rules





6. American Wood Preservers' Association (AWPA).  
Standard C2 (Lumber and Timber)  
Standard C9 (Plywood)
7. American Lumber Standards Committee (ALSC).
8. West Coast Lumber Inspection Bureau (WCLIB).  
Grading Rules

#### **1.04 SUBMITTALS**

##### **A. Quality Control Submittals**

1. Certificates: Certification for the following wood treatments:
  - a. Dip Treatment: Certification by treating plant stating chemical solutions used, submersion period, and conformance with applicable standards.
  - b. Waterborne Preservatives: Certified written statement that moisture content of treated materials was reduced to a maximum of 19 percent prior to shipment to Project site.
  - c. Pressure Treatment: Certification by treating plant stating chemicals and process used, net amount of chemical retained, and conformance with specified standards.

#### **1.05 QUALITY ASSURANCE**

##### **A. Mill and Producers Mark**

Each piece of lumber and plywood shall be grade stamped indicating type, grade, mill, and grading agency certified by the Board of Review of the American Lumber Standards Committee. Mark shall appear on unfinished surface, or ends of pieces with finished surfaces.

##### **B. Standards**

Comply with the following unless otherwise specified or indicated on the Drawings:

1. Lumber: American Softwood Lumber Standard PS 20 by the U.S. Department of Commerce. Comply with applicable provisions by each indicated use.
2. Grading Rules:
  - a. Douglas Fir, Hem-Fir, Idaho White Pine, and other Western Woods: Western Wood Products Association (WWPA) or West Coast Lumber Inspection Bureau (WCLIB).
  - b. Southern Pine: Southern Pine Inspection Bureau (SPIB).



- c. Redwood: Redwood Inspection Service (RIS).
- 3. Preservative Treatment: American Wood Preservers' Association (AWPA) Standards, quality control methods, and inspection requirements

## 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials dry during delivery. Store materials 6" minimum above ground surface. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood, and provide air circulation between stacks.
- B. Cover stored materials until ready for use for protection from moisture. Place and anchor covering in a manner which will assure good ventilation under the covering.

## PART 2 - PRODUCT

### 2.01 LUMBER

#### A. General

- 1. Furnish seasoned dimensional lumber dressed to nominal sizes indicated with 19 percent maximum moisture content at time of dressing, marked "S-DRY". Comply with dry size requirements of PS 20.

a. Dress: Surfaced 4 sides (S4S) unless otherwise indicated.

#### B. Board Lumber; less than 2" thick:

- 1. Concealed Board Lumber: Southern Pine No. 3 (SPIB), any species No. 4 (WWPA) or any species Standard (WCLIB), or Redwood Merchantable (RIS).

#### C. Miscellaneous Lumber

- 1. Standard grade, No. 3 grade, or better grade of the following species unless otherwise indicated:

a. Nailers and Blocking: Douglas Fir, Hem-Fir, Idaho White Pine or Southern Pine.

### 2.02 PRESERVATIVE TREATMENT

#### A. Treat lumber where indicated and as specified. Comply with applicable AWPA Standards and quality control and inspection requirements.

- 1. Fasteners and anchoring devices to be used with wood treated with waterborne preservatives shall be hot-dip galvanized or stainless steel if the wood will be exposed to moisture.

#### B. Complete fabrication of items to be treated to the greatest extent possible, prior to treatment. Where items must be cut after treatment, coat cut surfaces with heavy brush



coat of the same chemical used for treatment or other solution recommended by AWWA Standards for the treatment.

- C. Inspect wood after treating and drying. Discard warped or twisted items.
  
- D. Pressure Treatment (Above Ground Use)
  - 1. Treat the following wood items with waterborne preservatives for above ground use, complying with . AWWA Standards C2 & C9 Redry wood to a maximum moisture content of 19 percent after treatment.
    - a. Nailers, blocking, cants, shim stock, and similar members used in conjunction with roofing (including related flashings, trim and vapor barrier), coping, and waterproofing.
    - b. Nailers, blocking, furring, stripping, and similar concealed members in contact with exterior masonry and concrete (including interior wythe of exterior walls), and all sills for framing.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Verification of Conditions

Examine substrate and supporting structure on which rough carpentry is to be installed for defects that will adversely affect the execution and quality of the Work. Do not proceed with installation until unsatisfactory conditions are corrected.

#### **3.02 INSTALLATION**

- A. Do not use units of material with defects which impair the quality of the Work and units which are too small to fabricate the Work with minimum joints or with optimum joint arrangement.
- B. Install Work accurately to required lines and levels with members plumb and true, accurately cut and fitted and securely fastened. Closely fit rough carpentry to other associated construction.
- C. Securely attach carpentry Work to substrates by anchoring and fastening as indicated, or, if not indicated, as required by the referenced standards. Select fasteners of size that will not penetrate through members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required. Set nail heads in exposed Work which is to be painted or stained and fill resulting holes.

**END OF SECTION 06 10 00**



**SECTION 07 12 10**  
**LIQUID-APPLIED WATERPROOFING**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide Liquid-Applied Waterproofing system, including necessary accessories and auxiliary materials as indicated on Drawings and as specified herein.
1. Prior to installing the Liquid-Applied Waterproofing the Contractor shall apply a prime coat to the concrete substrate, followed by Bonding Cement or Type III Asphalt, and a Cap Sheet.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. ~~Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.~~

1. American Society for Testing and Materials (ASTM)
2. Canadian General Standards Board (CGSB)

**1.04 SUBMITTALS**

- A. Product Data: Manufacturer's specifications and installation instructions for each waterproofing material required. Include data substantiating compliance with requirements.
- B. Shop Drawings: Show full scale profiles of flashings, termination bars, reglets, and methods of seaming.
- C. Certification of single source for all materials.
- D. Water Test Method and Sequence.
- E. Submit membrane manufacturer's requirements for characteristics of concrete substrate, prior to start of Cast-in-Place Concrete work.



- F. Submit written approval from membrane manufacturer confirming compatibility of the waterproofing system with specified concrete deck and fill materials, prior to start of Cast-in-Place Concrete work.
- G. Water Test results.
- H. Membrane Manufacturer's Warranty.
- I. Qualifications per Article 1.05 of the Section.
- J. Manufacturer's final inspection certification per Part 3 of this Section.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer
  - 1. Minimum of 3 years of successful experience in the manufacture of the rubberized asphalt membrane for use as a waterproof membrane.
  - 2. Source Control: Obtain primary materials from single source; provide secondary materials only by manufacturers recommended by primary materials manufacturer.
- B. Waterproofing Installation Qualifications: The contractor or subcontractor performing the work must, within the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work.
- C. Pre-installation Conference: Prior to installation of the Liquid-Applied Waterproofing, but following the acceptance of required submittals, a conference will be called by the Commissioner at the Project site to review the materials selections, installation procedures and coordination of the work with other trades. The conference shall be attended by Contractor, waterproofing membrane manufacturer's representative, installer, and other Subcontractors whose work requires coordination with this work.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store, and handle materials in manner recommended by each respective product manufacturer.

**1.07 MANUFACTURER'S WARRANTY**

- A. Written 20-year Manufacturer's Warranty, agreeing to furnish labor and materials to repair or replace waterproofing materials that fail within the specified warranty period.



## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

A. The acceptable manufacturers and product systems are as follows:

1. Kemco Kemper System- 2K-PUR Two-Component, cold fluid-applied reinforced polyurethane with non-woven 165 polyester reinforcing fleece.
2. SIPLAST Terapro PMMA Liquid applied waterproofing system
3. Johns Manville- Seamfree Liquid membrane system
4. Or approved equal

### 2.02 LIQUID-APPLIED MEMBRANE WATERPROOFING

A. Meet the physical properties, as tested by an independent testing laboratory.

The Properties shall be the minimum required by the manufacturer for the system specified, and as approved by the Commissioner.

## PART 3 - EXECUTION

### 3.01 PREPARATION

A. Condition of Surfaces: Surfaces to receive membrane shall be free of defects or conditions that will interfere with, or prevent, a satisfactory installation of waterproofing systems.

1. Concrete surfaces shall be at least 28 days old and otherwise sufficiently cured to receive membrane.
2. Verify with membrane manufacturer and test field conditions for moisture content of concrete prior to membrane installation. Concrete shall be thoroughly dried out and free of moisture. There shall be at least 2 test areas for every 2500 square feet of area to be waterproofed. The Commissioner shall be present at these tests and the test methods shall be acceptable to the Commissioner.
3. All surfaces shall be free of depressions, voids, protrusions, cracks, holes, unevenness and other unsatisfactory conditions of substrates. Concrete must be monolithic, without spalled areas, honeycombs and sharp protrusions. Patching of substrates is not permitted unless written permission is issued by the membrane manufacturer.

B. Contaminants:

1. Surfaces shall be thoroughly cleaned and shall be free of water, dew, frost, dust, dirt oil, grease, concrete curing compounds, form release agents, laitance, and other



foreign matter. Sandblast if necessary to remove foreign materials, if so recommended by membrane manufacturer.

2. Dirt and dust shall be removed with an air compressor or industrial type vacuum cleaner or methods approved by membrane manufacturer.

### **3.02 INSPECTION OF SUBSTRATES**

- A. The manufacturer of the fluid-applied membrane waterproofing and the installer shall inspect the substrates to review their acceptability for the application of the system specified. Application of the membrane shall constitute acceptance by the manufacturer and installer of the substrate as suitable to receive the membrane.

### **3.03 INSTALLATION, GENERAL**

- A. At the start of the installation, the system manufacturer's representative shall be present at site to advise on the work.
- B. Install the fluid-applied membrane waterproofing in accordance with the manufacturers written instructions, except where more stringent requirements are shown or specified to provide a waterproof membrane that does not permit water penetration into the structure.
- C. Provide flashing or reinforcing materials at cracks and penetrations as required and with such materials and designs as recommended by the manufacturer of the Liquid-Applied Waterproofing.
- D. Fill non-moving cracks and joints with sealant or other compounds as recommended by the fluid-applied membrane waterproofing materials manufacturer for compatibility.
- E. Prime and seal concrete if required by membrane manufacturer. Use products and methods recommended by the fluid-applied membrane waterproofing materials manufacturer.

### **3.04 MEMBRANE INSTALLATION**

- A. General: Comply with manufacturer's instructions, except where more stringent requirements are shown on the Drawings or specified herein.
- B. Coordinate installation of the fluid-applied membrane waterproofing and associated work to provide a complete system complying with the recommendations of manufacturers and installers involved in work. Minimize period of exposure of fluid-applied membrane waterproofing materials.



**3.05 FIELD QUALITY CONTROL**

- A. Notify the manufacturer of the waterproofing materials in sufficient time, but not less than 3 days, prior to start of work to allow inspection of substrates. The membrane manufacturer shall inspect the installation on a regular basis. All joints shall be thoroughly inspected prior to concrete placement or the product being covered with other materials.
- B. Contractor shall pay for all services by the manufacturer. Work shall be done to the manufacturer's and the Commissioner's satisfaction.

**3.06 PROTECTION**

- A. Provide protection for membrane as recommended by the manufacturer. Protect membrane and drainage panels or protection board before and during backfilling and replace any membrane or drainage panels or protection board damaged during the backfilling operation. Do not allow traffic of any type on unprotected membrane. Minimum protection shall be 3/4" thick exterior grade plywood.
- B. Place backfill within 7 days. Avoid damaging the drainage panels or protection board with the compactor's hoe, exhaust, or tamper foot. Replace any damaged components.

**3.07 REMEDIATION**

- A. Contractor is responsible for providing a watertight structure. Provide all required remediation for any leakage that may occur with products and methods acceptable to the Commissioner.

**3.08 MEMBRANE MANUFACTURER'S FINAL INSPECTION**

- A. After all of the fluid-applied membrane waterproofing work is completed, an inspection shall be made by the manufacturer's representative, who shall certify that the system has been installed according to the Specifications.

**END OF SECTION 07 12 10**





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**SECTION 07 14 70  
CRYSTALLINE WATERPROOFING**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide at exterior walls of fuel tank room up to 6" above DFE (Design Flood Elevation) as indicated in drawings. Refer to specification 030050 for concrete admixture.

**1.03 REFERENCES**

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. International Concrete Repair Institute (ICRI)
- 
- B. American Society of Testing and Materials (ASTM)
- ASTM C109                      Standard Test Methods for compressive Strength of Hydraulic Cements
- C. US Army Corp of Engineers
- CRD-C 48-92    Method of Test for Water Permeability

**1.04 SUBMITTALS**

- A. Product Data
- Provide manufacturer's information on the waterproofing material, including application instructions.
- B. Quality Control Submittals
1. Certificates: Furnish manufacturer's certification that materials meet or exceed specification requirements.
  2. Procedure: Submit written description of water-proofing procedures and operations sequencing based on manufacturer's requirements prior to commencing the Work.



3. Submit intent to warranty document from manufacturer of waterproofing with a performance guarantee against water penetration through waterproofing system for 5 years with any necessary replacement material and labor supplied at no cost to the City of New York.

4. Contractor Qualifications: Provide proof of installer qualifications specified under "Quality Assurance".

C. Warranty

Submit manufacturer's warranty and installer's guarantee.

D. Mock-up

Provide mock-up as indicated under Quality Assurance.

**1.05 QUALITY ASSURANCE**

A. Qualifications

Waterproofing Installer: The contractor or subcontractor performing the work must, within the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work. In addition, the contractor or subcontractor must be approved by the manufacturer.

B. Manufacturer's Representative

All work of this Section shall be performed under the supervision of the waterproofing material manufacturer's representative.

C. Job Mockups

Prior to performing the work of this Section, prepare a sample panel of not less than 25 sq. ft. of waterproofing work. Do not proceed further with the work until the sample panel has been approved by Commissioner. Sample shall be a portion of the area to be restored and may be kept if approved.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Deliver the specified product in original, unopened containers with the manufacturer's name, labels, product identification and batch numbers.

B. Store and condition the specified product as recommended by the manufacturer.

C. Do not store liquid material in hot sun. Keep material from freezing.



### 1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply if the temperature unless surface temperature and ambient temperatures are 45-50°F and rising and below 85°F unless the material manufacturer is consulted for recommendations.
- B. Do not use frozen materials or materials coated with ice or frost.
- C. Protect from rain until material is completely dry.

### 1.08 WARRANTY

- A. Furnish manufacturer's warranty in a form satisfactory to the City of New York that warrants all Work for a period of five (5) years from the date of the acceptance of the building against any defects in workmanship or material and that this work will remain absolutely watertight for the entire period of the warranty.
- B. Installer guarantee shall be 2 years from Substantial Completion.
- C. Should any defects develop or any leaks occur in the Work within the guarantee period, such defects or leaks shall at once be remedied and made good without cost or expense to the City of New York.

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## PART 2 - PRODUCTS

### 2.01 MANUFACTURER

- A. Aquafin, Inc, Elkton, MD
- B. Kryton International, Inc, Vancouver, BC, Canada
- C. Vandex USA, Morrisville, PA
- D. Xypex Chemical Corporation, Richmond, BC, Canada
- E. Or approved equal

### 2.02 MATERIAL

- A. Crystalline Waterproofing
  - 1. Chemically reactive material that when placed on concrete or concrete masonry units creates a crystalline structure preventing the passage of water.
    - a. Compressive strength 3000 psi @ 28 days  
ASTM C109



- b. Permeability No measurable leakage CRD-C48 or acceptable when tested at 65 psi test by other agency Positive or negative
- 2. Product
  - a. Aquafin IC mortar to be applied as cove base and Auafin 1K to be applied to concrete or concrete masonry unit wall.
  - b. Equivalent products by Krystol, Vandex, or Xypex may be submitted if their products meet the specifications.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Do not begin surface preparation and application of waterproofing compound until all cracks, joints, and surface defects are repaired. Verify that all reglets have been formed at joints to receive the material.

#### **3.02 SURFACE PREPARATION**

- A. All substrates shall be clean and sound, free of frost, dust, laitance, grease, curing compounds, waxes, impregnations, foreign particles, other coatings, and disintegrated materials. All projections, rough spots, etc., shall be dressed off.
- B. Rout out faulty joints or cracks exceeding .02" to 3/4" wide by 1" deep minimum, as well as honey combs. Repair defects according to manufacturer's instructions with manufacturer's repair product, which shall be included in the written procedure.
- C. Roughen form tie holes.
- D. Mechanically prepare surface by high-pressure water blasting, shot blasting, or mechanical means to clean surface and provide the required surface profile. Provide an ICRI CSP 3 surface preparation (light shot blasting).
- E. Do not damage previously repaired surfaces and cracks.
- F. Rinse surfaces to be waterproofed several times so that concrete is thoroughly saturated. Remove any standing water, as surface is to be surface-saturated dry.

#### **3.03 APPLICATION**

- A. At all reglets, tie holes, and prepared cracks, mix material to consistency required by manufacturer and fill out with manufacturer's waterproofing patch product flush with adjacent surface, leaving a brush finish. Apply a slurry coat of material around the joint if required. Entire procedure is to be included in the Contractor's submittals. Follow manufacturer's instructions.



- B. Mix components in accordance with manufacturer's instructions and in correct proportions to a slurry consistency. Mixing of the components shall be done mechanically, using a low-speed (400-600 rpm) drill and jiffy paddle. Mix components in a clean, dry mixing container. Do not add water to mixture.
- C. Coating shall be applied only to approved prepared surfaces with trowels, high-quality brushes, rollers, or "hopper type" spray equipment. Immediately trowel the product level. Surface shall be saturated surface dry prior to application. For hot surfaces in direct sunlight, wet down surface with clean water then allow to surface dry prior to coating. Coating shall be applied at ambient and substrate temperatures between 45°F and 85°F.
- D. Apply material as a base coat in accordance with manufacturer's recommendations.
- E. Apply material for slabs at a rate of 2 lb/sq.yd. (or as required by specific manufacturer) in one or two coats as recommended by manufacturer. For walls, apply in two coats. Base coat shall be applied at a rate of 1.25-1.4 lb/sq.yd (or as required by specific manufacturer). After initial set but while still "green", apply finish coat at a rate of 1.25-1.4 lb/sq.yd. Leave strokes in a parallel, uniform direction. Use light pre-watering between coats when rapid drying conditions occur.

### **3.04 TESTING**

- A. After manufacturer's recommended curing period, fill tanks and pits with water and let stand for a week. Do not fill at a rate of greater than 6.5' in 24 hours. Should leakage occur, drain tanks and to perform repairs.
- B. Repair leaks by routing out large joints and cracks and installing manufacturer's water plug material. Apply additional applications of slurry at areas of fine cracks or seepage.

### **3.05 PROTECTION AND CLEANING**

- A. Protect material from extreme heat and cold during the curing process using tarps or other means as recommended by the materials manufacturer.
- B. Clean material from adjacent surfaces not to be protected as well as residue from the protective measures (i.e. tape residue)
- C. Clean surface with 100 ppm chlorine water solution.

### **3.06 FIELD QUALITY CONTROL**

- A. The City of New York will check surfaces and reject any that contain cracks or other defects. These areas shall be fixed at Contractor's expense.
- B. Engage the services of the material manufacturer's representative to instruct in the proper usage of the material and to inspect the work throughout the project.

**END OF SECTION 07 14 70**



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**SECTION 07 24 10  
BUILDING SOUND INSULATION**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide building sound insulation as specified herein and as indicated on the Drawings

**1.03 SUBMITTALS**

- A. Product Data: Sound dampening absorbers
- B. Manufacturer's Instructions: Sound dampening absorbers

**1.04 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery: Deliver materials to site in original sealed wrapping bearing manufacturer's name and brand designation. Store and handle to protect from damage. Do not allow insulation materials to become wet, soiled, crushed, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storing, and protecting of materials before and during installation
- B. Storage: Inspect materials delivered to the site for damage; unload and store out of weather in manufacturer's original packaging. Store only in dry locations, not subject to open flames or sparks, and easily accessible for inspection and handling.

**PART 2 - PRODUCTS**

**2.01 SOUND DAMPENING ABSORBERS**

- A. Absorbers shall be vinyl coated fiberglass cloth quilted on both sides of a double layer of 4" fiberglass. Panels shall be constructed with grommets along top, bottom and sides. Grommets shall be typically spaced 24" on center. Additionally, continuous hook and loop fasteners shall be provided along vertical edges to enable adjacent panels to be fully secured to each other. Absorbers shall comply with ASTM E 84, Class 1 or A. Absorbers shall have a NRC Rating of 1.05. Absorbers shall be Model QFA-Series as manufactured by Barricade Noise Control Products, or an approved equal.
  - 1. Barricade "QFA-20 Quilted Fiberglass Absorber"
  - 2. Acoustical Solutions "AQFA-11"
  - 3. Kinetics Noise Control "KFA-20Q-NA"





**PART 3 EXECUTION**

**3.01 EXISTING CONDITIONS**

- A. Before installing, ensure that areas that will be in contact with the sound proofing materials are dry and free of projections. If moisture or other conditions are found that do not allow the workmanlike installation of the products, do not proceed but notify Commissioner of such conditions.

**3.02 INSTALLATION**

- A. Install products in strict accordance with manufacturer's recommendations.

**END OF SECTION 07 24 10**



**SECTION 07 27 00  
FIRESTOPPING/SMOKE SEALS**

**PART 1 – GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide firestopping at all penetrations and juncture joints of fire-rated walls, floors and ceilings in accordance with the requirements of the NYC Building Code.
- B. Firestopping and Smoke Seals shall be provided, but not limited to the following specific locations:
1. Penetrations for the passage of duct, cable, cable tray, conduit, piping and electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor slabs and floor/ceiling assemblies), and vertical service shafts.
  2. Openings and penetrations in fire-rated partitions or walls.
  3. Locations shown specifically on the Drawings.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
1. American Society for Testing and Materials (ASTM)
  2. Underwriters Laboratories, Inc. (UL)
  3. National Fire Protection Association (NFPA)
  4. Warnock Hersey

**1.04 DEFINITIONS**

- A. Penetration: Any opening or foreign material passing through or into a fire-rated barrier.
- B. Fire-Rated: Have the ability to withstand the effects of a standard fire exposure for a specified time period, as determined by qualified testing.
- C. Fire-Rated Barrier: A floor, wall, partition or floor-ceiling assembly able to withstand a standard fire and hose stream test without failure.



- D. Fire resistance rating: The ability of a structure to act as a barrier to the spread of fire and to confine it to the area of origin. Ratings are expressed in hours and apply to beams, columns, floors, ceilings, roofs, walls and partitions.
- E. Firestopping: A means of sealing openings in fire-rated barriers to preserve or restore the fire resistance rating.
- F. Firestop System: A material, or combination of materials, installed to retain the integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke or gases through penetrations in fire-rated barriers.
- G. F Rating: The time period that the through-penetration firestop system limits the spread of fire through the penetration when tested in accordance with ASTM E814.
- H. T Rating: The time period that the penetration firestop system, including the penetrating item, limits the maximum temperature rise to 325°F (163°C) above its initial temperature through the penetration on the non-fire side when tested in accordance with ASTM E814.

#### **1.05 REQUIREMENTS**

##### **A. Technical Requirements**

- 1. Firestopping materials shall be UL Classified as "Fill, Void or Cavity Material" for use in Through-Penetration Firestop Systems.
- 2. Firestop Systems shall provide a fire resistance rating at least equal to the hourly resistance rating of the fire-rated barrier and resist passage of smoke and other gases.

##### **B. General Considerations**

- 1. Firestop Systems do not re-establish the structural integrity of load bearing partitions. The Contractor shall consult Commissioner prior to penetrating any load bearing assembly.
- 2. Firestop systems are not intended to support live loads or traffic. Contractor shall consult Commissioner if there is reason to believe these limitations may be violated.

#### **1.06 SUBMITTALS**

##### **A. Product Data**

Submit manufacturer's product information for each type of firestopping/smoke seal and assembly installed, including application instructions and specifications.

##### **B. Shop Drawing**

Submit shop drawings of each firestopping or smoke seal system/assembly to be installed in the project, showing all parts of the system, required clearances.

##### **C. Quality Control Submittals**



1. Certificates

- a. Furnish manufacturer's certification that materials meet or exceed specification requirements for each of the performance tests specified in Part 2. Provide testing certification.
- b. Furnish applicator's certification that material has been completed as specified to meet fire resistance ratings, thickness requirements, and application requirements of the applicable assembly.
- c. Furnish UL, BSA, MEA, or OTCR approval of material.
- d. Furnish certificate stating each material is 100% asbestos free.

2. Contractor Qualifications

Provide proof of Manufacturer and Applicator qualifications specified under "Quality Assurance".

D. Mock-up

Provide mock-up as indicated under Quality Assurance.

E. Guarantee

1. Contractor and installer's installation guarantee.

F. 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 of the City of New York.

**1.07 QUALITY ASSURANCE**

A. Qualifications

1. Manufacturer: Company specializing in the manufacture of firestopping/smoke seal materials to be used in this Contract shall have a minimum of three years experience.
2. Installer: All firestopping Work shall be performed by a Subcontractor who will be acceptable to the firestopping manufacturer in the application of its products and systems and have a minimum of three years experience and shall have worked on projects with similar quantities of materials used.

B. Regulatory Requirements

1. Building Code: Material and application shall meet the requirements for firestopping materials in accordance with the NYC Building Code.



2. Material must have UL or NYC BSA, MEA or OTCR approval for each assembly utilized. Comply with the following for firestopping that is required to be in compliance with BC 712 of the 2014 NYC Building Code:
  - a. ASTM E84 - Surface Burning Characteristics of Building Materials.
  - b. ASTM E814 - Fire Tests of Through Penetration Firestops.
  - c. U.L. 1479 - Fire Tests of Through-penetration Firestops.
  - d. U.L. - Fire Resistance Directory; Through-Penetration Firestop Systems (XHEZ), and Fill, Void or Cavity Materials (XHHW).
  - e. U.L. 723 - Standard Test Method for Surface Burning Characteristics of Building Materials.

**C. Manufacturer's Certification**

1. Manufacturer shall provide written certification stipulating that its products and systems used in this Project, if installed in accordance with the manufacturer's recommendations, shall provide the firestopping specified in this Section, as indicated by its UL rating for that specific installation.

2. The certification shall not include either or both of the following statements, or variations thereof:

"Commissioner or User shall determine suitability of the product or system for its intended use and assume all risks and liabilities connected therewith".

and,

"Commissioner or User shall test application of product or system for its specific use".

**D. Mock-up**

Install, on representative substrates (on site), one mock-up of each type of firestopping system to be used on Project, for each fire rating required and for each type of wall, floor, and ceiling. Acceptable mock-up installations may remain as part of the completed work.

**1.08 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.



**1.09 ENVIRONMENTAL REQUIREMENTS**

- A. Maintain air and substrate temperature at a minimum temperature of 50oF for 24 hours before, during, and for 24 hours after application of the material or as required by the product literature, which ever is more stringent. Contractor shall provide enclosures with heat to maintain temperatures.

**1.10 GUARANTEE**

- A. Submit a guarantee, executed by the Contractor and co-signed by the installer, agreeing to repair/replace firestopping work performed under this Contract which has cracked, flaked, dusted excessively, peeled, or has separated or fallen from the substrate due to defective workmanship for a period of two (2) years from the date of substantial completion.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURERS**

- A. Hilti Construction Chemicals, Inc., Tulsa, OK.
- B. The Carborundum Company, Niagara Falls, NY.
- C. 3M Fire Protection Products, St. Paul, MN.
- D. Bio Fireshield, Inc., Concord, MA

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- E. Tremco Sealant Division, Tremco LTD, Toronto, Ontario, Canada.
- F. Specified Technologies, Inc., Somerville, NJ
- G. W. R. Grace & Co., Macungie, PA
- H. RectorSeal Corp., Houston, TX
- I. Or approved equal

**2.02 MATERIALS**

- A. Grout and sealant systems, as well as integral firestopping sleeves and membranes, shall meet or exceed requirements as specified in Part 1 of this Section and shall be acceptable to the City of New York.
- B. Firestopping systems shall meet the requirements of ASTM E814, which include, but are not limited to, the following:
  - 1. Prevent flame pass-through.
  - 2. Restrict temperature to not exceed 325°F over ambient on side of assembly opposite flames.
  - 3. Provide a positive smoke seal.



4. Withstand hose stream test with a minimum positive pressure differential of 0.01 inch (2.49 pa.)
5. Provide an F rating of not less than the required fire rating of the wall penetrated.
6. Provide an F rating and a T rating for floor penetrations of not less than 1 hour, but not less than the required fire rating of the floor penetrated, except as follows:
  - a. Floor penetrations contained and located within the cavity of a wall do not require a T-rating.
  - b. Metallic piping or tubing penetrating a single fire rated floor, having a maximum 6" diameter can be firestopped with concrete, grout or mortar of thickness to maintain the fire rating of the floor penetrated. No limit to the number of floors penetrated if the area of the penetration does not exceed 144 square inches in any 100 square feet of floor area.
- C. Firestopping materials shall be asbestos-free, emit no toxic or combustible fumes and be capable of maintaining an effective barrier against flame, smoke, gas, and water in compliance with requirements of this Section.
- D. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating items(s) without affecting the adhesion or integrity of the system.
- E. Firestopping materials shall not require hazardous waste disposal of used containers/packages.
- F. On insulated pipe, the fire-rating classification must not require the removal of the insulation.
- G. Firestopping materials shall be free of solvents. Shrinkage while curing shall not exceed shrinkage experienced during specified testing. Firestopping shall remain in complete contact with adjacent construction when fully cured.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine and confirm the compatibility of surfaces to receive firestopping materials. Verify that surfaces are sound, clean and dry and are ready to receive the firestopping.
- B. Verify that penetration elements are properly located and securely fixed, with the proper space between the penetration element and surfaces of the opening.

#### **3.02 PREPARATION**

- A. Protect adjacent surfaces and equipment from damage.
- B. Clean surfaces of opening.

#### **3.03 INSTALLATION**



- A. Install firestopping system in strict accordance with the manufacturer's instructions to obtain the fire-rating required at the specific location. The Contractor and the City by New York shall be immediately notified of conditions that will not allow the proper installation of the material to achieve the required rating, such as the annular space between the penetration and sleeve not being wide enough to meet the requirements of the assembly.
- B. Provide escutcheons for piping at each side of penetration.

### **3.04 FIELD QUALITY CONTROL**

#### **A. Special Inspection**

- 1. The City of New York will assign under the requirements of Section 1704.25 of the 2014 NYC Building Code a Special Inspector who will inspect the firestopping/smoke seal installation to meet both the Special and periodic Special Requirements of the 2014 NYC Building Code.
- 2. The Special Inspector will make inspections and any testing deemed necessary.

#### **B. Nonconforming Firestopping/Smoke Seal Installation**

- 1. When inspection indicates firestopping does not comply with the required assembly, remove and replace firestopping.
- 2. ~~Areas of repair or replacement will be reinspected for compliance to the approved assembly.~~

#### **C. Contractors Responsibility for Quality Control**

- 1. Inspect all installations to ensure that all work meets the requirements specified as the Work progresses.
- 2. Cooperate with the Special Inspector performing Special and Periodic Inspection. Provide all access, including scaffolding and ladders.
- 3. Do not cover firestopping work until it is accepted and approved by the Special Inspector.

### **3.05 CLEANING**

- A. Remove excess materials, droppings, and debris; remove excess materials from adjacent surfaces.

### **3.06 PROTECTION**

- A. Protect firestopping installations from damage until completion of all Project Work.

**END OF SECTION 07 27 00**





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**SECTION 07 51 00  
BUILT-UP BITUMINOUS ROOFING REPAIRS**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide all built-up bituminous roofing repair Work as indicated on the Drawings and as specified herein. Existing roofing system is 4 ply SBS system manufactured by 'Johns Manville'. Contractor shall have Johns Manville inspect and approve all repairs and installations in order to maintain roof warranty.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. American Society for Testing and Materials (ASTM).
- C. Underwriters Laboratories, Inc. (UL).
- D. National Roofing Contractors Association (NRCA).
- E. Thermal Insulation Manufacturers Association (TIMA).
- F. Federal Specifications (FS)
- G. Factory Mutual System (FMS)
- H. United States Environmental Protection Agency (EPA)

**1.04 SUBMITTALS**

- A. Submittals Package - General

Submit the Shop Drawings, Product Data, Samples, and Quality Control Submittals specified below at the same time as a package. All submittal packages must be submitted prior to the Pre-Installation conference.



B. Product Data

1. Catalog sheets, Specifications and installation instructions for each material specified.

C. Samples

1. Roofing Membrane: 13 in. by width of roll, each type.
2. Base Flashing: 13 in. by width of roll, each type.
3. Vent Base Sheet: 13 in. by width of roll, each type.
4. Insulation: One 6" sq. piece, each type.
5. Fasteners: 3, each type.

D. Contract Closeout Submittals

1. Contractor's 2-year guarantee

**1.05 QUALITY ASSURANCE**

A. Roofing Installation Qualifications

1. Roofing Firm Qualifications

The contractor or subcontractor performing the work of this section must be a company regularly engaged in performing roofing projects with its own workforce and have successfully completed in a timely fashion at least three (3) roofing projects similar in scope, size and type to the required work within the last three (3) consecutive years prior to the bid opening. At least one of those projects must have been performed within the last twelve (12) months. The three (3) qualifying projects must have utilized the Johns Manville roof system, been installed by the contractor's or subcontractor's company utilizing its own workforce and must have qualified for, and have been issued, the warranty provided by Johns Manville. In addition, the contractor or subcontractor must be a certified or authorized installer for the Johns Manville roof system specified herein and shall submit proof of same.

B. Fire Department Regulations

Equipment and fuel shall meet the requirements of the New York City Fire Department.

C. Company Field Advisor



Secure the services of a Company Field Advisor of the membrane manufacturer for a minimum of 16 working hours. The Field Advisor shall be properly trained by the manufacturer to be technically qualified in design, installation, and servicing of the required products. Personnel involved solely in sales do not qualify. The Field Advisor shall be present at the beginning of the Pre-Installation Conference and at the actual membrane installation for the purpose of:

1. Rendering technical assistance to the Contractor regarding installation procedures of the system.
  2. Familiarizing the Commissioner with all aspects of the system including inspection techniques.
  3. Answering all questions which might arise.
- D. Coordination with existing roofing manufacturer  
Contractor shall coordinate with existing roofing manufacturer Johns Manville to maintain the warranty of existing roofing. Coordination efforts shall include (but not be limited to):
1. Notify Johns Manville prior to any repair or installation work on the roof.
  2. ~~The installer must be Johns Manville approved roofer.~~
  3. Contractor shall provide drawings, before and after photos and other submittals required by Johns Manville for maintaining warranty of existing roofing.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

### **A. Delivery**

1. Roofing materials shall be delivered to the site in the manufacturer's unbroken containers and shall bear the manufacturer's printed labels.

### **B. Storage and Handling**

1. Store materials a minimum of 6" off the ground, in a dry, well ventilated place protected from the weather. Enclosed trailers are recommended.
2. Mark for identification all materials which become wet. Remove such materials for the site.
2. Handle roll goods with care; store on end. Do not use roll goods which have been damaged.

## **1.07 PROJECT CONDITIONS**



- A. Do not execute the Work of this section unless the Commissioner is present, or unless the Commissioner directs that the Work be performed during the Commissioner's absence.
- B. Temperature  

Do not apply built-up roofing when the deck or air temperature is below 40° F.
- C. Do not execute the Work of this Section unless the substrate is dry, and free from debris and dust.
- D. Moisture Protection
  - 1. For Existing Roof: Limit the removal of existing materials to areas that can be completely re-roofed or temporarily protected within the same day. Temporary protection shall not be considered part of the system. Provide temporary water cut-offs in accordance with the roofing manufacturer's written Specifications.

#### **1.08 WARRANTY**

- A. Warranty Period: Two years covering defects in product or workmanship. Also includes repair to all ancillary areas damaged due to leaks.
- B. Existing roofing by Johns Manville is under warranty until June 15, 2025. (Guarantee # ANM101040087). Contractor shall coordinate with roofing manufacturer to ensure maintenance of this warranty.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

All roofing products used shall be manufactured and/or approved for use by existing roofing manufacturer 'Johns Manville'.

- A. Asphalt Primer and Asphalt  

Johns Manville, Denver, CO.
- B. Base Sheet  

Johns Manville GlasBase.
- C. Vent Base Sheet  

Johns Manville Ventsulation.
- D. Roofing Membrane, Vapor Barrier and Cover Strip



Johns Manville GlasPly Premier.

E. Insulation

1. Composite Insulation Board

Johns Manville Fesco Foam Isocyanurate, or ENERGY 3 Plus.

2. Isocyanurate Insulation Board

ENERGY 3 Isocyanurate by Johns Manville.

F. Base Flashing

1. Two Base Plies: Johns Manville GLasPly Premier.

2. One Ply Cap sheet: Johns Manville Dynaflex.

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G. Mineral-Surfaced Modified Bitumen Asphalt Membrane

Johns Manville Dynakap

H. Flashing Cement

Johns Manville MBR two-part Flashing Cement or Type III Steep Asphalt

I. Elastomeric Cement

MBR Utility cement by Johns Manville

J. Perlite Cant Strip: Johns Manville

**2.02 MATERIALS FOR VAPOR BARRIER**

A. Asphalt Vapor Barrier over Concrete Deck or concrete fill/screed

1. Primer: Asphalt primer, ASTM D41.

2. Steep Asphalt: ASTM D 312, Type III.



3. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, type VI. UL Classified.

### **2.03 MATERIALS FOR BUILT-UP MEMBRANE**

#### **A. Mineral Surfaced Asphalt Membrane**

1. Steep Asphalt (Slopes 1/2" to 3" per Foot): 190°, Type III.
2. Special Steep Asphalt: 220°, Type IV (slopes 3" to 6" per Foot).
3. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, Type VI. UL Classified.
4. Mineral-Surfaced Modified Bitumen Cap Sheet: Reinforced modified Bitumen Cap Sheet, ASTM D6163 or D6164, Type II, that incorporates the properties of both a strong fiberglass or polyester mat with an elastomeric base material consisting of modified bitumen material and fire retardant additives. UL Classified.

### **2.04 COMPOSITION FLASHINGS**

#### **A. Built-Up Base Flashing**

1. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, Type VI. UL Classified.
2. Reinforced Modified Cap Sheet: Reinforced modified Bitumen flashing, ASTM D6163, Type II, that incorporates the properties of both a strong fiberglass or polyester mat with an elastomeric base material consisting of modified bitumen material and fire retardant additives. UL Classified.
3. Steep Asphalt: 190°, ASTM D312 Type III.
4. Modified Flashing Cement.

#### **B. Coverstrips**

1. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, Type VI. UL Classified.
2. Reinforced Modified Cap Sheet: Reinforced modified Bitumen flashing, ASTM D6163, Type II.
3. Plastic Cement: Flashing grade, fibrated asphalt roofing cement, ASTM D 4586. UL Classified.
4. Modified Flashing Cement

### **2.05 INSULATION**



- A. Approval of insulation is contingent upon approval by the membrane manufacturer for use with specified roof system.
1. Provide type and thickness of insulation as indicated on the Drawings. Isocyanurate insulation shall have a 15 year time weighted average Long Term Thermal Resistance (LTTR) R-value of at least 6 for each inch of insulation thickness, as determined in accordance with ASTM C1289 or CAN/ULC-S770 (Standard Test Method for Determination of Long Term Thermal Resistance of Closed Cell Thermal Insulating Foams). Perlite and fiberboard shall have an R-value of at least 1.3 for 1/2" thickness.
  2. Types
    - a. Isocyanurate – ASTM C 1289, Type II, Class 1, Grade 2
    - b. Perlite - ASTM C 728
    - c. Fiberboard - ASTM C 208
  3. All insulation: Factory Mutual, Class 1 or U.L. Class A.
- B. Rigid Insulation

~~Provide insulation using one of the assemblies described below in subparagraph 1.~~

1. Two Layers of Insulation:

Two layers of insulation consisting of one layer of isocyanurate insulation, and a top layer of composite insulation. Board size 48" x 48" maximum.

- a. Base layer: Closed cell isocyanurate foam core skinned on both sides with factory applied facers of the generic type recommended by the membrane manufacturer. ASTM C 1298, Type II, Class 1, Grade 2. UL Classified. Thickness 2" maximum, 1" minimum.
- b. Top layer: A layer of isocyanurate foam integrally bonded to a layer of perlite or wood fiberboard on one side and a nonasphaltic fiberglass mat on the other. Total thickness of top layer 1.5" minimum, 2.5" maximum.

## 2.06 FASTENERS

- A. Fasteners for Securing Vent Base Sheet to Concrete

Corrosion-resistant fastener such as Olympic Heavy Duty Deck Screw or Drive-pin fastener through 3" diameter sheet metal disk.

- B. Fasteners for Securing Roofing Membrane To Wood Nailers





Annular ring roofing nail with one-inch solid cap, "Cap Nail" as manufactured by Simplex Nails Inc., Americus, Georgia.

C. Fasteners for Securing Built-Up Base Flashing

1. Wood Surfaces: Annular ring roofing nail with one inch solid cap, "Cap Nail" as manufactured by Simplex Nails Inc., 'Grip Fast', 'Simpson Strong Tie' or approved equal.
2. Metal Surfaces: Hardened, self tapping #10 Sheet metal screw thru one inch dia. sheet metal disk.
3. Concrete and Masonry Surfaces: Hardened, masonry drive pin, thru one inch dia. sheet metal disk.

**2.07 MISCELLANEOUS MATERIALS**

A. Cant Strips (For built-up base Flashings)

Perlite, ASTM C728.

**PART 3 - EXECUTION**

**3.01 VERIFICATIONS OF CONDITIONS**

- A. Verify that existing substrates are in satisfactory condition to receive roofing materials

**3.02 REMOVALS**

- A. Remove all existing roofing, including, but not limited to, felts, asphalt, coal tar, and vapor barrier, down to sound, clean screed coat/concrete deck, as well as vertical surfaces to which flashing will be adhered.

**3.03 EXAMINATION**

- A. Verify that Work of other trades which penetrates the roof deck or requires personnel and equipment to traverse the roof deck has been completed.
- B. Examine surfaces for inadequate anchorage, foreign material, moisture, and unevenness that would prevent the execution, and quality of application, of the built-up roofing system as specified.
- C. Do not proceed with application of built-up roofing system until defects are corrected.

**3.04 PREPARATION**

- A. Moisture Testing for Roof Deck



1. All roof decks where roofing is to be installed shall be thoroughly dried out and free of moisture before installing new membrane.

The Commissioner shall be present at these tests. The Contractor shall submit a signed statement that the tests have been performed and list the test results for each area.

a. Roof Deck Dryness Test (NRCA Approved Method)

- 1) Use approximately one pint of bitumen that is specified for use in the roof membrane, heated to a temperature that will ensure an application temperature of 400°F. See Built-up Roofing, Section IV-B, (Equiviscous Temperature) NRCA roofing and waterproofing manual.
- 2) Pour the bitumen on the surface of the deck. If the bitumen foams, the deck is NOT dry enough to roof.
- 3) After the bitumen has cooled, an attempt should be made to strip the bitumen from the deck surface. If the bitumen strips clean from the deck, the deck is NOT dry enough to roof.
- 4) If the tests prove the deck is damp, it shall be allowed to dry and be retested until dry enough for the roofing to be installed. Depending on the severity of the moisture condition, the Commissioner may permit the installation of vented base sheet in lieu of one ply of vapor barrier.

B. Priming (for concrete decks)

Prior to application of vapor barrier, and after the deck has passed the dryness test, apply asphalt primer to concrete deck surface at the rate of one gallon per square.

### 3.05 INSTALLATION OF ROOFING

- A. Install all components of roofing in accordance with the manufacture's recommendations.

### 3.06 TESTING

- A. Test completed roofing repairs in accordance with the roofing manufacturer's recommendations. If leaks occur, Contractor shall do all necessary work to correct them and testing shall be repeated until no leaks occur.

### 3.07 INSPECTION

- A. After all roofing system Work is completed, an inspection shall be made by the roofing system manufacturer's representative (Company Field Advisor). The representative shall certify that roofing system has been installed according to the Specifications.



**3.08 CLEANING**

- A. Remove bitumen from surfaces other than those requiring bituminous coatings.
- B. Remove all debris from roof area.

**END OF SECTION 07 51 00**

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**SECTION 076000  
FLASHING AND SHEET METAL**

**PART 1 – GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide all flashing, trim and sheet metal Work as indicated on the Drawings, as required for the completed Work, and as specified herein. The Work shall include, but shall not be limited to, the following:
1. Roof flashings, counterflashing and reglets
  2. Coping flashings
  3. Gutters and downspouts
  4. Insulated rooftop duct Curbs (prefabricated)
  5. Miscellaneous flashings and other sheet metal work as indicated in the drawings.

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**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
- C. American Society for Testing and Materials (ASTM).
- D. Federal Specifications (FS).

**1.04 SUBMITTALS**

- A. Shop Drawings
1. Provide shop drawings for each sheet metal item to indicate shape, dimensions, material and gauge, finish. Show the manner of forming, jointing, and securing the metal flashings, trim, and other specified sheet metal items. Include expansion joint connections, and the method of forming waterproof connections to adjoining construction.
- B. Samples



1. Materials for Flashing and Counter Flashing: One 6" sq piece, for each material specified.
  2. Sample of new gutter with integral fascia matching profile of existing
  3. Sample of new downspout
- C. Certificates of qualifications as specified under Article titled "Quality Assurance".

#### **1.05 QUALITY ASSURANCE**

- A. Except as otherwise shown or specified, comply with applicable recommendations, details, and standards of SMACNA.
- B. The installer shall have a minimum of three(3) years' experience in the fabrication and installation of flashing systems, sheet metal components and other items utilizing the materials indicated in the specifications and drawings
- C. All metal Work shall be ink-stamped at intervals, identifying  
Manufacturer, type metal, and gage or thickness.
- D. Materials containing asbestos are prohibited.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store, and handle products of this Section in such manner to protect them from damage.

#### **1.07 PROJECT CONDITIONS**

- A. Make the roof and all uncompleted flashings watertight at the end of each work day.

#### **1.08 GUARANTEE**

- A. The Contractor shall provide a two (2) year written guarantee, covering the flashing and sheet metal materials and workmanship. Should any defects occur during the stated period, they shall be corrected immediately, and all damage caused by such defects shall be corrected; all corrective Work shall be at the Contractor's expense.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIALS FOR FABRICATION**

- A. Stainless steel Sheet: 28 Gauge 304 Grade material



## 2.02 FASTENERS

- A. Screws, Bolts, and other Fastening Accessories: Stainless steel
- B. Anchors

Provide one of the following types:

1. Hammer driven anchors, consisting of a stainless steel drive pin and a corrosion resistant metal expansion shield inserted thru a stainless steel disc with an EPDM sealing washer.
2. Self-tapping, corrosion resistant, concrete and masonry screw inserted thru a stainless steel disc with an EPDM sealing washer.

## 2.03 MISCELLANEOUS MATERIALS

- A. Flashing Sealants, Cements, Mastics, and Adhesives

Provide products recommended in writing by the flashing manufacturer. Materials containing asbestos are prohibited.

1. Where low modulus silicone sealant is indicated provide ASTM C 920, single-component, neutral-curing silicone; Class 100/50, Grade NS, Use NT, Use O.

## 2.04 FABRICATION

- A. General: Where practicable, form and fabricate sheet metal Work in the factory or shop. Produce bends and profiles accurately to the indicated shapes. Where not indicated or specified, follow the applicable requirements of the reference standards listed in PART 1. All corners to be factory prefabricated. Hem exposed sheet metal to eliminate all sharp edges and corners.
- B. Stainless Steel Flashing and Counterflashing: Fabricated to be spring-tight against wall/roofing flashing when required. All corners shall be factory prefabricated: mitered and lapped approximately 1" at corner, and fully soldered or welded.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Coordinate the work of this Section with other Work for the correct sequencing of items which make up the entire system of weatherproofing or waterproofing.

### 3.02 PREPARATION



- A. Do not install the Work of this Section unless all necessary nailers, blocking and other supporting components have been provided.
- B. Do not install the Work of this Section unless all substrates are clean and dry. Do not cover air barrier membrane until the completion of a curing period if recommended by the membrane manufacturer.

**3.03 INSTALLATION**

- A. Isolation: Separate dissimilar metals from each other with a dielectric coating to prevent galvanic action. Coating shall be bituminous or synthetic material as required for compatibility with adjacent materials.

**END OF SECTION 07 60 00**



**SECTION 07 90 00  
JOINT SEALERS**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide all joint sealer Work as indicated on the Drawings, as required for the completed Work, and as specified herein.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work

1. American Society for Testing and Materials (ASTM)

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**1.04 SUBMITTALS**

- A. Product Data

Catalog sheets, specifications, and installation instructions for each product specified except miscellaneous materials.

- B. Samples for Initial Selection:

1. For all other uses: provide Manufacturer's color charts consisting of strips of cured sealants showing the full range of Manufacturer's standard colors available for each product exposed to view.

- C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-(13-mm-) wide joints formed between two 6-inch-(150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants

- D. Quality Control Submittals

1. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
2. Installer's Qualifications Data: Affidavit required under Quality Assurance Article.
3. Test Results





- a. Sealant manufacturer's test reports certifying compatibility with all contiguous materials.
  - b. Sealant manufacturer's test reports certifying that the sealant will not stain contiguous materials.
  - c. The results of field adhesion testing.
- E. Low Emitting Materials Compliance Submittals
1. Provide documentation for each sealant, sealant primer and cleaner to be used on site and within the weatherproofing/waterproof membrane (interior) of the building, indicating that the sealants and primers with V.O.C. requirements of the City of New York.

## **1.05 QUALITY ASSURANCE**

### **A. Installer's Qualifications**

The persons installing the sealants and their supervisor shall be experienced in the installation of sealants and shall have been regularly employed by a company engaged in the installation of sealants for a minimum of two years.

1. Furnish a letter from the sealant manufacturer, stating that the Installer is trained to install the manufacturer's sealant materials.

### **B. Container Labels**

Include manufacturer's name, trade name of product, kind of material, federal specification number (if applicable), expiration date (if applicable), and packaging date or batch number.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store, and handle joint sealer materials as recommended by the Manufacturer, to protect from damage.

## **1.07 PROJECT CONDITIONS**

### **A. Environmental Requirements**

1. Temperature: Unless otherwise approved or recommended in writing by the sealant manufacturer, do not install sealants at temperatures below 40 degrees F or above 85 degrees F.
2. Humidity and Moisture: Do not install the Work of this Section under conditions that are detrimental to the application, curing, and performance of the materials.



3. Ventilation: Provide sufficient ventilation wherever sealants, primers, and other similar materials are installed in enclosed spaces. Follow manufacturer's recommendations.
  4. Do not proceed with installation of joint sealants under the following conditions
    - a. When joint substrates are wet.
    - b. Where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
    - c. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
    - d. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
    - e. Surfaces are frozen.
    - f. Surfaces are superheated by the sun.
- B. Protection
1. Protect all surfaces adjacent to sealants with non-staining removable tape or other approved covering to prevent soiling or staining.
  2. Protect all other surfaces in the Work area with tarps, plastic sheets, or other approved covering to prevent defacement from droppings.
  3. Protect any painted surfaces which are not included in the Work from impact or damage.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Pecora Corp., Harleyville, PA
- B. Tremco Sealing and Coatings, Wading River, NY 11792
- C. Sika Corporation, Lyndhurst, NJ 07071
- D. Hydrotite
- E. Or approved equal

### **2.02 SEALANTS**

- A. Type 1 Sealant



One-part silicone sealant; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, A and O; Pecora 890; Tremco Spectrum-1 or Sika's SikaSil C-995.

Provide custom colors for use around window perimeters, to match window frame or masonry, or other colors as determined by the Commissioner.

### **2.03 EXPANDABLE WATERSTOPS**

- A. Hydrotite CJ-1020-2K-ADH, or approved equal.

### **2.04 JOINT FILLERS**

- A. As recommended by the sealer manufacturer.

### **2.05 MISCELLANEOUS MATERIALS**

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

- 1. For primers used on site and within the weatherproofing/waterproof membrane (interior) of the building comply with V.O.C. requirements of the City New York.

- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

- 1. For cleaners used on site and within the weatherproofing/waterproof membrane (interior) of the building comply with V.O.C. requirements of the City of New York.

- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

- D. Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

- E. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), O (open-cell material) or B (bicellular material with a surface skin, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

- F. Bond Breaker Tape

Polyethylene or other plastic tape as recommended by the sealant manufacturer; non-bonding to sealant; self-adhesive where applicable.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**



- A. Examine all joint surfaces for conditions that may be detrimental to the performance of the completed Work. Do not proceed until satisfactory corrections have been made.

### **3.02 PREPARATION**

- A. Clean joint surfaces immediately before installation of sealant and other materials specified in this Section.
  - 1. Remove all loose materials, dirt, dust, rust, oils and other foreign matter that will impair the performance of materials installed under this Section.
  - 2. Remove lacquers, protective coatings and similar materials from joint faces with manufacturer's recommended solvents.
  - 3. Use methods approved by the sealer manufacturer's recommended means to clean the joint surfaces, assuring that the sealant materials will obtain positive and permanent adhesion.

### **3.03 JOINT BACKING INSTALLATION**

- A. Install bond breaker tape in relaxed condition as it comes off the roll. Do not stretch the tape. Lap individual lengths.
- B. Install backer rod of sufficient size to fill the joint width at all points in a compressed state. Compress backer rod at the widest part of the joint by a minimum of 25 percent. Do not cut or puncture the surface skin of the rod.

### **3.04 SEALANT INSTALLATION**

- A. Except as shown or specified otherwise, install sealants in accordance with the manufacturer's printed instructions.
- B. Install sealants with ratchet hand gun or other approved mechanical gun. Where gun application is impracticable, install sealant by knife or by pouring, as applicable.
- C. Finishing

Tool all vertical, non-sag sealants so as to compress the sealant, eliminating all air voids and providing a neat smoothly finished joint. Provide slightly concave joint surface, unless otherwise indicated or recommended by the manufacturer.

  - 1. Use tool wetting agents as recommended by the sealant manufacturer.

### **3.05 EXPANDABLE WATERSTOP**

- A. Install in location indicated on the Drawings and in accordance with the manufacturer's recommendations.



**3.06 CLEANING**

- A. Immediately remove misapplied sealant and droppings from metal surfaces with solvents and wiping cloths. On other materials, remove misapplied sealant and droppings by methods and materials recommended in writing by the manufacturer of the sealant material.
- B. After sealants are applied and before skin begins to form on sealant, remove all masking and other protection and clean up remaining defacement caused by the Work.

**END OF SECTION 07 90 00**



**SECTION 08 11 00  
STEEL DOORS AND FRAMES**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide galvanized steel and stainless steel doors and frames as indicated on Drawings and specified herein.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

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1. Underwriters' Laboratories, Inc. (UL)
  2. American Society for Testing and Materials (ASTM)
  3. National Fire Protection Association (NFPA)
  4. Steel Door Institute (SDI)
  5. Hollow Metal Manufacturers Association (HMMA)
  6. Warnock Hersey Inc.

**1.04 SUBMITTALS**

- A. Product Data

Manufacturer's catalog sheets, specifications, and installation instructions.

- B. Shop Drawings:

1. All shop drawing shall be Site specific for the Project. Show details of each frame type, elevation, construction and installation for each door type, conditions at openings, location for each door type, location and installation requirements for finish hardware (including cutouts and reinforcements), details of connections, and anchorage and accessory items.



2. Include a schedule of doors and frames using the same reference numbers for details and openings as those on the Contract Drawings.

C. Samples

1. Frames: Corner sample of each type, 18" x 18" with mortises and reinforcements, shop painted.
2. Doors: Corner sample of each type showing construction, 18" x 18", with mortises and reinforcements, shop painted.

D. Certificates

1. Include approval data and acceptance by a New York City Building Department approved testing agency for all fire-rated assemblies.
2. Provide certification for oversized assemblies as described in Quality Assurance.
3. Provide certification for watertight door assemblies and certified test/calculation data.

E. Warranties

Provide manufacturer/installer warranty.

**1.05 QUALITY ASSURANCE**

- A. Provide doors and frames complying with ANSI/SDI A250.8 and as herein specified.

B. Fire Rated Assemblies

1. Wherever fire resistance classification is shown or scheduled for steel doors and frames, provide fire rated units that have been tested as fire door assemblies and comply with National Fire Protection Association (NFPA) Standard No. 80, are tested in accordance with NFPA 252 or UL 10B/UL 10C and UL 1784 as required by the NYC Building Code and comply with these Specifications. Identify each door and frame with metal UL, or Warnock Hersey Inc. labels indicating applicable fire class of the unit. Rivet or weld labels on the hinge edge of door and jamb rabbet of frame.
  - a. Oversize Assemblies: Whenever fire rated assemblies are larger than size limitations established by NFPA, provide manufacturer's certification that they have been constructed with materials and methods equivalent to requirements for labeled construction.
  - b. See Door Schedule in the Drawings for Label Requirements (Class) for respective openings.

C. Regulatory Requirements



1. Notwithstanding the requirements for fire-rated assemblies noted above, all fire-rated doors and frames shall be approved for use in the City of New York.
2. Provide evidence of acceptance by an approved testing agency. Provide permanent labels on doors and frames as required by the New York City Building Code. Labels shall be applied at the factory or where fabrication and assembly are performed.

#### **1.06 WARRANTY**

- A. Submit warranty signed by manufacturer, 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.
- B. Installer's guarantee: 1 year from date of substantial completion.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Store doors and frames on raised platforms in vertical position with blocking between units to allow air circulation.
- B. During delivery, storage and handling, protect doors and frames from water damage.
- C. Provide delivery, storage and handling in such manner to prevent damage to products.

#### **1.08 FIELD EXAMINATION**

- A. At the Site, before door installation, the Engineer reserves the right to select at random one or more doors for examination by cutting a portion of such size to reveal the construction of the particular door.
  1. If the examination finds that the doors examined do not comply with requirements of the Specifications, all doors shall be removed from the Site and new doors shall be provided. Costs of examination and replacement of rejected doors shall be borne by Contractor.

#### **1.09 GAGE STANDARDS**

- A. Gages specified are based on U.S Standard Gauge for hot rolled and cold rolled steel sheets.
- B. The allowable tolerances for steel sheet thicknesses shall be in accordance with HMMA Standards.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**





- A. General Fireproof Door Corp., Bronx, NY 10474
- B. Acme & Dorf Door Co., New City, NY 10956
- C. Ceco Door Products Div., Brentwood, TN 37027
- D. Or approved equal

## 2.02 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip

Commercial quality carbon steel, pickled and oiled, complying with ASTM A1011 and ASTM A568.

- B. Cold-Rolled Steel Sheets

Commercial Quality carbon steel complying with ASTM A366 A1008 and ASTM A568.

- C. Galvannealed Steel Sheets

Carbon steel sheets of commercial quality complying with ASTM A653 Doors and frames shall have A60 zinc-iron coating, mill phosphatized, complying with ASTM A653

- D. Stainless Steel Sheets

Commercial quality stainless steel sheets, AISI Type 316, complying with ASTM A167, exposed finish No. 4 polish

- E. Anchors and Supports

Fabricate of gages indicated on and of not less than 16 gage sheet steel, unless otherwise indicated, on the drawings

1. Galvanized Units: Galvanized anchors and supports used with galvanized frames, complying with ASTM A153, Class B.
2. Stainless Steel Units: Stainless steel used with stainless steel frames complying with ASTM A167.

- F. Anchorage Devices, Bolts, and other Fasteners

Manufacturer's standard units unless otherwise indicated on the Drawings.

1. Galvanized or Galvannealed Units: Galvanized items used with galvanized frames complying with ASTM A153, Class C or D as applicable.



2. Stainless Steel Units: Stainless steel.

### 2.03 FABRICATION

- A. Fabricate hollow metal work accurately and assemble neatly to ensure work smooth and free from dents, tool marks, visible waves, warp, buckles and conspicuous joints.
- B. Align lines straight and true with arises and angles as sharp as practicable. Miter corners in true alignment and join similar abutting profiles accurately.
- C. Assemble all joints to form imperceptible intersections when finished.
- D. Form each member, such as jamb and head, from a single piece of metal, unless otherwise shown or approved.
- E. Fasten all members together to provide rigid construction in assembled work. Weld all connections except those for removable members such as glazing beads.
- F. Weld, dress smooth and flush joints on exposed faces.
- G. Clearances
  1. Not applicable for watertight door.
  2. Fabricate doors for their respective frames within the following clearances:
    - a. Jambs and Head: 3/32" to 1/8".
    - b. Meeting Edges of Pairs: 1/8" to 3/16".
    - c. Bottom (no threshold or carpet): 3/8", maximum.
    - d. Bottom (at threshold or carpet): 1/4", maximum.
- H. Work showing defects or blemishes will be rejected, and rejected work shall be replaced with satisfactory work.

### 2.04 DOORS

- A. General
  1. Provide steel and stainless steel doors of types and styles indicated on drawings or schedules. Comply with ANSI/SDI A250.8 requirements unless more restrictive requirements are specified herein. Also doors shall have been pretested by the manufacturer to conform to ASTM F476, Door Impact Test, Grade 40, Table X5.1.
  2. Design and Thickness: Flush design doors, seamless vertical edges, hollow construction, 1-3/4" thick unless specifically noted otherwise.
  3. Reinforce inside of doors with continuous formed steel sections not less than 20 gage, spaced 6 inches on center. Spot weld at not more than 5 inches on center to both face sheets.



4. Sound Deadening (ASTM E90): Minimum Sound Transmission Class (STC) of 30.
5. Door Edges: Bevel lock stile edge of single acting hinged doors 1/8" in 2". Double acting doors shall have rounded edges, approximately 2¼" radius. Meeting stiles of pairs of single acting doors shall be "V" beveled or rounded as detailed on the Drawings or required.

**B. Doors**

1. Fabricate doors with two (2) outer stretcher-leveled, galvanized steel sheets or stainless steel sheets of 14 gage unless indicated otherwise on the Drawings. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces and stile edges. On mortise face of door, vertical joints shall be continuously welded and ground smooth and steel doors shall be coated with zinc-rich primer.
2. Provide reinforcement for surface sheet, edge, hardware, stops, and other provisions, of size and gage as specified or detailed on Drawings.
3. Provide 14 GA bottom channel and top channel and closure, as detailed on Drawings.

**2.05 FRAMES**

**A. General**

1. Provide steel or stainless steel frames for doors and other openings where shown, of size and profile as indicated on Drawings.
2. Construction: Full-welded unit construction, with corners mitered and continuously welded full depth and width of frame, unless otherwise indicated. Knock-down type frames will not be accepted.
  - a. Fixed Stops: Integral 5/8" stop unless otherwise indicated. Construct jambs and heads from one piece of metal each; rabbeted and flanged as required for the various types of openings, and neatly mitered or interlocked and welded together. Provide channel, angle and bent plate reinforcing as indicated on approved Shop Drawings or otherwise required. Provide reinforcing in the heads of frames where shown or required.
3. Frame Material
  - a. Frames: 12 gage Galvanized steel sheet or 12 gage stainless steel sheet unless indicated otherwise on Drawings.



4. Provide frames for masonry openings with adjustable Underwriter's type masonry anchors to suit conditions of installation, using not less than three (3) at each jamb, in addition to floor anchors.
5. Provide frames with calking stops, filler pieces and trim where indicated on Drawings or required; integrally formed as part of the frame wherever possible. Applied calking stops, filler pieces, and other members as indicated, shall be neatly attached by spot welding. All welds at galvanized frames shall be painted with zinc-rich primer.
6. At butts, cut back jamb the thickness of one leaf of butt.
7. Drill and tap reinforcement to template.
8. Provide reinforcement for hardware as indicated on Drawings and as required for proper hardware installation. Refer to Section 08 71 00 - Finish Hardware.

**2.06 SHOP PAINTING**

- A. All doors shall be delivered to the site with a full shop coat. Doors not fully shop coated shall not be accepted. Galvanized or galvanized steel doors shall be painted with following paint system:

Primer	Manufacturer's Product	Top Coat	Manufacturer's Product
Epoxy Primer	Carboline Carboguard 888	Aliphatic	CarbolineCarbothane 134HG
	PPG PMC, Amercoat 385	Polyurethane	PPG PMC Amercoat 450 H
	SW Macropoxy 646	Gloss	SW Acrolon 218 HS B65-600
	4.0 DFT		4 DFT

- B. Units shall pass the following tests:
  1. Salt Spray Test complying with ASTM B117 for 120 continuous hours.
  2. Water fog Test Complying with ASTM D1735 for 240 continuous hours

**2.07 WATERTIGHT STAINLESS STEEL DOOR ASSEMBLE FOR FUEL TANK VAULT**

- A. Watertight door and frame assembly and hardware shall be designed and provided by a manufacturer specializing in watertight doors with a fire resistive rating of 3 hours and capable of immersion in salt water. Thickness of door and door frame shall be as required by the door manufacturer, but not less than specified hereinbefore.
- B. The door manufacturer shall submit certified test or certified calculation data attesting that the door will perform meet the requirements in Paragraph above.

**PART 3 - EXECUTION**

**3.01 EXAMINATION**



A. Verification of Conditions

Examine substrate and conditions, under which the frames are to be installed, for defects which will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

**3.02 INSTALLATION**

A. Install steel doors, frames, and accessories in accordance with the Drawing Details, approved Shop Drawings, and the manufacturer's printed instructions, except as otherwise indicated.

B. Frame Installations

1. Place frames accurately in position; plumb, align, and brace securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreader bars, leaving surfaces smooth and undamaged.

a. At in-place masonry construction, place frames and secure in place with anchorage devices. Set anchorage devices opposite each anchor location, in accordance with details on approved Shop Drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.

i. Anchor frames as detailed on the Drawings.

b. Place fire rated frames in accordance with NFPA Standard No. 80.

c. Provide necessary field splices in frames as detailed on approved Shop Drawings, welded and finished to match factory fabrication.

d. Extend jambs to structural floor slab and securely anchor in place.

C. Door Installation

1. Install doors accurately in their respective frames within the clearance specified in Part 2.

2. Place fire rated doors with clearances as specified in NFPA standard No. 80.

D. Drill and tap doors and frames to receive surface applied hardware.

E. Stainless steel door assembly shall be installed in strict accordance with the door manufacturer's shop drawings and recommendations

**3.03 ADJUSTING**

A. Coat Touch-up

If damage during installation, apply touch-up of original painting system.

B. Final Adjustments



Check and adjust operating finish hardware items prior to final inspection. Leave work in complete and proper operating condition.

**3.04 CLEANING**

- A. Clean doors, frames, and accessories, leaving free of dirt and other foreign material after completion of installation.

**END OF SECTION 08 11 00**



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**SECTION 08 71 00  
FINISH HARDWARE**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide finish hardware as indicated on Drawings, as specified herein and as needed for complete hardware requirements.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- 
1. American National Standards Institute (ANSI).
  2. National Fire Protection Association (NFPA).
  3. Door and Hardware Institute (DHI).
  4. Underwriters Laboratories (UL).

**1.04 SUBMITTALS**

- A. Manufacturer's Technical Product Data: Submit for each hardware item type, including cuts, specifications and characteristics, instructions for installation, operation, and maintenance.

B. Hardware Schedule

NOTE: Provide Schedule for entire Project in one submittal, unless otherwise directed. Submit Hardware Schedule in book form (8½" x 11" pages), indicating the following for each item. No continuous computer printout permitted.

1. Locations of hardware, with cross-reference to schedules and other indications on Drawings.
2. Name, manufacturer, type, style, size, function, and finish.
3. Information for fastenings.





4. Mounting Locations.
5. Materials and sizes of doors and frames.
6. Explanation of abbreviations and symbols.
7. At time of submittal of Hardware Schedule, furnish hardware templates to fabricators of other factory-prepared work necessary for installation of hardware.

C. Templates

D. Key Schedule

1. Consult with the City of New York prior to preparing a keying schedule in order to confirm the required keying scheme.
2. Submit Hardware Key Schedule, prepared by hardware supplier, within forty-five (45) days after starting date of Contract.
3. Stamp top face of each key with letter and number using keyset symbols as set forth in the BHMA handbook. Tag each series of keys.
4. Stamp face of each cylinder with the same corresponding keyset symbols.
5. Locks shall be made up on combinations as specified.

E. Furnish schedule of keys in quadruple indicating keyset symbol of each key and number of rooms, cases, lockers, and other locations for which the keys are intended. Submit schedule for approval before making keys.

F. Deliver to the City of New York the required number of keys for each lock, properly marked.

G. Warranties

Furnish Warranties as specified hereinafter.

**1.05 QUALITY ASSURANCE**

A. Hardware Supplier

Finish hardware shall be furnished by those having a minimum three years of builders hardware experience and shall have in their employ at least one certified Architectural Hardware Consultants (AHC) to correctly interpret the plans, detailed drawings and specifications.

B. Manufacturer



1. Manufacturer shall have minimum of three (3) years successful experience manufacturing types and sizes of Hardware specified herein.
2. Obtain each hardware type from a single manufacturer.

**C. Minimum Quality Requirements**

The manufacturer shall certify that the Hardware items to be furnished shall be of quality specified herein, and meet the requirements of the applicable ANSI A156 Grade 1 standard for each item.

**D. Fire-rated Openings**

Provide hardware in compliance with NFPA Standard No. 80 and NYC Building Code requirements, tested and listed by UL for types and sizes of doors, and in compliance with requirements of door frame and door labels.

**1.06 SHIPPING, STORAGE, AND HANDLING**

- A. Package and ship hardware to prevent damage. Properly identify and tag each item. Sort, package and mark hardware with set numbers.
- B. Inventory hardware immediately upon delivery.
- C. Provide secure (locked) storage area for hardware until installed.

**1.07 PROJECT CONDITIONS**

- A. Coordinate hardware with other work. Tag each item or package separately, with identification related to the final hardware schedule and include basic installation instructions in the package. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated and as necessary for proper installation and functions. Deliver packaged hardware items to the proper locations for installation.
- B. Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware.

**1.08 WARRANTIES**

- A. The hardware manufacturers shall provide full replacement warranty as listed below. Replacement warranty shall include material and labor cost.
  1. Locksets, etc. 1 year.
  2. Hinges 5 years.
  3. Balance of hardware 1 year.
- B. Closers shall be warranted to properly operate door, free from mechanical defects for ten years from date of substantial completion of the Work. Closers which fail to meet



specified requirements shall be replaced or repaired and made to operate properly by Contractor without additional expense to the City of New York.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

#### **A. Butts**

1. Stanley
2. McKinney
3. Hager
4. Bommer
5. Lawrence
6. Or approved equal

#### **B. Continuous Hinges**

1. Markar
2. McKinney
3. Ives
4. Or approved equal

#### **C. Locksets, Passage Sets (Lever Type)**

1. Yale SL 8800 FL Series mortise lock with satin stainless steel finish (US32D).
2. Sargent 8200 Series mortise in satin stainless steel finish (US32D).
3. Schlage L9000 Series mortise lock in satin stainless steel finish (US32D).
4. Marks BE101 5000-BL Series US 32D finish.
5. Or approved equal

#### **D. Rim Latch**

1. Yale
2. Segal
3. Or approved equal

#### **E. Cylinders: To match with Commissioner's keying system.**

1. Sargent
2. Corbin Russwin
3. Schlage
4. Marks
5. Yale
6. Falcon



7. Or approved equal
  - F. Door Closers (non-ADA)
    1. LCN
    2. Norton
    3. Sargent
    4. Yale
    5. Dorma
    6. Falcon
    7. Or approved equal
  - G. Stop and Holder
    1. Glynn Johnson
    2. Architectural Builders Hardware
    3. Rixson (Heavy-Duty 8HD Series)
    4. Or approved equal
  - H. Surface Bolts
    1. Ives
    2. Rockwood
    3. Securitech
    4. Or approved equal
- 

## **2.02 MATERIALS AND FABRICATION**

- A. General
  1. Hardware: Heavy duty cast or forged (.080 min.) bronze with satin chromium finish U.S. 26D, except as otherwise specified.
  2. Interior Door Holders: Steel, satin chromium U.S. 26D finish.
  3. Door closers: As specified herein.
  4. Interior butts and horizontal releases: As hereinafter specified with chrome finish.
  5. Surfaces of castings shall be true, smooth and free from burrs. Lock mechanism and accessory components in contact with or bear upon other parts shall be dressed to a true, smooth surface.
  6. Items of cast iron shall be annealed.
  7. Whenever weight is specified, it shall mean actual weight of casting without screws, washers and accessories.



8. Do not use products with manufacturer's name in an exposed location, except name on rim of lock cylinders.
9. Backset: 2-3/4" for locksets and latchsets unless indicated otherwise.

**B. Screws**

1. Secure hardware with suitable screws and bolts of same material and finish as hardware items unless otherwise specified. Screws for strike and face plates, hinges, overhead door holders, and door checks and brackets for these items shall be flat-headed counter-sunk screws. Screws for other exposed hardware shall be oval-headed. Screws shall be countersunk unless expressly specified otherwise. Provide Phillips head screws unless otherwise indicated.
2. Hardware for metal frames and doors shall be secured with suitable machine screws, mill screws and bolts.
3. Manufacturer of each hardware item shall provide the fastenings required for the installation of that item.
4. Self-tapping or TEK screws are not permitted.
5. Wood screws for securing door butts shall be at least two inches long to secure butts through jamb and into wood stud behind jamb and blocking.

**C. Hubs**

Hubs for lever spindles: Sintered steel, copper infiltrated.

**2.03 GENERAL HARDWARE REQUIREMENTS**

- A. Hardware Schedule is intended to guide Contractor in preparing the Schedule for Work of this Section. It shall not relieve Contractor from the necessity of examining Specifications, Drawings and Details, and providing everything necessary to properly complete hardware installation.
- B. Hardware used on hollow metal doors, sash or jambs, shall be made to templates and packed with machine screws or other fastenings recommended by the manufacturer for the particular application scheduled.
- C. Hardware items not described shall be equal in grade, workmanship, and other particulars to similar items of hardware described.

**2.04 FINISHES**

- A. Hardware finishes shall comply with requirements of U.S. Bureau of Standards for the following:

U.S. - DESCRIPTION



US26D - Satin Chromium  
US32 - Polished Stainless Steel  
US32D - Satin Stainless Steel

**2.05 HARDWARE TYPE REQUIREMENTS:**

**A. Locks and Latches**

1. General Cylinder Lockset: Unless otherwise indicated.
  - a. Type: mortise, easy spring cylinder lock with latch bolt and guard bolt.
  - b. Case: 5-5/8" high, 4" wide, 3/4" thick. Steel, with zinc dichromate finish.
  - c. Backset: 2-3/4"
  - d. Hub: sintered steel, copper infiltrated.
  - e. Front: 8" high x 1-1/4" wide stainless steel, adjustable, protected, attached to case by machine screws.
  - f. Levers: solid stainless steel, secured to 5/16" square, hardened steel spindles.
  - g. Full Escutcheon: stainless steel, each side, 2-1/2" x 8".
  - h. Operation: From inside by lever. Outside lever operated by key or made stationary, as desired. Guard bolt, working on closed strike plate, automatically locks latch bolt to prevent it from being forced back when closed.
  - i. Secure locksets to doors with Phillips Head screws unless otherwise indicated.
2. Cylinders:
  - a. Cylinders of locks shall be of proper length to fit doors for which they are intended. Cylinders shall be solid brass with common standard diameter rotating plug. The keyway shall be paracentric type of single section with seven pins or multiple (four or more) sections with six pins capable of being masterkeyed and grand masterkeyed as specified without duplications or interchanges.
  - b. Provide cylinders with removable cores.
    - i. Removable Cores: Core insert, removable by use of a special key; for use only with core manufacturer's cylinder.
3. Strikes:
  - a. Strikes for latches shall project sufficiently to properly protect trim. Slots in strike plates shall not be more than 1/4" longer than



bolts. Metal between slots for latch and bolt shall not be less than 1/4".

- b. Strikes used with hollow metal jambs shall be of box type with closed back.

4. Latch Bolts:

Latch bolts shall be constructed so that they will not work loose. Where washer is riveted to latch spindle, rivet head shall be full and machine upset. Latch and lock bolts not otherwise specified shall be cast bronze.

B. Bolts and Catches

1. Extension Bolt for Large Double Interior Doors:

- a. Face Plate: Cast bronze, not less than 1" x 6-3/4" x 1/8" (A.S.A.), recessed, with large thumb piece secured with 4 screws. For wood doors, set face plate flush. For hollow metal doors, set face plate on surface with edges rounded or beveled.
- b. Bolt: 1/2" square, full 3/4" throw, bolt carriage smoothly fitted with strong guide posts and heavy spring.
- c. Guide Plates: Heavily flanged
- d. Strike: Composition or concrete floor shall have 3" deep strike with flange not less than 1/4" at top and well-grouted in position. For wood floor, strike shall be flanged back full 1/2" and secured with 2 screws.

2. Surface Bolts for Double Doors:

Surface bolts shall be Ives No. SB453, 8" long top and bottom of inactive leaf of double doors.

C. Door Stops

1. Door Stops:

Hollow metal doors shall be provided with stop to suit condition except where otherwise specially indicated. Hollow metal doors shall be provided with overhead stops similar to Glynn Johnson 81 Series without holder feature.

D. Door Closers

- 1. All surface closers shall exceed ANSI A156.4 Grade 1 requirements in all aspects as called for below. All closers shall have certification by an independent testing laboratory of 10,000,000 cycles without failure.
  - a. Door closers shall have cast iron cases treated to overcome porosity, arms of malleable iron, and connecting rods of high carbon steel.



- b. Door closers shall be full rack-and-pinion hydraulic type. Hydraulic fluid shall be non-gumming and non-freezing. Closer shall have multi-size spring power adjustment to permit setting of spring power. Closer shall have two non-critical valves, hex key adjusted to independently regulate sweep and latch speed. Closer shall have adjustable back-check controlled by a hex key adjusted valve.
- c. Door closers shall be of size shown in the following schedule except where otherwise specified:

i. Interior doors up to and including 32" wide	No. 2
ii. Other interior doors	No. 3

- 5. Closers described hereinbefore shall be equipped with valve control back check for opening.
- 6. Corner brackets are not permitted
- 7. Provide plastic covers for closers.
- 8. Provide no closers on Hollow Metal access doors, unless otherwise specified.
- 9. All closers shall be of one manufacturer's products.

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- 10. All closers shall be inspected after installation by a factory representative to insure proper adjustment and operation. A report shall be submitted to the Architect after visit has been made.

#### E. Butts and Hinges

- 1. Extra Heavy Wrought Bronze Butts: Ball bearing, self-lubricating butts, with inner edges of leaves beveled, three to each door unless otherwise specified. Loose pin for inside doors. Butts shall have flat button tips stamped with classification number and trade name or trademark of manufacturer.
- 2. Wrought Bronze Butts (Interior Doors):
  - a. Interior doors, unless otherwise specified, shall have wrought bronze butts, five knuckle, ball or oilite bearing. Full mortise type for hollow metal doors.
  - b. Butts shall be of cold rolled bronze with inner edges of leaves beveled to form close fitting joints. Outer edges shall be true, corners square, surfaces finely finished and highly polished.
  - c. Pins shall be of cold drawn stainless steel wire grooved to hold lubricant.
  - d. Balls and raceways shall be stainless steel.





- e. Tips shall be bronze of flat button type, with shoulders flush with barrels.
- f. Butts shall have classification number and trade name or trademark of manufacturer stamped on tips.
- g. Where wrought bronze butts as described in hereinbefore are specified in Hardware Schedule, Contractor may substitute ball or oilite bearing, flat button tip, wrought steel butts.
- h. Each butt shall have two (2) permanently attached ball or oilite bearing washers, enclosed in solid bronze casing, consisting of hardened steel raceways and hardened tool steel balls.
- i. Hollow metal steel doors shall be provided with full mortise loose-pin butts except open out doors to closets, storerooms and supply rooms shall have fast-pin butts. Fast-pin butts shall have pins fastened to knuckle by a set screw not accessible when door is closed.

3. Quantity of hinges shall be provided to conform to the following:

- a. Doors up to 60" in heights : 2 hinges
- b. Doors 60" to 90" in height : 3 hinges
- c. Doors over 90" in height : 1 hinge every 30" or part thereof

4. Full Mortise Anchor Hinge Set: Shall be of 0.190 gauge, steel or wrought bronze butts, five knuckle, ball or oilite bearing type. Right or left hand as specified.

F. Continuous Hinges

- 1. Full height piano-type hinge providing full height door support.
- 2. Shall support weights up to 600 lbs. 4'-0" maximum door width.
- 3. Material shall be 14 gauge, 304 stainless steel.
- 4. Barrel Type: Exterior barrel diameter .438 (7/16), with .25 diameter 304 stainless steel pin.
- 5. Each knuckle shall be 2", including self lubricated twin nylon bearing at each separation.
- 6. Hinges shall meet ANSI/BHMA Standard A156.26 Grade 2.
- 7. Fasteners: provide #10 x 1/2" self drilling Tek screws, and #10 x 1" wood screws standard. If security fasteners are required, they must be specified.
- 8. Provide 1-3/8" Adjusta-Screw or Adjusta-Stud type fastener or approved equal with 10-32 internal thread. Hex adjustment must be supplied.



9. Hinge Series:
  - a. Markar: FM300
  - b. Ives 700 series stainless steel pin and barrel hinges
  - c. Mckinney MCK-FM300

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION**

- A. Provide complete installation of finish hardware items as indicated on Drawings and as specified herein.
- B. Mount hardware as recommended by respective manufacturer.
- C. Mount door (room) hardware items at heights and locations on doors and frames in accordance with "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by Door and Hardware Institute, except where specifically indicated otherwise.
- D. Set hardware items plumb and level and secure with proper fasteners.

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#### **3.02 APPLYING HARDWARE**

- A. Hardware specified in this Section shall be fitted, installed and adjusted.
- B. Use screws and/or bolts furnished by the manufacturer of the hardware item and install in accordance with the manufacturer's instructions and templates and as required. Install full complement of screws and/or bolts.
- C. Self-tapping or TEK screws are not permitted except when used for continuous hinges.
- D. At completion of Project, leave hardware in perfect condition, free from stains, varnish, scratches and mars. Half-surface butts shall be bolted on doors with nuts on hinge side of doors.
- E. No surface hardware, except butts and pivots, shall be installed before final coat of paint or varnish has been applied.

#### **3.03 CLEANING AND ADJUSTING**

- A. Clean hardware items thoroughly and adjust for proper operation.

#### **3.04 KEY OPERATION AND INSPECTION**

- A. Upon completion of the building and after locks have been secured in proper positions, keys belonging thereto shall be fitted and made to work freely in respective locks in the



presence of the Commissioner. The required number of keys for each lock, properly marked, shall be delivered to the Commissioner, who will give a receipt of such delivery.

**3.05 FINISH HARDWARE SCHEDULE**

- A. Provide hardware for each door, each pair of doors, and each set of doors, in compliance with "Hardware Set Numbers" indicated in Door Schedule on Drawings.

Manufacturer's names and product designations for hardware types are listed for the purpose of establishing minimum requirements. Provide the product specified or comparable product of other manufacturers listed in Art. 2.01 for each hardware type.

- B. All door frames located in smoke partitions and fire-rated partitions shall be provided with continuous smoke seals at jambs and head, whether or not listed in Hardware Sets below. Manufacturer/model: Pemko S44D; McKinney S44D or approved equal.

<b>ITEM</b>	<b>QUANTITY</b>	<b>MFR. &amp; CAT. NO. (Basis of Design)</b>
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**Set No. 1  
Each Stainless  
Steel Double Door  
(Subject to approval  
of Door Manufacturer**

1. Continuous Hinge	2	McKinney MCK-FM300
2. Lockset	1	Sargent 8215 LW1B
3. Surface Bolts (Top & Bottom Inactive Leaf)	2	Securitech BSB--100
4. Overhead Stop Without Holder	2	Glynn Johnson 81 Series
5. Smoke Seal		Pemko S44D

**Set No. 2  
Each Steel  
Double Door**

1. Butts	3 pair 4-1/2" x 4-1/2"	McKinney TB 2314
2. Lockset	1	Sargent 8215 LW1B
3. Surface Bolts (Top & Bottom Inactive Leaf)	2	Securitech BSB--100
4. Overhead Stop Without Holder	2	Glynn Johnson 81 Series
5. Smoke Seal		Pemko S44D

**Set No. 3**



**Each Steel  
Door**

- |    |                                 |                               |                         |
|----|---------------------------------|-------------------------------|-------------------------|
| 1. | Butts                           | 1-1/2 pair<br>4-1/2" x 4-1/2" | McKinney TB 2314        |
| 2. | Lockset                         | 1                             | Sargent 8215 LW1B       |
| 3. | Overhead Stop<br>Without Holder | 2                             | Glynn Johnson 81 Series |
| 4. | Smoke Seal                      |                               | Pemko S44D              |

**3.06 KEYING**

- A. Keying Requirements: Match facility keying system.

**END OF SECTION 08 71 00**

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**SECTION 08 90 00  
METAL WALL LOUVERS**

**PART 1 – GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide stationary metal window-mounted louver as indicated on Drawings and as specified herein.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Air Movement and Control Association (AMCA)
2. American Architectural Manufacturers Association (AAMA)
3. Aluminum Association (AA)

**1.04 SUBMITTALS**

A. Shop Drawings

1. Include plans, elevations, sections, details, and attachments to other Work. Show blade profiles, angles, and spacing.

B. Product Data

1. Catalog cuts, specifications, and installation instructions for louver type specified. Include cut sheets for bird and insect screens.

C. Samples

1. Samples for Initial Selection: For units with factory-applied color finishes.
2. Samples for Verification: For each type of metal finish required.



1.05 QUALITY ASSURANCE

- A. Louvers shall be rated by AMCA (Air Movement and Control Assoc.).

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products of this Section as recommended by manufacturer to protect from damage.

PART 2 - PRODUCTS

2.01 ALUMINUM LOUVERS

A. Manufacturers

1. The Airo-lite Co., LLC., Schofield, WI
2. Reliable Products Inc., Geneva, AL
3. Industrial Louvers Inc., Delano, MN
4. Or approved equal

B. Type

1. Stationary extruded louvers, 2" deep unless indicated otherwise, with extrusions not less than 1/8" thick, of 6063T5 aluminum alloy.

C. Fabrication

1. Form frames with mitered or coped members, welded or riveted and soldered joints. Form ends of blades flat against frame jamb and weld, or rivet and solder blades to frame at each end to ensure watertight joints. Reinforce units with concealed plates, angles, tees or other shapes to form rigid unit. Allow for expansion and contraction.
2. Assemble louvers in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
3. Maintain equal louver blade spacing to produce uniform appearance.
4. 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.



D. Factory Finish After Assembly: 3-Coat Kynar 500 or Hylar 5000 70% fluoropolymer (PVFD) resin coating consisting of an inhibitive primer, oven-cured resin color coating and clear resin top coat complying with AAMA 2605; finish to have 20 year manufacturer warranty. Color to be selected by the Commissioner.

E. Sills

Same material and finish as louvers.

## 2.02 LOUVER SCREENS

A. General

Fabricate removable screen frames of same metal and finish as louvers. Locate screens on inside face of louvers, unless otherwise indicated. Secure screens to louver frames with machine screws at each corner and spaced 12" o.c along frame perimeter.

B. Bird Screens

Anodized 0.064 aluminum wire, 1/2" mesh.

C. Insect Screens

Provide louver manufacturer's approved insect screen

## 2.03 FASTENERS AND ANCHORS

A. Bolts, Nuts, Lags, Washers, Screws and Anchors

Same material as items being installed unless otherwise indicated. Types, gages and lengths to suit unit installation conditions. Aluminum or stainless steel for exterior locations or for items anchored to exterior walls.

## PART 3 EXECUTIONS

### 3.01 EXAMINATION

A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 PREPARATION





- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

### 3.03 INSTALLATION

- A. Install Work of this Section in accordance with manufacturer's printed instructions, except as shown otherwise on Drawings.
- B. Install units plumb, level and in proper alignment with adjacent construction.
- C. Form tight joints with exposed connections accurately fit together.
- D. Provide concealed anchorages wherever possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to form weathertight connection.
- E. Where louvers are in contact with concrete, masonry or dissimilar metal, coat contacting surface with heavy coat of bituminous paint.

### 3.04 ADJUSTING AND CLEANING

- A. Clean exposed surfaces of louvers that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning.
- 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 the 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 08 90 00**



**SECTION 09 24 23  
CEMENT STUCCO**

**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 REFERENCES**

- A. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar  
B. ASTM C578 - Specification for Preformed, Cellular Polystyrene Thermal Insulation  
C. ASTM C847 - Standard Specification for Metal Lath  
D. ASTM C897 - Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plaster  
E. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster  
F. ASTM C933 - Standard Specification for Welded Wire Lath  
G. ASTM C1032 - Standard Specification for Woven Wire Plaster Base  
H. ASTM C1063 - Standard Specification for Installation of Lathing and Furring for Portland Cement Based Plaster
- 
- I. ASTM C1177 - Specification for Glass Mat Gypsum for Use as Sheathing  
J. ASTM C1278 - Specification for Fiber-Reinforced Gypsum Panel  
K. ASTM C1396 - Standard Specification for Gypsum Board  
L. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials  
M. ASTM E119 - Method for Fire Tests of Building Construction and Materials  
N. ASTM E330 - Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static air Pressure Difference  
O. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials  
P. ICC Acceptance Criteria 219 - Acceptance Criteria for Exterior Insulation And Finish Systems  
Q. ICC Acceptance Criteria 11 - Acceptance Criteria for Cementitious Exterior Wall Coatings

**1.3 ASSEMBLY DESCRIPTION**

- A. A code complying water resistive barrier, metal lath, stucco base, reinforcing mesh embedded in stucco level Coat, and an acrylic or elastomeric based finish coat.

**1.4 SUBMITTALS**

- A. General: Submit Samples, Evaluation Reports and manufacturer's product datasheets in accordance with DDC General Requirements Submittal Section.  
B. Samples: Submit samples for approval. Samples shall be of materials specified and of suitable size as



required to accurately represent each color and texture used on project. Prepare each sample using same tools and techniques for actual project application. Maintain and make available, at job site, approved samples.

- C. **Manufacturer's Warranty:** Submit sample copies of Manufacturer's Warranty indicating Single Source Responsibility for Water Stucco Base coat, finish coat and optional Primer, level coat and reinforcing mesh as specified.

**1.5 QUALITY ASSURANCE**

**A. Qualifications:**

- 1. **Manufacturer:** Shall have marketed stucco assemblies for at least three years and shall have completed projects of same general scope and complexity.
- 2. **Applicator:** Shall be experienced and competent in installation of stucco materials, and shall provide evidence of a minimum of 3 years' experience in work similar to that required by this section.

**B. Stucco Functional Criteria:**

- 1. **General:** Stucco application shall be to vertical substrates or to substrates sloped for positive drainage. Substrates sloped for drainage shall have additional protection from weather exposure that might be harmful to coating performance.
- 2. **Performance Requirements**

<b>Fastwall</b>	<b>Method</b>	<b>ICC AC 11 Criteria</b>	<b>Results</b>
Accelerated Weathering	ASTM G153	2000 Hours	No deleterious effect
Freeze-Thaw Resistance	ICC AC 11	10 cycles	Pass
Transverse Wind Load Resistance	ASTM E330	Meet Design Loads	Refer to ICC-ES ESR-2564
Fire Resistance	ASTM E119	One hour fire	Refer to ICC-ES ESR-2564
Drainage	ICC AC 11	90%	Refer to ICC-ES ESR-2564
<b>Acrylic Finish</b>			
<b>Acrylic Finish</b>	<b>Method</b>	<b>ICC or ASTM Criteria</b>	<b>Results</b>
Accelerated Weathering	ASTM G153 (ASTM G 23) ASTM G154	No deleterious effects at 2000 hours when viewed under 5x magnification	2000 Hours: no deleterious effect
Freeze/Thaw Resistance	ASTM E2485	No deleterious effects at 10 cycles when viewed under 5x magnification	60 cycles: no deleterious effect
Fungus Resistance	MIL STD 810B	No Requirement	28 days: no growth
Mildew Resistance	ASTM D3273	No growth supported during 28 day exposure period	Pass



Moisture Resistance	ASTM D2247	No deleterious effects at 14 day exposure	Pass
Salt Fog Resistance	ASTM B117	No deleterious effects at 300 hours	500 hours: no deterioration

- C. Substrate Conditions:
  - 1. Substrates shall be sound, dry and free of dust, dirt, laitance, efflorescence and other harmful contaminants.
  - 2. Substrate Dimensional Tolerances: Flat with ¼ in (6.4 mm) within any 4 ft (1.22 m) radius.
  - 3. Maximum deflection of substrate system under positive or negative design loads shall not exceed L/360 of span.
  
- D. Expansion and Control Joints: Continuous expansion and control joints shall be installed at locations in accordance with ASTM C1063 and ASTM C926.
  - 1. For direct application to concrete or masonry, stucco joints are required only at control/expansion joints in the underlying concrete or masonry

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery: Deliver stucco assembly products in original packaging with manufacturer's identification.
- B. Storage: Store stucco assembly products in a dry location, out of direct sunlight, off the ground, and protected from moisture.

**1.7 SITE / ENVIRONMENTAL CONDITIONS**

- A. Substrate Temperature: Do not apply products to substrates whose temperature are below 40°F (4.4°C) or contain frost or ice.
- B. Inclement Weather: Do not apply products during inclement weather, unless appropriate protection is employed.
- C. Sunlight Exposure: Avoid, when possible, installation of the products in direct sunlight. Application of Finishes in direct sunlight in hot weather may adversely affect aesthetics.
- D. Do not apply stucco base coats or finishes if ambient temperature falls below 40°F (4°C) within 24 hours of application. Protect stucco from uneven and excessive evaporation during dry weather and strong blasts of dry air.
- E. Prior to installation, the wall shall be inspected for surface contamination, or other conditions that may adversely affect the performance of the stucco assembly, and shall be free of residual moisture.

**1.8 COORDINATION AND SCHEDULING:**

- A. Coordination: Coordinate stucco assembly installation with other construction operations.



## 1.9 WARRANTY

- A. Warranty: Upon substantial completion, provide minimum 15 year Manufacturer's Stucco Assembly Warranty.

## PART 2 – PRODUCTS

### 2.1 MANUFACTURERS

- A. Parex USA, Inc.
- B. STO Corporation, Atlanta GA
- C. DRYVIT Corp., West Warwick, RI
- D. Or approved equal

### 2.2 MATERIALS

- A. Stucco Assembly Materials:
  - 1. Stucco Base ( $\frac{3}{8}$  in –  $\frac{1}{2}$  in)
    - a. Stucco Base Concentrate: mixture of portland cement, and ingredients mixed with clean, cool, potable water, and ASTM C897 or ASTM C144 sand added in the field
  - B. Acrylic Bonder & Admix: 100% acrylic admix emulsion for portland cement based products, to enhance curing, adhesion, freeze-thaw resistance and workability.
- C. Leveling and Reinforcing Coat:
  - 1. Copolymer based, factory blend of cement and proprietary ingredients requiring addition of water.
  - 2. Standard Mesh: Weight 4.5 oz/yd<sup>2</sup> (153 g/m<sup>2</sup>) reinforcing mesh.
  - 3. Primer: 100% acrylic based coating to prepare surfaces for LaHabra (or approved equal) finishes.
- D. Finish:
  - 1. Perma-Elastic Elastomeric Finish: Factory blended, 100 % acrylic polymer based elastomeric textured finish, integrally colored.
    - a. Finish texture and color as selected by Commissioner

### 2.3 RELATED MATERIALS AND ACCESSORIES

- A. General: Stucco Assembly and its related materials shall conform to the requirements of ICC-ES Evaluation Report No. 2564 and shall conform to this specification.
- B. Substrate Materials:



1. Precast concrete lintels
  2. Existing brick masonry
- C. Water Resistive Barriers:
1. For non-wood based sheathing shall be either:
    - a. Liquid applied waterproofing, refer to specification 07 12 10
- D. Lath and Accessories: Conform to ASTM C847, ASTM C933, ASTM C1032, ASTM C1063 and Appendix
1. Stainless steel lath, 2.5lb/SY
  2. Stainless steel J-bead
- E. Expanded Polystyrene Features over LaHabra Fastwall 100 Stucco (or approved equal)
1. Standard Mesh: Weight 4.5 oz/yd<sup>2</sup> (153 g/m<sup>2</sup>) reinforcing mesh.
- F. Seals, Sealants and Bond Breakers: Sealants shall conform to ASTM C920, Grade NS, Class 25, Use NT. Backer rod shall be closed-cell polyethylene foam.

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## **PART 3 – EXECUTION**

### **3.1 EXAMINATION**

- A. Compliance: Comply with manufacturer's instructions for installation of Stucco Assembly products.
- B. Substrate Examination: Examine prior to Stucco Base installation as follows:
  1. Substrate shall be of a type approved by stucco manufacturer.
  2. Substrate shall be examined for soundness, and other harmful conditions.
  3. Substrate shall be free of dust, dirt, laitance, efflorescence, and other harmful contaminants.
  4. Substrate construction in accordance with substrate material manufacturer's specifications and applicable building codes.
- C. Ensure that flashing has been installed

### **3.2 PREPARATION**

- A. Water Resistive Barrier:
  1. Installed according to manufacturer's instructions.



- B. Wire Fabric Lath and Metal Lath: Install according to ICC Evaluation Report ESR 2564, ASTM C1063 and Appendix and the Building Code.
- C. Masonry: Remove projecting joint mortar so it is even with the plane of the wall. Remove surface contaminants such as efflorescence, existing paint or any other bond inhibiting material by sandblasting, waterblasting, wire brushing, chipping or other appropriate means. Pre-moisten the surface with water just prior to placement of stucco, apply Acrylic Bonder & Admix.

### 3.3 MIXING

- A. Mix products in accordance with manufacturer's instructions, including the Product Data Sheets.
- B. Admix - Acrylic Bonder & Admix  
Prepare and mix admixture per manufacturer's written instructions

### 3.4 APPLICATION

- A. General: Stucco Assembly and its related materials shall conform to the requirements of ICC-ES Evaluation Report No. 2564 and shall conform to this specification.
- B. Bonding Agent - Acrylic Bonder & Admix
  - 1. Apply at an approximate rate of 250 ft<sup>2</sup> per gallon using a low-pressure sprayer, brush or roller. (application in direct sunlight may cause the product to dry too quickly)
- C. Stucco Base:
  - 1. Stucco mixtures shall be applied in one or two coats to a minimum thickness of 3/8 in (9.5 mm) by hand troweling the mixture to the wire lath in accordance with Stucco Product Data Sheets. The maximum thickness applied in one pass is 1/2 in (12.7 mm).
  - 2. Rod surface to true plane and float to densify.
  - 3. Trowel to smooth and uniform surface to receive acrylic polymer finish coat.
- D. Leveling and Reinforcing Coat:
  - 1. After Moist Curing, allow Stucco Base to air dry a minimum of 24 hours before applying the leveling and reinforcing coat.
  - 2. Using a stainless steel trowel, apply the Stucco Level Coat over the Stucco Base at a thickness of 1/16 - 3/32 in. (1.6 - 2.4 mm).
  - 3. The acrylic primer and finishes can be applied as soon as the Stucco Level Coat has cured, typically within 24 hours.
- E. Primer and Finish:
  - 1. Remove surface contaminants such as dust or dirt without damaging the substrate.
  - 2. Ambient and surface temperature must be 40°F (4°C) or higher during application and drying time.



Supplemental heat and protection from precipitation must be provided as needed.

3. Use only on surfaces that are sound, clean, dry, unpainted, and free from any residue that might affect the ability of the finish to bond to the surface
4. Protect Finish Coats from inclement weather until completely dry.

F. Curing:

1. Stucco Base: Keep stucco moist for at least 48 hours (longer in dry weather) by lightly fogging walls. Start light fogging after initial set of 1–2 hours.
2. Air dry acrylic based and elastomeric finish coats only, do not wet cure.

**3.5 CLEAN-UP**

- A. Removal: Remove and legally dispose of Stucco component debris material from job site.

**3.6 PROTECTION**

- A. Provide protection of installed materials from water infiltration into or behind them.
- B. Provide protection of installed stucco from dust, dirt, precipitation, and freezing during installation.
- C. Provide protection of installed finish from dust, dirt, precipitation, freezing, and continuous high humidity-until-fully-dry.
- D. Clean exposed surfaces using materials and methods recommended by the manufacturer of the material or product being cleaned. Remove and replace work that cannot be cleaned to the satisfaction of the Owner.

**END OF SECTION 09 24 23**





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**SECTION 09 26 00  
GYPSUM BOARD ASSEMBLIES**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide all materials, labor and equipment to properly install the following Work:
1. Fire rated shaft walls at second floor.
  2. Fire rated partitions at second floor.
  3. Fire rated soffits at first floor.
  4. Non-fire rated ceiling at first floor.
  5. Non-load-bearing steel framing.
  6. All accessory components.

**1.03 REFERENCES**

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. American Society for Testing and Materials (ASTM), latest editions.
- |       |   |
|-------|---|
| A641  | Zinc-Coated (Galvanized) Carbon Steel Wire.   |
| A653/ | General Requirements for Steel Sheet, Zinc A653M Coated (Galvanized) by the Hot-Dip Process |
| C11   | Standard Terminology Related to Gypsum and Related Building Materials and Systems           |
| C36   | Gypsum Wallboard  |
| C473  | Standard Test Methods for Physical Testing of Gypsum Panel Products                         |



- C475 Joint Treatment Materials for Gypsum Wallboard Construction
  - C645 Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board
  - C754 Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard, Backing Board or Water Resistant Backing Board
  - C834 Standard Specification for Latex Sealants
  - C840 Specification for Application and Finishing of Gypsum Board
  - C919 Practices for Use of Sealants in Acoustical Applications
  - C1002 Steel Drill Screws for the Application of Gypsum Board
  - C1047 Standard Specification for accessories for Gypsum Wallboard and Gypsum Veneer Base
  - C1325 Standard Specification for Non-Asbestos Fiber Mat Reinforced Cement Interior Substrate Sheets
  - C1388 Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
  - C1396 Standard Specification for Gypsum Board
  - D2020 Standard Test Methods for Mildew (Fungus) Resistance of Paper and Paperboard
  - D3273 Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
  - E84 Surface Burning Characteristics of Building Materials
  - E119 Fire Tests of Building Construction and Materials
  - G21 Standard Practice for determining Resistance of Synthetic Polymeric Materials to Fungi
- C. Gypsum Association
- GA-600 Fire Resistance Design Manual
  - GA-214 Levels of Finishes



GA-216 Recommended Specifications for the Application and Finishing of Gypsum Board

GA-505 Gypsum Board Products - Glossary of Terminology

D. Underwriters Laboratories Inc. (UL)

Fire Resistance Directory

E. International Code Council, ICC-ES (Evaluation Service)

AC86 - Acceptance Criteria for Cold-Formed Steel Framing Members – Interior Non load-bearing Wall Assemblies.

F. American Iron and Steel Institute (AISI)

AISI S905 – Test Methods for Mechanically Fastened Cold-Formed Steel Connections

AISI Standard for Cold-Formed Steel Framing - General Provisions

AISI NASPEC

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**1.04 SUBMITTALS**

A. Product Data

1. Submit manufacturers' product information, specifications, and installation instructions for the following products: mold and moisture resistant gypsum board, joint compounds, acoustical sealants, fasteners, trim, control joints, joint reinforcing, metal furring members, metal studs, tracks, runners, resilient clips, and all related accessories.
2. Submit limiting height tables for metal stud framing based on testing and engineering analysis in accordance with ICC-ES Acceptance Criteria AC86.

B. Shop Drawings

Submit drawings indicating sizes and locations of steel grounds for attachment and support of signs, other accessories, fixtures, furnishings, finishes, and equipment.

C. Samples

Submit samples of the following materials:

1. Wallboard, each type: 12" square.
2. Metal studs (regular and C-H studs), J-runners, and track: 12"



3. Accessories: 12", outside corner bead, furring channels, and J-beads
4. Screw, each type: 2 each

**D. Materials Certificates and Acceptances**

1. Submit certificates from the manufacturers of the specified materials stating compliance with the applicable requirements set forth for all materials specified in this Section.
2. Submit certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the NYC Building Code are acceptable for the intended use. When test methods are stipulated in the NYC Building Code, the tests utilized shall be stated in the certification. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.
3. Submit written acceptances from the wallboard manufacturer and metal stud manufacturer accepting the type of metal studs, tracks, and fasteners to be used for each type of wallboard.

**E. Low Emitting Materials Compliance Submittals.**

1. Provide documentation for each sealant to be used indicating that the sealants comply with V.O.C. requirements of City of New York.
2. Submit documentation of recycled content in gypsum board materials – product data, mix design information, or manufacturer's statement.

**1.05 QUALITY ASSURANCE**

**A. Qualifications**

Submit affidavit certifying that installer is a firm with not less than 3 years of experience relevant to the installation of specified materials.

**B. Regulatory Requirements**

1. Building Code: Work of this section shall conform to all requirements of N.Y.C. Building Code.
2. New York City Board of Standards and Appeals (BSA), and New York City Materials Equipment Acceptance (MEA) approvals are acceptable for materials and assemblies conforming to current NYC Building Code requirements.
3. Fire-Resistance Ratings



- a. Comply with fire-resistance ratings as indicated and as required codes. Provide certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the NYC Building Code are acceptable for the intended use.
- b. Provide materials, accessories and application procedures which have been listed by UL or tested in accordance with ASTM E119 for the type of construction shown. Provide materials and construct assemblies which qualify for required fire resistance classifications in accordance with the Gypsum Association "Fire Resistance Design Manual" as referenced in the Building Code of the City of New York, or in accordance with the acceptance requirements of the New York City MEA or BSA.

C. Industry Standards

1. Comply with applicable requirements of ASTM C840, except where more detailed or more stringent requirements are indicated, including the recommendations of the manufacturer.

D. Company Field Advisor

1. ~~Secure the services of a Company Field Advisor of the gypsum board manufacturer for a minimum of 2 working hours. The Field Advisor shall be properly trained by the manufacturer to be technically qualified in design, installation, and servicing of the required products. The Field Advisor shall be present at the beginning of the actual gypsum board installation for the purpose of:~~
  - a. Rendering technical assistance to the Contractor regarding installation procedures of the system.
  - b. Familiarizing the Commissioner with all aspects of the system including inspection techniques.
  - c. Answering all questions which might arise.

E. Single Source Responsibility

Obtain all steel studs and other metal framing components and accessories from a single manufacturer.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer.
- B. Store all materials inside, under cover, in a manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction



traffic and other causes. Neatly stack gypsum boards to prevent sagging. Do not store at temperature exceeding 125°F.

- C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal framing members, corner beads, and trim from being bent or damaged.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Subject to compliance with requirements, provide products of a specified manufacturer.
- B. Products which vary slightly from specified criteria will be considered for acceptance upon submission of a written explanation and complete technical data to the City of New York. Written authorization from the City of New York is required prior to installation of such materials whether or not the manufacturers are listed herein.

- C. Gypsum board and related products

Gypsum board shall be mold and moisture resistant.

1. SHEETROCK brand Mold Tough Gypsum Panels, USG Corporation
2. SHEETROCK brand Mold Tough Gypsum Liner Panels, USG Corporation
3. DensArmor Plus Interior Guard Panels, Georgia-Pacific Gypsum Corporation, Atlanta, GA
4. DensGlass Ultra Shaft Liner Panels, Georgia-Pacific Gypsum Corporation, Atlanta, GA
5. Gold Bond brand XP Fire-Shield Wallboard, National Gypsum Company, Charlotte, NC
6. Gold Bond brand 1" Fire-Shield Shaftliner XP Gypsum Panels, National Gypsum Company, Charlotte, NC
7. Mold Defense Type X panels, Lafarge North America Incorporated.
8. Mold Defense Shaftliner Type X panels, Lafarge North America Incorporated.
9. Weather Defense Platinum Shaftliner Type X, Lafarge North America Incorporated.
10. Or approved equal

- D. Metal Support Materials

1. Marino\Ware, South Plainfield, NJ



2. ClarkDietrich Building Systems, West Chester, OH
3. Super Stud Building Products Inc., Edison, NJ
4. United States Gypsum Co., Chicago, IL
5. Or approved equal

## 2.02 MATERIALS

### A. Metal Framing

#### 1. Steel Studs

In compliance with ASTM C645, provide galvanized steel, C-shaped members as specified and as shown on the Drawings of sizes indicated below:

- a. Stud depth: 3<sup>5</sup>/<sub>8</sub>" unless indicated otherwise on the Drawings.
- b. Stud thickness: 0.0296 inch minimum thickness of base metal or 20 gage min., for all wall framing members unless otherwise indicated.

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#### 1) Alternative thickness studs:

- a) Alternative thickness studs may be used in lieu of 0.0296" thick studs, and shall be 20 gauge equivalent or heavier gauge, evaluated in accordance with ICC-ES AC86 Acceptance Criteria, latest edition, with partition heights limited by the following:
  - i) Deflection: L/240. L/360 for partitions with ceramic tile finish.
  - ii) Loads: All loads to which the assembly is subjected including wall mounted equipment and furnishings. Not less than 5 psf uniform transverse load. Framing shall support all loads without exceeding the allowable stress of the steel.
  - iii) Brand and type of wallboard used, and number of layers, extending full height of partition.
- b) Pull-out strength for #6 screws in 20 ga. equivalent studs shall be at least 45 lbs. in accordance with AISI S905 test method.





- c) Use of alternative thickness studs is subject to the written acceptance of the wallboard manufacturer.
    - d) Conform to all requirements indicated on the Drawings and specified herein, including fire resistance ratings of assemblies.
  - c. Stud thickness: 0.0428 inch min. thickness of base metal or 18 gage min., unless otherwise indicated, for use at all framed openings.
- 2. Runners  

In compliance with ASTM C645, provide galvanized steel runners to match applicable assembly specified, to match wall framing members, unless indicated otherwise.
- 3. Furring Members  

In compliance with ASTM C645, provide galvanized cold rolled steel, 0.0296" minimum thickness of base metal or 20 gage min., screw type hat shaped channels; 7/8" depth, width approx. 2 3/4", hemmed edges.

  - a. Where furring channels are used in conjunction with resilient sound isolation clips, width of channel shall be coordinated with clip configuration to ensure proper fit.
- 4. Furring Members for Shaft Walls  

Provide galvanized steel C-H studs, J-Runners or other stud shapes indicated on Drawings, 0.0346 inch minimum design steel thickness or 20 gage minimum.
- 5. Horizontal Bracing  

Provide 3/4 inch galvanized cold rolled steel channels, or steel studs, fastened to webs in a horizontal position. Angle or channel shaped galvanized horizontal bracing that is fixed in place without fasteners may be used subject to written acceptance of the steel stud manufacturer and meeting all required partition ratings and performance criteria; 0.0296" minimum base metal thickness, 7/8" x 7/8" minimum size angle or equivalent channel shape. Comply with ASTM C645, ASTM C754.
- 6. Protective coating of framing shall conform to ASTM A653/A653M - G40 minimum, or shall be a protective coating with equal or better corrosion resistance.



7. Fasteners for Metal Framing

- a. Provide fasteners of type, size, style, grade, holding power, class, and other properties required for secure installation of framing and furring. Galvanize all fasteners and accessories. Powder actuated fasteners shall not be used during official school hours and shall not be used in occupied areas of a building.
- b. All devices, other than bolts, used to interconnect ceiling members are required to be certified and listed by an Approved Agency in accordance with NYC Department of Buildings rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

B. Gypsum Board

1. General: Panels shall be mold and moisture resistant, meeting a minimum average panel score of "8" in accordance with ASTM D3273. Provide in dimensions resulting in the minimum number of joints. Long edges tapered. Panels shall not contain asbestos.
2. Glass mat faced gypsum board (glass mat facings front and back)
  - a. Gypsum wallboard: 5/8" thick, Type X Core. Comply with ASTM C630 and ASTM C1177.
  - b. Shaft wall liner panel: 1" thick, fire resistance Type X. Comply with ASTM C442 and ASTM C1396.

C. Furring Anchorages

1. In compliance with ASTM A641, provide 16 gage galvanized wire ties, manufacturers standard wire-type clips, bolts, or screws as recommended by furring manufacturer.
2. All devices, other than bolts, used to interconnect ceiling members are required to be certified and listed by an Approved Agency in accordance with NYC Department of Buildings rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

D. Trim Accessories

1. General: Comply with ASTM C1047, standard accessories as recommended by gypsum board manufacturer. Where exposed to view provide accessories recommended for level-5 finish. Metal trim shall be formed of galvanized or zinc-coated steel. Provide paper faced metal trim where recommended by board manufacturer. Designed for concealment of paper or metal flanges in joint



compound. Provide corner beads, L-type edge trim beads, V-type edge trim beads, and control joint beads.

2. Corner Reinforcement, provide for all outside corners:
  - a. Sheetrock Brand paper faced metal outside corner, tape-on bead, model B1W; U.S. Gypsum Company.
  - b. No-Coat UltraCorner Brand Structural Drywall Corner.

**E. Joint Treatment Materials**

1. Jointing System - typical: Comply with ASTM C475. Type recommended by the manufacturer for the application indicated, to prevent cracking, and to meet fire resistance requirements where applicable. Reinforcing tape and compound shall be designed as a system to be used together.
2. Provide setting type or ready-mixed drying type joint compound as recommended by the board manufacturer for each type of board, for joints, fastener heads and cut edges of board.
3. Skim coat: For final coat of Level 5 finish, use type recommended by manufacturer.
4. Jointing compound shall be asbestos free.

**F. Insulation: Comply with ASTM C665, Mineral Fiber Blanket.**

1. Sound attenuating blankets, Type I, Density: 2.5 lbs/cubic foot minimum. Thermafiber Inc.; Roxul, Inc., Johns Manville, or approved equal.
2. Fungi Resistance: Insulation and facing shall be fungi resistant when tested in accordance with ASTM C1338.

**G. Miscellaneous Materials**

1. General: Provide auxiliary materials for gypsum board work of the type and grade recommended by the gypsum board manufacturer.
2. Gypsum board Screws:
  - a. Comply with recommendations of the wallboard and metal framing manufacturers and ASTM C1002.
  - b. For fastening the gypsum board in place, specially designed for use with power-driven tools, of length recommended for application in board manufacturers printed instructions, but not less than 1-1/4" long, with self-tapping threads and self-drilling points. Screws shall be steel with rust inhibitive coating.



3. Concealed Acoustical Sealant: Comply with ASTM C919; nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable sealant for concealed applications.
  - a. All sealants used on site and within the weatherproofing/ waterproof membrane (interior) of the building comply with V.O.C. requirements of the City of New York.
4. Exposed Acoustical Sealant: Comply with ASTM C834; nonoxidizing, skinnable, paintable, gunnable sealant for exposed applications, either latex or acrylic based type or acrylic-latex type.
  - a. For sealants used on site and within the weatherproofing/ waterproof membrane (interior) of the building comply with V.O.C. requirements of the City of New York.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION AND PREPARATION**

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##### **A. Inspection**

1. Prior to installation of the Work of this Section, carefully inspect the installed Work of all other trades and verify that all such Work is complete to the point where this installation may properly commence.
2. Do not install gypsum board in any location where it may be directly exposed to water.
3. Installation shall comply with manufacturer's recommendations as approved by the City of New York, with all pertinent codes and regulations as a minimum standard.

##### **B. Coordination of Work**

Coordinate Work of this Section with the Work of other Divisions which have items installed in, on or contiguous to gypsum board assemblies.

##### **C. Verification of Conditions**

Start of Work constitutes acceptance of existing conditions, Contractor shall bring any discrepancies to the attention of the City of New York prior to start of Work.



D. Construction Tolerances.

1. Do not exceed 1/8" in 8 feet variation from plumb or level in any exposed line or surface except at joints between boards. Do not exceed 1/16" variation between planes or abutting edges or ends. Shim as required to comply with specified tolerances. Variations shall not be visible in finished surfaces.

**3.02 ENVIRONMENTAL REQUIREMENTS**

A. General

Comply with requirements of all referenced application standards and manufacturers recommendations for environmental conditions before, during and after gypsum board application.

B. Environmental Conditions

1. Maintain continuous uniform building temperatures of not less than 55°F and not more than 90°F for a minimum of 48 hours prior to, during and following application of gypsum board and joint treatment materials and until joint and finishing compounds have dried.

Conform to more restrictive environmental conditions where required by the manufacturer.

2. Do not install gypsum board in any location where it may be exposed to moisture during the Construction Phase of the Project. Sources of moisture may include: rain, snow, groundwater, flooding and contiguous construction materials. Replace any gypsum board that has been exposed to moisture during the Construction Phase.

C. Ventilation

Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry hot weather to prevent too rapid drying.

D. Drying Time

Provide adequate drying time between coats of joint compound.

**3.03 INSTALLATION - STEEL FRAMING**

A. General

Comply with ASTM C754 and manufacturers installation instructions for all non-load bearing steel stud installations.



1. Extend all partitions to underside of roof and floor construction unless indicated otherwise. Brace laterally as required for stability.
2. Where fire-rated work is indicated on Drawings construct assemblies in accordance with the Article herein titled Quality Assurance, Paragraph titled Regulatory Requirements.

**B. Steel Stud Installation**

1. Where partitions abut ceiling or deck construction or vertical structural elements, provide slip or cushion type joint between metal framing and structure as recommended by manufacturer to prevent transfer of structural loads or movements to partitions, except as otherwise indicated.
2. Accurately align top and bottom tracks. Secure runner tracks as recommended by the framing manufacturer for the upper and lower construction involved, except, do not exceed 24" on center spacing for power driven fasteners. Provide fasteners approximately 2" from corners and ends of tracks.
3. Position studs vertically and engage both floor and top tracks. Install studs at 16" on center maximum spacing unless closer spacing is indicated on the Drawings, or is required for height of partition or transverse loading in order to meet deflection requirements. Fasten studs to track flanges with screws, or as otherwise required to meet fire resistance ratings.
  - a. Use full length studs between tracks wherever possible. If necessary, splice studs with a minimum 8" nested lap and fasten with 2 screws per stud flange.
  - b. Provide additional studs to support inside corners at partition intersections, and to support outside corners and terminations of partitions (and both sides of control joints).
4. Frame openings other than door openings to comply with details shown and manufacturers instructions. Provide full length studs adjacent to jambs and horizontal header and sill tracks. Extend studs to underside of roof or floor construction above.
5. Construct fire rated partitions, vertical ductwork enclosures, column enclosures, etc. to meet or exceed the rating shown on the Drawings.
6. Where framing is in contact with an exterior masonry wall, install asphalt felt protection strip between metal and masonry.

**C. Furring Channel Installation**

1. Attach hat-shaped metal furring channels to masonry or concrete surfaces; either vertically or horizontally, 16" maximum on center and within 2" of interior



corners unless otherwise indicated on Drawings. Attach furring with hammer-set or power driven fasteners through alternate flanges spaced 24" on center. Provide metal furring channel clips.

2. Where furring channel is installed directly to a masonry exterior wall, install asphalt felt protection strip between furring channel and wall.
3. Where splices in channels occur, nest channels 8" at splices and anchor with two fasteners in each wing.
4. Where furring channels are attached to resilient clips, space clips in a pattern not to exceed 24 inches on center vertically and 48 inches on center horizontally, and as recommended by clip manufacturer for supported loads. Locate centerline of bottom channel a maximum of 3" above floor. Do not locate channel splices at clips. Anchor clips using manufacturer's recommended screw fasteners. Installation shall be in accordance with clip manufacturer's written instructions.

**D. Running Channel Installation**

Floor and top running channels or stud tracks shall be galvanized cold rolled steel with 1½" extended leg on top runner to allow movement (legs longer as recommended by manufacturer or as required to prevent transfer of structural loads or movements to partitions). Match gauge of studs indicated for assembly. Securely fasten to floor, roof or vertical structural elements with fasteners approved by manufacturer, spaced not more than 24" on center. Provide slip or cushion type joint between channel and structural elements as indicated in paragraph titled Steel Stud Installation, above.

**E. Horizontal Bracing or Stiffener Installation**

Install metal stud bracing fastened to each partition stud with webs in a horizontal position, or horizontal bracing fixed to each stud in accordance with manufacturer's instructions. Provide continuous horizontal rows of bracing, spaced vertically 4'-0" on center maximum, unless otherwise indicated. The uppermost row shall be located 12 inches from the top of stud, or as otherwise recommended by the stud manufacturer. Provide additional bracing as recommended by stud manufacturer.

**F. Furring Members for Shaft Walls**

Install furring members, including C-H studs and J-Runners, according to stud manufacturers published instructions for required assemblies.

**G. Chase Wall Erection**

1. Align two parallel rows of floor and top runners spaced apart as detailed. Attach to concrete floor slabs with concrete stub nails or power-driven anchors 24" o.c. maximum, and to structure above in similar fashion.



2. Position steel studs vertically in runners, 16" o.c. maximum unless closer spacing is indicated on the Drawings, or is required for height of partition or transverse loading in order to meet deflection requirements. Position studs with flanges in the same direction, and with studs on opposite sides of chase directly across from each other. Anchor all studs to floor and ceiling runner flanges with fastener tool.

H. Tolerances

Do not exceed 1/8" in 8 feet variation from plumb or level in any exposed line or surface, except at joints between planes or abutting edges or ends. Shim as required to comply with specified tolerances. Variations shall not be visible in finished wall surfaces.

**3.04 INSTALLATION - PANELS**

A. Applying and Finishing Panels, General

Comply with manufacturer's printed installation instructions and recommendations based upon Project conditions, ASTM C840, GA-216, and these Specifications, for all gypsum board application and finishing.

1. Provide wallboard panels of type, thicknesses, and number of layers indicated on the Drawings.
2. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
3. Work shall be sealed at perimeters, at control and expansion joints, and at all penetrations with continuous beads of acoustical sealant, including a bead at both faces of partitions. Comply with ASTM C 919 and all manufacturers recommendations for beads, including sealing of partitions above ceilings. Close off sound-flanking paths around or through the Work. Firestopping required for fire-rated work shall be covered under Section 07 27 00-Firestopping/Smoke Seals.
4. Where fire-rated work is indicated on Drawings construct assemblies in accordance with the Article herein titled Quality Assurance, Paragraph titled Regulatory Requirements.
5. Install the gypsum board with separate boards in moderate contact but not forced into place. At internal and external corners, conceal the cut edges of the board by overlapping covered edges of the abutting boards. Stagger the boards so that corners of any four boards will not meet at a common point except in vertical corners.
6. Extend all partitions to underside of roof and floor construction, unless indicated otherwise.





7. Fit gypsum panels around ducts, pipes, and conduits.
8. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments. Provide space to properly install sealant or firestopping as applicable between edges and abutting structural surfaces. Trim edges with U-bead edge trim where edges of gypsum panels are exposed.
9. Fasten the gypsum board with drywall screws as recommended by the gypsum board manufacturer. Drive the required screws with clutch-controlled power screwdrivers. Provide fasteners in gypsum panels according to referenced gypsum board application and finishing standard, manufacturer's written recommendations, and as required for fire-resistance-rated assembly. Maximum spacing shall be as follows:

- a. Maximum fastener spacing panels: 8 inches o.c.

10. Shaft Walls

Construct with 1" liner panels inserted in C-H studs 24" o.c. maximum, with double layer 5/8" Firecode Core panels screw attached to C-H studs, or as otherwise indicated on the Drawings.

B. Panel Application

1. Multilayer application on partitions/walls: Apply board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
2. Make end and edge joints, where required, over furring or framing members. Position boards so that like edges abut, with tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
3. Cover both faces of steel stud partition framing with wallboard as indicated on the Drawings (including above ceilings). For panels manufactured with different textures on opposite faces, follow manufacturers recommendations, based on finish material, to determine which side shall face towards studs.
4. Multilayer Fastening Methods: Fasten base layers and face layers separately to supports with screws unless otherwise indicated or required by fire-resistance-rated assembly.

C. Finishing and Joint Treatment



1. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
2. Prefill open joints and damaged surface areas.
3. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
4. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C840 and as indicated, for locations as follows:
  - a. Concealed locations  

ASTM C840 - Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim in ceiling plenum areas, other concealed areas, and where panels are substrate for tile, unless a higher level of finish is required for fire-resistance rated assemblies.
  - b. Exposed locations  

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ASTM C840 - Level 5, with finished surfaces completely flat and uniform, with no visible irregularities or imperfections: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface at panel and trim surfaces that will be exposed to view.
5. Outside Corners
  - a. Install corner bead fitting neatly over the corner and apply compound to both sides of corner.
  - b. Treat the corner with joint compound as recommended by accessory manufacturer, allowing compound to dry between coats. Final coat shall completely cover corner.
6. Inside Corners  

Treat as specified for joints, except that the reinforcing tape shall be folded lengthwise through the middle and fitted neatly into corner.
7. Properly prepare surfaces to receive painting, coating and tile finishes.



**3.05 CLEAN UP AND PROTECTION**

- A. In addition to the requirements of these Specifications, use all necessary care during execution of this portion of the Work to prevent scattering of gypsum board scraps and dust and to prevent tracking of joint and finishing compound onto floor surfaces. At completion of each segment of installation in a room or space, promptly pick up and remove from the working area all scraps, debris and surplus material of this Section.

**END OF SECTION 09 26 00**



**SECTION 09 80 00  
FUEL RESISTANT EPOXY COATING**

**PART 1 – GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. Provide materials, labor, equipment, and services necessary to complete all fuel resistant epoxy coating applied to floors and walls in the Oil Tank Room and the Emergency Generator Room.

**1.03 SUBMITTALS**

- A. Product Data

Provide manufacturers' product literature for all materials specified. In addition to actual material data, submit manufacturer's printed directions and recommendations for environmental conditions, surface preparation, priming, mixing, reduction, spreading rate, application and storage, as applicable for each of the materials specified.

- B. Provide certification that the work will be performed by personnel with a minimum of three years experience.
- C. Provide certification that products have been obtained from a single manufacturer.
- D. Extra Materials

**1.04 QUALITY ASSURANCE**

- A. Qualifications

Work of this Section shall be performed by personnel with a minimum of three years experience.

- B. Single Source Responsibility

Provide product of a single manufacturer to ensure compatibility of layers.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery

Deliver materials to the site in original, unopened containers bearing label containing the following information:



1. Product name or title of material
  2. Manufacturer's stock number and date of manufacture
  3. Manufacturer's name
  4. Thinning instructions
  5. Application instructions
- B. Storage
1. The City of New York will designate space on premises for storage of materials.
  2. When other painting materials are to be used, coating systems will be stored in areas designated for storage of paint and will adhere to all requirements for storage outlined in Section 09 91 00, of this Specification.

## **1.06 PROJECT CONDITIONS**

- A. Environmental Requirements
1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.
- B. Protection
1. Protect floors with drop cloths or building paper.
  2. Remove oily rags, waste, empty containers from site each night.
  3. Keep containers tightly closed.
  4. Post caution signs warning against smoking and open flame when working with flammable materials.
- C. Ventilation

Provide ventilation in area to receive coating introducing fresh air and exhausting air continuously during and 24 hours after application to maintain non-toxic, unpolluted, safe working area.

## **1.07 MAINTENANCE**

- A. Extra Materials

At completion of Work, furnish to the two (2) gallons of coating system used in the Work. Furnish materials in manufacturer's original sealed containers marked with color name and or numbers specified herein.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**



- A. Subject to compliance with requirements, provide products of one of the following manufacturers:
  - 1. Conseal Concrete Sealant, Inc.
  - 2. Dur-A-Flex, Inc
  - 3. Key Resin Company
  - 4. Or approved equal

## **2.02 MATERIALS**

- A. Fuel resistant epoxy coating; Conseal CS-90; PolySpec Thiokol; Tnemec Typoxy or approved equal. Three (3) coat application at a DFT of 2 mils.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Areas to be coated must be kept free of traffic and no other trade shall work in the area during application procedure.
- B. Contractor shall provide sufficient electric power, light, heat to permit proper application of this coating.

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### **3.02 PREPARATION OF SURFACES**

- A. All surfaces shall be clean-free of dirt, grease and foreign matter that would adversely affect the adhesion, finish appearance or protective properties of special coating.
- B. If for any reason the surfaces cannot be properly prepared, the condition shall be reported to the Contractor, who will be responsible for rectifying the unsatisfactory condition. If recommended by the coating manufacturer, provide a block filler when applying coating to CMU walls
- C. Comply with manufacturer's recommendations for preparation of surfaces.

### **3.03 APPLICATION**

- A. Coating: Apply in accordance with the manufacturer's recommendations. Apply in three coats resulting in a DFT of 2 mils per coat.

### **3.04 ADJUST AND CLEAN**

- A. Remove and replace all surfaces that have been damaged or improperly applied.
- B. Completely remove from areas of Work all waste materials, rubbish, scaffolding and debris as a result of Work performed under this Section.
- C. All areas in which Work was performed under this Section shall be left "broom-clean".

**END OF SECTION 09 80 00**



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**SECTION 09 91 00**  
**PAINTING**

**PART 1 - GENERAL**

**1.01 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].

**1.02 DESCRIPTION OF WORK**

- A. This Section includes, but is not limited to, surface preparation and field painting of the following:
1. Interior concrete masonry unit walls
  2. Interior concrete ceilings
  3. Gypsum board walls

**1.03 REFERENCES**

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- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
1. Federal Specifications (FS)
  2. Occupational Safety and Health Administration (OSHA)
  3. Steel Structures Painting Council (SSPC)
  4. American Society of Testing and Materials (ASTM)

**1.04 SUBMITTALS**

- A. Product Data

Provide manufacturers' product literature for all materials specified and material manufacturer's printed directions and recommendations for environmental conditions, surface preparation, priming, mixing, reduction, spreading rate, application, storage and VOC content, as applicable for each of the materials specified.

- B. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.





1. Include manufacturer's full range of color and finish options if additional selection is required

C. Quality Assurance

1. Certification that materials for each system are obtained from a single manufacturer.
2. Work shall be performed by personnel with a minimum of three years experience who meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).
3. Certification that material meets or exceeds the performance requirements of Federal Specifications.
4. Certification that materials comply with regulations for Volatile Organic Compounds.

D. Guarantee

Provide Guarantee per Article 1.08.

**1.05 QUALITY ASSURANCE**

A. General

1. All painting materials shall arrive at the job ready-mixed.
2. Remove all rejected materials from the premises immediately.
3. All thinning and tinting materials shall be as recommended by the manufacturer. Generally, all paints shall not require additional thinning.
4. Verify that the specified shop prime paint for each applicable item in this Project is compatible with the total coating system, prior to application.
5. Materials selected for each system type shall be products of a single manufacturer.
6. In existing building locations, repair of existing base surface is to be approved prior to commencement of painting.

B. Qualifications

1. Work of this Section shall be performed by personnel with a minimum of three years experience in performing this type of Work.
2. The Contractor shall ensure that all employees meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).



C. Regulatory Requirements

1. Commonwealth of Massachusetts Building Code VOC regulations.
2. Steel Structures Painting Council (SSPC).
3. U.S. Department of Labor, Occupational Safety and Health Administration, Construction Industry Standards (29 CFR 1926/1910) Revised 10/1/79, Washington, D.C.
4. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62 (Lead In Construction Standard).

D. Mock-Ups: Provide 4 foot x 4 foot mock-ups of each type of surface.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Delivery

Deliver materials to the site in original, unopened containers bearing manufacturers name and label containing the following information:

1. Product name or title of material
2. Manufacturer's stock number, batch number, VOC content in grams per liter and date of manufacture.
3. Manufacturer's name
4. Federal Specification number, if applicable.
5. Federal regulations for amount of lead in paint (less the 0.06% lead in non-volatile ingredients)
6. Contents by volume for major pigment and vehicle constitutions
7. Thinning instructions
8. Application instructions
9. Color name and number

B. Storage

1. The commissioner will designate space on premises for storage of materials. Contractor shall restrict storage in this area to paint materials and related equipment, and provide the following:



- a. Provide one (1) approved chemical dry fire extinguisher equal to 20 lb. CO<sub>2</sub> rating in all assigned rooms or locations where painting materials are stored. Fire extinguisher shall bear the label of the National Board of Fire Underwriters and tag of most recent inspection.
  - b. Provide three (3) standard size red fire pails with clean sand in above locations. At the completion of project, fire extinguishers and pails shall become property of Contractor.
2. Maintain storage area in clean condition, store materials not in use in tightly covered containers. Remove oily rags, waste and empty containers from site each night.
  3. Provide Commissioner with one key for each space if spaces are to be kept locked when not in use.
  4. Protect all materials from freezing.

#### **1.07 PROJECT CONDITIONS**

##### **A. Environmental Requirements**

1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.
2. Do not apply finish in areas where dust is being generated or will be generated while the material is drying.
3. Provide paint and coating products to comply with applicable environmental regulations and VOC requirements.
4. The Contractor shall ensure that all requirements of OSHA 29 CFR 1926.62 (Lead in Construction Standard) are adhered to during the project. In addition, the Contractor shall ensure that proper work area protection and clean-up procedures (as described in this Section) are strictly adhered to during all phases on the project.

#### **1.08 GUARANTEES**

##### **A. Adherence of workmanship and materials to Specifications requirements shall be maintained for the one year Contract guarantee period. These requirements shall include the following:**

1. There shall be no evidence of blistering, peeling, crazing, alligatoring, streaking, staining, or chalking.
2. Dirt shall be removed without blemishing the finish by washing with mild soap and water.



3. Colors of surfaces shall remain free from serious fading; the variation, if any, shall be uniform.
- B. Correct all defects, appearing within the guarantee period, by removal of the defective work and replacement as directed.
- C. All corrective measures shall be the Contractor's responsibility, and shall be made at no extra cost to the City of New York. The requirements set forth in Part 3 of these Specifications shall be strictly adhered to.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Benjamin Moore and Co.
- B. Carboline
- C. Sherman Williams
- D. PPG
- E. Or approved equal

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### **2.02 MATERIALS**

- A. Provide products which meet all VOC requirements for applications outlined herein.
- B. Provide products which meet all Federal regulations for amount of lead in paint (less than 0.06% lead in non-volatile ingredients).
- C. Use only thinners approved by paint manufacturers for applications intended and use only within recommended limits.
- D. Miscellaneous Standards and Requirements
  1. Turpentine: ASTM D13.
  2. Mineral Spirits (Petroleum Paint Thinner): FS TT-T-29
  3. Cleaning Solvents: Low toxicity; flash point in excess of 100°F.
  4. Polyester Filler: Polyester resin base autobody filler standard weight or finishing grade required by conditions; Marson's "White Lightning" and "Topcoat."
  5. Color Pigments: Pure, non-fading, finely ground pigments, at least 99 percent passing a 325 mesh sieve. Color pigments that are to be used on masonry and concrete shall be lime proof - FS-TT-P-381.



**2.03 INTERIOR PAINTING SYSTEMS**

**A. Concrete**

**1. Semi-Gloss Finish:**

1st Coat - Vinyl Acrylic Latex Primer  
- Sealer (Flat) -- 1.0 Mils DFT

2nd & 3rd Coats-  
Semi-Gloss Vinyl Acrylic Latex  
Enamel -- 1.3 Mils DFT  
each coat

**B. Concrete Masonry Units**

**1. Semi-Gloss Finish:**

\*1st Coat - Vinyl Acrylic Latex Block Filler, or 100% acrylic resin block  
filler/surfacer as recommended by manufacturer of succeeding coats.

\*\*1st Coat - Vinyl Acrylic Latex Primer-Sealer (Flat)  
-- 1.0 Mils DFT

2nd & 3rd Coats -  
Semi-Gloss Vinyl Acrylic Latex Enamel-- 1.3 Mils DFT  
each coat

**2. Gloss Finish:**

\*1st Coat - Vinyl Acrylic Latex Block Filler, or 100% acrylic resin block  
filler/surfacer as recommended by manufacturer of succeeding coats.

\*\*1st Coat - Vinyl Acrylic Latex  
Primer-Sealer (Flat) -- 1.0 Mils DFT

2nd & 3rd Coats -  
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT  
each coat

\*Apply filler coat on new and previously unpainted concrete masonry units at a rate to  
ensure complete coverage with all pores filled. If required, provide in two (2) or more  
coats.

\*\* Spot prime previously painted concrete masonry unit surfaces as needed.

**C. Gypsum Drywall**

**1. Semi-Gloss Finish:**



1st Coat - Vinyl Acrylic Latex  
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats -  
Semi-Gloss Vinyl Acrylic Latex  
Enamel --1.3 Mils DFT  
Each Coat

2. Gloss Finish:

1st Coat - Vinyl Acrylic Latex  
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats -  
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT  
Each Coat

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

A. Verification of Conditions

1. The application of painter's finish to any surface shall be taken to indicate that the Contractor considers such surfaces suitable for a first-class finish.
2. Do not apply painter's finish in any locations until the Work of other trades that might damage the new finish is completed.
3. Notify the City of New York in writing regarding Work by others that does not provide a suitable surface for the new finish.
4. In case of dispute regarding the suitability of any surface, the City of New York's decision shall be final and conclusive upon all concerned.
5. Contractor shall check the compatibility of previously painted surface with the new coating by applying a test panel 4 foot wide x wall height. Allow test panel to dry thoroughly; verify proper adhesion before proceeding with painting Work.

**3.02 PREPARATION AND APPLICATION**

A. Protection

Cover or otherwise protect finished Work of other trades and surfaces not to be painted concurrently or not to be painted.



B. Surface Preparation

1. Perform preparation and cleaning procedures in accordance with the paint manufacturer's instructions and as specified.
  - a. Sand bare spots and abraded areas of shop primed and previously painted surfaces. Where paint is missing or removed, sand surrounding edges of sound paint film so edges of existing paint do not show through the finished system.
  - b. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease with clean cloths and cleaning solvents prior to other cleaning procedures. Program the cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
2. Ferrous Metals
  - a. Remove dirt and grease with cleaning solvents that will not affect shop prime coat. Wipe off with clean cloths.
  - b. Remove rust, mill scale and defective paint down to bare metal, using scraper, sandpaper, or wire brush. Grind if necessary to remove shoulders at edge of sound paint to prevent flaws from photographing finish coats.
3. Galvanized Metal
  - a. Remove dust and oil with mineral spirits and wipe dry with clean cloth. Repair welded and abraded surfaces with a 2 mil (dry) minimum thick coating of cold galvanizing compound in conformance with ASTM A780; comply with manufacturer's application instructions.
  - b. Repair steel decks and cold-formed metal framing immediately following installation.
  - c. For hot-dipped galvanized surfaces, allow 6 months of weathering prior to cleaning specified in a. above. Immediately before painting, roughen surface with course sandpaper. Zinc metallized surfaces do not require sanding.
4. Gypsum Board: Fill cracks and other blemishes with spackling or patching compound and sand smooth.
5. Concrete and Concrete Unit Masonry: Prepare cementitious surfaces by removing efflorescence, chalk, dust, grease and oils. Concrete and mortar shall be cured as recommended by paint manufacturer.

C. Materials Preparation



1. Mix and prepare painting materials in accordance with the manufacturer's directions.
2. Stir materials before and during application to produce and maintain a mixture of uniform density. Do not stir any film that may form on the surface of materials into the material; remove the film and strain the material before using.
3. Thinning: Use only thinners recommended by the paint manufacturer and use only within the recommended or specified limits.

### 3.03 APPLICATION

#### A. General

1. Apply paint materials to produce smooth finished surfaces, free of brush or roller marks, drops, runs, or sags.
2. Paint materials shall be kept at a proper and uniform consistency.
3. Thin only when necessary to achieve best results.
4. Thinners shall be material recommended by manufacturer of paint, and in quantity as recommended.
5. Excessive use of thinner as indicated by variation in absorption, lack of "hide", thickness of dry film, mottled or streaky coat, shall be cause for rejection. Correct as directed.
6. Apply all coats with brush or roller (spraying will not be permitted) varying slightly the color of succeeding coats.
7. Brush out or roll on first or prime coat; work well into surface.
8. Each coat shall be inspected, approved and dry before proceeding with additional coats.
9. The surfaces of metals shall be sanded or rubbed between coats to assure smooth finish and proper adhesion of subsequent coats.
10. Avoid lapping of paint on glass, hardware, or other adjoining surfaces.

### 3.04 FIELD QUALITY CONTROL

- A. The City of New York reserves the right to require the following material testing procedures at any time, and any number of times during period of field painting:
  1. Measurement of dry film thickness (DFT) by use of a dry film thickness gauge in accordance with use and calibration requirements of Structural Steel Painting





Council [SSPC], "Method of Measurement of Dry Paint Thickness with Magnetic Gauges".

2. Engage services of an independent testing laboratory, recommended by the City of New York, to sample paint being used. Samples of materials delivered to construction site will be taken, identified and sealed, and certified in presence of Contractor
3. Testing laboratory will perform appropriate tests for any or all of the following characteristics: Abrasion resistance, apparent reflectivity, flexibility, washability, absorption, accelerated weathering, dry opacity, accelerated yellowness, recoating, skinning, color retention, alkali resistance and quantitative materials analysis.
4. If test results show that material being used does not comply with specified requirements, Contractor shall be directed to stop painting Work, and remove non-complying paint; repaint surfaces coated with rejected paint; remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are non-compatible.
  - a. If the samples do not comply with requirements of the Specifications, costs of testing and remediation of rejected work shall be borne by Contractor.

### **3.05 CLEANING**

#### **A. General**

Contractor shall clean-up behind each paint crew such that painting and clean-up will be a continuous uninterrupted operation. The practice of one general clean-up after completion of all painting will be strictly prohibited. This clean-up will include, but not be limited to the following:

1. Remove spots or defacement resulting from Work of this Section.
2. Retouch all damaged surfaces to leave Work in perfect finished condition.
3. If spots or defacement cannot be satisfactorily removed and retouched, re-finish the surfaces as directed.
4. Remove from premises all surplus paint materials, debris and any other rubbish resulting from the Work.
5. Leave storage space clean and in condition required for equivalent spaces in project.

### **3.06 PROTECTION**

- A. Provide caution tape and/or locked entryways during paint removal activities in existing buildings to prevent access to the work area from unauthorized personnel.



- B. Provide "Wet Paint" signs to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their Work after completion of painting operations.
- C. At the completion of Work of other trades, touch-up and restore all damaged or defaced painted surfaces as directed by the City of New York.

**END OF SECTION 09 91 00**



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**SECTION 23 05 00  
COMMON WORK RESULTS FOR HVAC**

**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 and applies to all work included in Division 23.
- B. Work in this Section includes providing labor, materials, equipment, services necessary, fabrication, installation and testing for fully operational and safe systems including all necessary materials, appurtenances and features whether specified or shown in the contract documents or not, in conformity with all applicable codes for the following:

---

1. Mechanical work covered by all sections within Division 23 of the specifications, including, but not limited to:

- a. Heating, ventilating and air conditioning systems and equipment and accessories.
  - b. Motors and controllers including variable frequency drives.
  - c. Instrumentation and Control systems.
  - d. Testing, Adjusting and balancing.
  - e. Cleaning of piping systems.
  - f. Dielectric fittings.
  - g. Mechanical sleeve seals.
  - h. Escutcheons.
  - i. Grout.
  - j. HVAC demolition.
  - k. Equipment installation requirements common to equipment sections.
  - l. Painting and finishing.
  - m. Concrete bases.
  - n. Supports and anchorages.
- C. Provide cutting and patching, for the Mechanical Work outside of the GC scope of work area.
- D. Provide piping from plumbing terminations, 10 feet from equipment, for water, gas, compressed air and as indicated.
- E. Provide drainage from noted equipment to floor drains, roof drains, sink, or funnel drains.



- F. Provide piping connections to equipment, as required, for kitchens, laboratories, laundries, and as indicated.

### 1.3 DEFINITIONS

- A. "Piping": pipe, tube, fittings, flanges, valves, controls, strainers, hangers, supports, unions, traps, drains, insulation, and related items.
- B. "Wiring": raceway, fittings, wire, boxes and related items.
- C. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- D. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- E. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- F. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings, in chases, in enclosures, in trenches or in crawl spaces.
- G. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- H. "Motor Controllers": manual or magnetic starters (with or without switches), individual pushbuttons or hand-off-automatic (HOA) switches controlling the operation of motors.
- I. "Control" or "Actuating Devices": automatic sensing and switching devices such as thermostats, pressure, float, electro-pneumatic switches and electrodes controlling operation of equipment.

### 1.4 ABBREVIATIONS

- A. The following are industry abbreviations for plastic materials.
  - 1. CPVC: Chlorinated polyvinyl chloride plastic.
  - 2. PE: Polyethylene plastic.
  - 3. PVC: Polyvinyl chloride plastic.
- B. The following are industry abbreviations for rubber materials:
  - 1. EPDM: Ethylene-propylene-diene terpolymer rubber.
  - 2. NBR: Acrylonitrile-butadiene rubber.



C. Following is a list of abbreviations and symbols that are used in the specifications:

Word or Symbol	Abbreviation or Symbol Used in Specifications
φ	phase
air conditioning unit	ACU
alternating current	AC
ampere	amp
brake horsepower (bhp)	BHP
British thermal units	Btu
Celsius	C
cfh	CFH
cubic feet per minute	cfm
cubic feet per second	cfs
degree	°
direct current	DC
emergency power system	EPS
etcetera (etc.)	etc.
Fahrenheit	F
feet	ft.
feet per minute	fpm
gallon	gal.
gallons-per-minute	gpm
hertz	Hz
horsepower	hp
inches	in.
kilovolt	kV
kilowatt	kW
KVA	kVA
length	length
manufacturer	Mfr.
minute	minute
number	No.
ounce	oz.
percent	%
plus and minus	±
pound or pounds	lb. or lbs.
pounds per square inch (psi)	psi
power factor	pf
psig	psig
PVC	PVC
revolutions per minute (rpm)	rpm
square foot or square feet	sq. ft.
times	times (unless used in an equation, then use x)
uninterruptible power supply (UPS)	UPS



Word or Symbol	Abbreviation or Symbol Used in Specifications
Variable Frequency Drive	VFD
volt	V
water gauge	w.g.
width	width
wire-gauge	awg
WWP	WWP

**1.5 UTILITY CONNECTIONS**

- A. Arrange for and pay utility costs for work of this Division.
- B. Included:
  - 1. Connection to utility company mains.
  - 2. Connection to on-site piping mains.
  - 3. Payment of service charges.
  - 4. Provisions for temporary utilities.

**1.6 JOB CONDITIONS**

- A. Examine all drawings and specifications in a manner to be fully cognizant of all work required under this Division.
- B. Adjoining work of other Divisions shall be examined for interferences and conditions affecting this Division.
- C. Examine site related work and surfaces before starting work of any Section.
  - 1. Report to Commissioner, in writing, conditions which will prevent proper provision of this work.
  - 2. Beginning work of any Section without reporting unsuitable conditions to Commissioner constitutes acceptance of conditions by Contractor.
  - 3. Perform any required removal, repair or replacement of this work caused by unsuitable conditions at no additional cost to City of New York.
- D. Connections to existing work.
  - 1. Verification of existing:
    - a. Before submitting bid, become thoroughly familiar with actual existing conditions and systems at the building, and of the existing installations to which connections must be made, including any necessary alterations, and existing building engineering practices and requirements. The intent of the work is shown on the drawings and described herein, and no consideration will be granted by reason of



lack of familiarity on the part of the contractor with actual physical conditions, requirements, and practices at the site.

2. Install new work and connect to existing work with minimum interference to existing facilities.
3. Temporary shutdowns of existing services:
  - a. At no additional charges.
  - b. At times not to interfere with normal operation of existing facilities.
  - c. Only with written consent of City of New York.
4. Maintain continuous operation of existing facilities as required with necessary temporary connections between new and existing work.
5. Restore existing disturbed work to original condition.
6. Perform following work only after regular working hours:
  - a. As per City of New York's direction.

E. Removal and relocation of existing work.

1. Disconnect, remove or relocate material, equipment, plumbing fixtures, piping and other work noted and required by removal or changes in existing construction.
2. Where existing pipes, conduits and/or ducts which are to remain prevent installation of new work as indicated, relocate, or arrange for relocation, of existing pipes, conduits and/or ducts.
3. Provide new material and equipment required for relocated equipment.
4. Plug or cap active piping or ductwork behind or below finish.
5. Do not leave long dead-end branches. Cap or plug as close as possible to active line.
6. Remove unused piping, ductwork and material.
7. Dispose of removed fixtures and equipment as directed.
8. Turn over removed fixtures and equipment to City of New York as directed.

F. Special Traffic Requirements:

1. Maintain emergency and service entrances useable to pedestrian, truck, and ambulance traffic at all times.
2. Where trenches are cut, provide adequate bridging for above mentioned traffic.
3. (Other paragraphs as required).

G. If asbestos insulation is found when working in existing areas, immediately stop work and notify Commissioner. Do not restart work until advised in writing by Commissioner that it is safe to do so following abatement, encapsulation, etc.

## 1.7 CLEARANCE FROM ELECTRICAL EQUIPMENT

A. Piping or ductwork:

1. Prohibited in:





- a. Electric rooms and closets.
  - b. Telephone rooms and closets.
  - c. Elevator machine rooms.
  - d. Electric switchboard room.
2. Prohibited above an area within 5 ft. of:
- a. Transformers.
  - b. Motor control centers.
  - c. Standby power plant.
  - d. Bus ducts.

## 1.8 SUBMITTALS

- A. Submit the following items as hereinafter specified:
1. Names and qualifications of test and balance agencies.
  2. Layout Drawings.
  3. Coordinated Drawings.
  4. As-built Record Drawings (Submitted to Client).
  5. Record Files (Submitted to Client).
  6. Operating and Maintenance Manuals.
  7. Welding certificates.
  8. Equipment and material submittals as required by sections within this division.
- B. Items shall comply with the requirements as hereinafter specified.
- C. Submit shop drawings, product data, samples and certificates of compliance required by contract documents.
1. See DDC General Conditions for reference of minimum requirements, if not stated hereinbelow.
- D. For all equipment requiring MEA numbers by City of New York, numbers shall be included within the equipment submittals.
- E. Schedule of submittals, as agreed to by the Commissioner, will set the basis of the minimum required submittals. Submittals shall be provided by the Contractor promptly and in accordance with the Schedule of submittals and in such sequence as to cause no delay in work or in work of any other divisions.
- F. Resubmission Requirements:
1. In addition to DDC General Conditions requirements, make any corrections or change in Submittals required. Resubmit for review until no exceptions are taken or a resubmission is not required.
  2. Shop Drawings and Product Data:
    - a. Revise initial drawings or data, and resubmit as specified for initial submittal.



- b. Indicate any changes which have been made other than those requested.
3. Samples: Submit new samples as required for initial submittal.
4. Clearly identify resubmittal by original submittal date, number and revision number and indicate all changes from previous submittal.
5. If more than two submissions are required (initial submittal and one resubmittal) based on rejection or lack of compliance by submittal, then the Contractor shall:
  - a. Arrange for additional reviews by the Commissioner.
  - b. Pay all costs for such additional reviews.
- G. Corrections or comments made on the shop drawings during review do not relieve the Contractor from compliance with requirements of the drawings and specifications. Shop drawing checking by the Commissioner is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The Contractor is responsible for:
  1. Confirming and correlating all quantities and dimensions.
  2. Selecting fabrication processes and techniques of construction.
  3. Coordinating his work with that of all other trades.
  4. Performing his work in a safe and satisfactory manner.
- H. Coordinated Drawings:
  1. ~~This Contractor shall prepare coordinated drawings which shall show work of all trades including, but not limited to:~~
    - a. Items noted in the Supplemental General conditions.
    - b. Coordinated Ductwork with penetrations at floors, walls, ceiling and roof.
    - c. Piping, including:
      - 1) HVAC, plumbing and fire protection.
      - 2) Minor Piping such as drains, air vents, condensate piping, etc.
      - 3) Sleeves and penetrations.
      - 4) Expansion devices, anchors, guides and hangers.
    - d. Mechanical Equipment.
    - e. Supports and suspension devices.
    - f. Ductwork/Piping high points and low points.
    - g. Electrical Equipment.
    - h. Main Electrical conduits and bus ducts.
    - i. Equipment support and suspension devices including hangers, supports and bracing.
    - j. Structural and architectural constraints including:
      - 1) Beams, braces, trusses, flanges, constraints, walls, openings ratings, doors, wall types, glazing.
    - k. Show location of:
      - 1) Valves.
      - 2) Piping specialties.



- 3) Dampers.
  - 4) Access doors.
  - 5) Control and electrical panels.
  - 6) Disconnect switches
  - 7) Others as required.
2. Provide sections and elevations for all mechanical rooms, mechanical areas, areas with routed duct mains, areas with routed piping mains, and areas adjacent to the existing structure.
  3. Preparation of drawings:
    - a. Prepare reproducible CADD drawings.
    - b. Submit to other trades for review of space allocated to all trades.
    - c. Revise drawings to compensate for requirements of existing conditions and conditions created by other trades.
  4. Final prepared drawings shall show that other trades affected have made reviews and signed, by each trade, at completion of coordination.
  5. Coordinated shop drawings shall be for all areas.
  6. Contractor is to assure that each trade has coordinated work with other trades, prior to submittal.

I. Quantity of Submittals Required.

1. Layout (Shop) Drawings and Coordinated Drawings:
  - a. Submit three prints.
  - b. Upon review, two sets of prints will be annotated and returned. One set of prints will be retained by the Engineer.
  - c. Copies of these prints will serve as record copies for Commissioner.
2. Product Data (brochures):
  - a. Submit two copies of product data.
  - b. Upon review, one copy will be returned.
  - c. If comments are required, they will be returned with each copy.
  - d. One copy will be retained by the Engineer.

**1.9 RELATED WORK AND REQUIREMENTS**

A. Related work specified elsewhere:

1. Providing temporary heat.
2. Providing finish painting, including pipe stenciling.
3. Trench covers and frames.
4. Providing chimney cleanout door and thimble.
5. Cutting and patching, per the DDC General Conditions.
6. Louvers in doors.
7. Undercut doors.



8. Wall louvers and screens.
9. Plenums other than sheet metal.
10. Flashing.

#### **1.10 QUALITY ASSURANCE**

- A. All equipment and accessories to be the product of a manufacturer regularly engaged in its manufacture.
- B. Supply all equipment and accessories new and free from defects.
- C. Supply all equipment and accessories in compliance with the applicable standards and with all applicable national, state and local codes.
- D. All items of a given type shall be the products of the same manufacturer.
- E. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
- F. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
  1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
  2. ~~Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.~~

#### **1.11 REFERENCE STANDARDS**

- A. Published codes, specifications, standards, tests or recommended methods of trade, industry or governmental organizations apply to work in this Division where cited below:
  1. AABC: Associated Air Balance Council.
  2. ADC: Air Diffuser Council.
  3. AMCA: Air Moving and Conditioning Association.
  4. ANSI: American National Standards Institute.
  5. ARI: Air-Conditioning and Refrigeration Institute.
  6. ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers.
  7. ASME: American Society of Mechanical Engineers.
  8. ASSE: American Society of Sanitary Engineers.
  9. ASTM: American Society for Testing and Materials.
  10. AWS: American Welding Standards.
  11. FM: Factory Mutual.
  12. Local Utility Authorities.
  13. National, State and Local Codes.
  14. NEMA: National Electrical Manufacturer's Association.
  15. NFPA: National Fire Protection Association.
  16. OSHA: Occupational Safety and Health Act.
  17. PDI: Plumbing and Drainage Institute.



18. New York State Energy Code
19. UBC: Uniform Building Code.
20. UL: Underwriters' Laboratories, Inc.
21. UMC: Uniform Mechanical Code.
22. UPC: Uniform Plumbing Code.

#### **1.12 COORDINATION**

- A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for HVAC installations.
- B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- C. Coordinate requirements for access panels and doors for HVAC items requiring access that are concealed behind finished surfaces.

#### **1.13 SPECIAL TOOLS**

- A. Furnish to City of New York at completion of work:
  1. One set of any special tools required to operate, adjust, dismantle or repair equipment furnished under any section of this Division.
  2. "Special tools": those not normally found in possession of mechanics or maintenance personnel.
  3. One pressure grease gun for each type of grease required.
    - a. With adapters to fit all lubricating fittings on equipment.
    - b. Include lubricant for lubricated plug valves.
  4. Tag each item and cross reference in Maintenance Manual.
  5. Turn over to Commissioner or temporarily secure to unit at Commissioner's instruction.

#### **1.14 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.
- C. Check dimensions of access route through the site from delivery point to final location. Where necessary, ship in crated sections of size to permit passing through available space. Dismantle and/or reassemble, reprovise and retest equipment too large to pass through available access route to final location in one piece.
- D. Ship equipment in original packages, to prevent damaging or entrance of foreign matter.



- E. Handle and ship in accordance with manufacturer's recommendations.
- F. Provide protective coverings during construction.
- G. Replace at no expense to City of New York, equipment or material damaged during storage or handling, as directed by Commissioner.
- H. Tag all items with weatherproof tag, identifying equipment by name and purchase order number.
- I. Include packing and shipping lists.
- J. Special requirements as specified in individual sections.

#### **1.15 PROTECTION OF MATERIALS**

- A. Protect from damage, water, dust, etc., material, equipment and apparatus provided under this Division, both in storage and installed, until Notice of Completion has been filed.
- B. Provide temporary storage facilities for material and equipment.
- C. Arrange with City of New York for storage facilities for materials and equipment.
- D. Material, equipment or apparatus damaged because of improper storage or protection will be rejected.
  - 1. Remove from site and provide new, duplicate, material equipment or apparatus in replacement of that rejected.
- E. Cover motors and other moving machinery to protect from dirt and water during construction.
- F. Protect premises and work of other Divisions from damage arising out of installation of work of this Division.
  - 1. Repair or replace, as directed by Commissioner, materials and parts of premises which become damaged as result of installation of work of this Division.
  - 2. Remove replaced parts from premises.

#### **1.16 SCHEDULE OF WORK**

- A. Arrange work to conform to schedule of construction established or required to comply with Contract Documents.
- B. In scheduling, anticipate means of installing equipment through available openings in structure.
- C. Confirm in writing to Commissioner, within 30 days of signing of contract, anticipated number of days required to perform test, balance, and acceptance testing of mechanical systems:



1. This phase must occur after completion of mechanical systems, including all control calibration and adjustment, and requires substantial completion of the building, including closure, ceilings, lighting, partitioning, etc.
  2. Submit for approval at this time, names and qualifications of test and balancing agencies to be used.
- D. Arrange with City of New York schedule for work in each area.
- E. Unless otherwise directed by City of New York perform work during normal working hours.
- F. Work delays:
1. In case noisy work interferes with City of New York's operations, City of New York may require work to be stopped and performed at some other time, or after normal working hours.
  2. Lost time and overtime will be compensated for by City of New York.
  3. Submit, with bid proposal, schedule of hourly rates and overtime premiums.

#### **1.17 NOISE REDUCTION**

- A. Cooperate in reducing objectionable noise or vibration caused by mechanical systems.
1. To extent of adjustments to specified and installed equipment and appurtenances.
- B. Correct noise problems caused by failure to install work in accordance with Contract Documents. Include labor and materials required as result of such failure.

#### **1.18 PERMITS, LICENSES, AND INSPECTIONS**

- A. Permits and Licenses:
1. Secure required permits and licenses including payments of all charges and fees.
- B. Inspections:
1. Obtain certificates of final inspection approval and submit to Commissioner before acceptance of the Work.
  2. Obtain inspections during the Work as required to allow timely progress of these and other trades.

#### **1.19 GUARANTEE**

- A. Guarantee all materials, equipment, apparatus and workmanship to be free of defective materials and faulty workmanship for period of one year from date of filing of Notice of Completion, unless extended guarantee periods are specified in individual sections.
- B. Furnish guarantee covering all work in accordance with general requirements of the Contract.



- C. Provide new materials, equipment, apparatus and labor to replace that determined by Commissioner to be defective or faulty.
- D. This guarantee also applies to services such as Instructions, Adjusting, Testing, Noise, Balancing, etc.
- E. Equipment manufacturers shall include extended warranty to give full coverage during warranty period, unless longer period is specified.

## **1.20 PRELIMINARY OPERATION**

- A. Any portion of the system or equipment shall be placed in operation at the request of the City of New York prior to the final completion and acceptance of the work. Such operation shall be under the direct supervision of the Contractor.
- B. Preliminary operation or payment thereof shall not be construed as acceptance of any part of the Work.

## **PART 2 - PRODUCTS**

### **2.1 GROUT**

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
  - 1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
  - 2. Design Mix: 5000-psi, 28-day compressive strength.
  - 3. Packaging: Premixed and factory packaged.

### **2.2 PAINTING**

- A. Manufacturers:
  - 1. Sherwin-Williams.
  - 2. Pittsburgh Plate Glass Co.
  - 3. Pratt and Lambert.
  - 4. Rust-Oleum.
  - 5. Or approved equal.
- B. Materials:
  - 1. Best grade for its purpose.
  - 2. Deliver in original sealed containers.
  - 3. Apply in accordance with manufacturers instructions.
  - 4. Heat resistant paint for hot piping, equipment and materials.
  - 5. Colors as selected.



## **PART 3 - EXECUTION**

### **3.1 HVAC DEMOLITION**

- A. Refer to DDC General Conditions and Division 02 Section "Selective Structure Demolition" for general demolition requirements and procedures.
- B. Disconnect, demolish, and remove HVAC systems, equipment, and components indicated to be removed.
  - 1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - 2. Disconnect and cap services and remove equipment.
  - 3. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - 4. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to City of New York.
- C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

### **3.2 PIPING SYSTEMS - COMMON REQUIREMENTS**

- A. Install piping according to the following requirements and Division 23 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping to permit valve servicing.
- G. Install piping at indicated slopes.
- H. Install piping free of sags and bends.



- I. Install fittings for changes in direction and branch connections.
- J. Install piping to allow application of insulation.
- K. Select system components with pressure rating equal to or greater than system operating pressure.
- L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:
  1. New Piping:
    - a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
    - b. Chrome-Plated Piping: One-piece, cast-brass type with polished chrome-plated finish.
    - c. Insulated Piping: One-piece, stamped-steel type with spring clips.
    - d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    - e. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece or split-casting, cast-brass type with polished chrome-plated finish.
    - f. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with rough-brass finish.
    - g. Bare Piping in Equipment Rooms: One-piece, cast-brass type.
    - h. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.
  2. Existing Piping: Use the following:
    - a. Chrome-Plated Piping: Split-casting, cast-brass type with chrome-plated finish.
    - b. Insulated Piping: Split-plate, stamped-steel type with concealed hinge and spring clips.
    - c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-casting, cast-brass type with chrome-plated finish.
    - d. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-casting, cast-brass type with chrome-plated finish.
    - e. Bare Piping in Unfinished Service Spaces: Split-casting, cast-brass type with rough-brass finish.
    - f. Bare Piping in Equipment Rooms: Split-casting, cast-brass type.
    - g. Bare Piping at Floor Penetrations in Equipment Rooms: Split-casting, floor-plate type.
- M. Sleeves are not required for core-drilled holes.
- N. Permanent sleeves are not required for holes formed by removable PE sleeves.
- O. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
  1. Cut sleeves to length for mounting flush with both surfaces.



- a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
3. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
  - a. Steel Pipe Sleeves: For pipes smaller than NPS 6.
  - b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.
  - c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level.
    - 1) Seal space outside of sleeve fittings with grout.
4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.
- P. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials.
- Q. Verify final equipment locations for roughing-in.
- R. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

### 3.3 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 23 Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:



1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

### 3.4 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
  2. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
  3. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

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### 3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- C. Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.
- E. Access to Valves and Equipment.
1. Access shall be possible where valves, expansion joints, fire dampers, motors, filters, control devices, and any other equipment requiring access for servicing, repairs, or maintenance are located in walls, chases, and/or above ceilings.
  2. Definition of Accessible:
    - a. Valves and dampers may be operated.
    - b. Control devices may be adjusted.
    - c. Fire dampers may be reset.
    - d. Equipment access panels may be opened.



- e. Normal maintenance work such as replacement of filters, lubrication of bearings, etc., may be performed readily within arm's reach of access opening.
  - f. It shall not be necessary to crawl through furred ceiling space to perform such operations.
3. Group concealed valves, expansion joints, controls, dampers and equipment requiring service access, so as to be freely accessible through access doors and to minimize the number of access doors required.
  4. Relocate piping equipment and accessories as required, at no extra cost to afford proper maintenance access.
  5. For access into ductwork see Section 233300: Air Duct Accessories.
  6. Coordinate location of access panels with applicable trades installing walls or ceiling.
    - a. Coordinate panel locations with lights and other architectural features.
    - b. Submit proposed panel locations to Commissioner for review.
  7. Access doors or panels will be installed by the trade furnishing surface on which panels are installed.
  8. Arrange for location and marking of removable tiles in splined ceilings where access panels are not installed.
  9. Existing Structures:
    - a. When installation requires access openings through existing construction, provide necessary panels, and arrange for respective trades to provide openings and framing which may be required.
    - b. Restore adjoining existing surfaces to original condition after new access panels have been installed.

### **3.6 PAINTING**

- A. Painting of exposed roof-top equipment.
- B. Finish painting under Division 09.
  1. Colors coordinated by Mechanical Subcontractor as directed by Commissioner.
- C. Painting under this Division:
  1. Interior of ductwork as far back as visible from outside: flat black.
  2. Uncoated hangers, supports, rods and inserts: dip in zinc chromate primer.
  3. Factory prime coat for following except as noted.
    - a. Pumps.
    - b. Fans.
    - c. Motors.
    - d. Equipment.
    - e. Air outlets.
    - f. Converter.



4. Marred surfaces of prime coated equipment and piping: spot prime coat to match adjacent coat.
5. Shop prime coat for following, except as noted:
  - a. Tanks.

D. General:

1. Labor, materials and equipment necessary for field painting.
2. Protect flooring and equipment with drip cloths.
3. Paint and materials stored in location where directed.
4. Oily rags and waste removed from building every night.
5. Furnish each space containing stored painting materials with approved 2½ gallon fire extinguisher.
6. Wire brush and clean off all oil, dirt and grease areas to be painted before paint is applied.
7. Mixing:
  - a. Mixed and strained as required by manufacturer.
  - b. Use thinners only in accordance with manufacturers recommendation.
  - c. Follow printed instructions on paint containers. If none are available, instructions shall be obtained in writing from manufacturer.

8. Workmanship:

- a. No painting or finishing shall be done with:
    - 1) Dust laden air.
    - 2) Unsuitable weather conditions.
    - 3) Space temperature below 60°F.
  - b. Pipes being painted: containing no heat and to remain cold until paint is dried.
  - c. Paint spread: uniform and proper film thickness showing no runs, sags, crawls or other defects.
  - d. Finished surfaces shall be uniform in sheen, color, and texture.
  - e. All coats to be thoroughly dry before succeeding coats are applied, minimum 24 hrs. between coats.
  - f. Priming undercoat: slightly different color for inspection purposes.
9. Exposed, uninsulated, ungalvanized sheet metal other than stainless steel and aluminum: Two coats of aluminum paint or alkyd paint color as directed.
  10. Exposed, uninsulated, galvanized sheet metal in finished space including mechanical equipment rooms:
    - a. One coat galvanized iron primer.
    - b. Two coats alkyd oil paint, color as directed.
  11. Exposed, insulated piping and equipment covering:
    - a. One coat primer sealer.



- b. Two coats alkyd oil paint, color as directed.
- 12. Finned tube radiation: One coat factory or field applied coat of heat resisting paint.
- 13. Paint following with two coats alkyd oil paint, color as directed:
  - a. Exposed steel and metal work not furnished with factory-painted finish.
  - b. Structural steel supports for piping ductwork and equipment.
  - c. Exposed, uninsulated piping.
- 14. Exposed, uninsulated aluminum sheet metal in finished space:
  - a. One coat zinc chromate primer.
- 15. No paint on exposed, uninsulated stainless steel sheet metal in finished space.
- E. Finish painting:
  - 1. Consisting of two finished coats of high gloss medium or long alkyd paint over prime coat.
  - 2. Submit color shade for approval.
  - 3. Piping continuously painted in all exposed areas.
  - 4. Color coding per Section 230553: Mechanical Identification for HVAC piping and equipment
- F. Interior of ductwork as far back as visible from outside: flat black.
- G. Uncoated hangers, supports, rods and inserts: dip in zinc chromate primer.
- H. Factory finish:
  - 1. Steel air outlets in acoustical tile ceilings: baked white enamel.
  - 2. Aluminum air outlets: anodized.
  - 3. Exposed fan coil units: baked enamel.
  - 4. Unit ventilators and unit heaters: baked enamel.
- I. Factory prime coat, except as noted:
  - 1. Pumps.
  - 2. Fans.
  - 3. Motors.
  - 4. Equipment.
  - 5. Registers.
  - 6. Diffusers.
  - 7. Grilles.
- J. Marred surfaces of prime coated equipment and piping: spot prime coat to match adjacent coat.
- K. Shop prime coat for following except as noted:
  - 1. Tanks.



### 3.7 CONCRETE WORK

- A. On concrete floors, install equipment on concrete housekeeping pads:
    - 1. Pads 4 in. high unless otherwise noted.
    - 2. Extend 6 in. minimum beyond equipment base, all sides.
    - 3. Concrete work, including forming and reinforcing, under Division 03
      - a. Coordinate size and location with General Contractor.
      - b. Furnish and locate anchors and anchor bolts.
    - 4. Curbs for field erected plenums similar.
  - B. Miscellaneous Concrete Items:
    - 1. Concrete work, including forming and reinforcing, under Division 03.
    - 2. Concrete for:
      - a. Anchor and thrust blocks.
      - b. Underground tank hold down slabs.
      - c. Pipe trenches.
    - 3. Refer to details on drawings.
  - C. Provide foundations for:
    - 1. Pumps.
    - 2. Fans.
    - 3. Floor mounted tanks
- 

### 3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGES

- A. Refer to Division 05 Section "Metal Fabrications" for structural steel.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor HVAC materials and equipment.
- C. Field Welding: Comply with AWS D1.1.

### 3.9 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

- A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor HVAC materials and equipment.
- B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.
- C. Attach to substrates as required to support applied loads.





### **3.10 GROUTING**

- A. Mix and install grout for HVAC equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

### **3.11 CUTTING AND PATCHING**

- A. All carpentry, cutting and patching to be done under trades doing that work.
- B. Provide all carpentry, cutting and patching required for proper installation of material and equipment specified in this Division.
- C. Do not cut or drill structural members without consent of Commissioner.

### **3.12 CUTTING THROUGH CELLULAR FLOORING**

- A. Cut openings for reception of work:
  - 1. In accordance with manufacturer's recommendations and approval.
  - 2. Not to interrupt continuity of electrical raceways.

### **3.13 WATER PROOFING**

- A. Where any work pierces waterproofing, installation shall be subject to review.
  - 1. Provide all necessary sleeves, caulking, flashing and flashing fittings required to make openings absolutely watertight.
- B. Flashing:
  - 1. 6 lb. lead.
  - 2. 16 oz. lead coated copper.
  - 3. No.22 USSG aluminum.
  - 4. Fittings for piping through roof:



- a. Galvanized cast iron bottom recess roof type.
  - b. Similar to Josam No. 26440 or No. 26450.
- C. Provide weather protection canopies, hoods or enclosures over out-of-door equipment which could be damaged by exposure to weather.
1. This requirement applies to:
    - a. Damper operators.
    - b. Damper bearings.
    - c. Controls.
    - d. Instruments.
  2. See other sections in this Division for application of this requirement to motors, drives, ducts, and fans, etc.
  3. Identify items under such covers if entirely enclosed.

### **3.14 CLEANING AND ADJUSTING**

- A. Brush and clean work prior to concealing, painting and acceptance. Perform in stages if directed.
- ~~B. Painted or exposed work soiled or damaged: clean and repair to match adjoining work before final acceptance.~~
- C. Remove debris from inside and outside of materials and equipment.
- D. Flush out piping after installation.
- E. Clean piping systems as described.
- F. Adjust valves and automatic control devices.
- G. Traps, wastes and supplies: unobstructed.

### **3.15 FIELD QUALITY CONTROL**

- A. Tests:
  1. Perform as specified in individual sections.
- B. Provide required labor, material, equipment, and connections.
- C. Furnish written report and certification that tests have been satisfactorily completed.
- D. Repair or replace defective work, as directed.
- E. Pay for restoring or replacing damaged work due to tests, as directed.

- F. Pay for restoring or replacing damaged work of others, due to tests, as directed.

**3.16 INSTRUCTION**

- A. Provide instruction by qualified manufacturers' representatives for equipment as specified in this Division.
- B. Instruction to include:
  - 1. Site-specific instruction.
  - 2. Minimum hours as specified in each Section.
  - 3. Instruction materials (minimum six sets).
  - 4. Video (2 copies) of each instruction session upon completion.
- C. Each instruction session to be scheduled with City of New York at least 30 days in advance.

**END OF SECTION 23 05 00**



**SECTION 23 05 13  
COMMON MOTOR REQUIREMENTS FOR HVAC 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 SUMMARY**

- A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

**1.3 COORDINATION**

- 
- A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
1. Motor controllers.
  2. Torque, speed, and horsepower requirements of the load.
  3. Ratings and characteristics of supply circuit and required control sequence.
  4. Ambient and environmental conditions of installation location.

**PART 2 - PRODUCTS**

**2.1 GENERAL MOTOR REQUIREMENTS**

- A. Comply with requirements in this Section except when stricter requirements are specified in HVAC equipment schedules or Sections.
- B. Comply with NEMA MG 1 unless otherwise indicated.
- C. Comply with IEEE 841 for severe-duty motors.

**2.2 MOTOR CHARACTERISTICS**

- A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.



- B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

### **2.3 POLYPHASE MOTORS**

- A. Description: NEMA MG 1, Design B, medium induction motor.
- B. Efficiency: Energy efficient, as defined in NEMA MG 1, including applications of premium efficiency motors.
- C. Service Factor: 1.15.
- D. Multispeed Motors: Variable torque.
  - 1. For motors with 2:1 speed ratio, consequent pole, single winding.
  - 2. For motors with other than 2:1 speed ratio, separate winding for each speed.
- E. Multispeed Motors: Separate winding for each speed.
- F. Rotor: Random-wound, squirrel cage.
- G. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.
- H. Temperature Rise: Match insulation rating.
- I. Insulation: Class F
- J. Code Letter Designation:
  - 1. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.
- K. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

### **2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS**

- A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.
- B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.
  - 1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
  - 2. Energy- and Premium-Efficient Motors: Class B temperature rise; Class F insulation.
  - 3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.



- 4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.
- C. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

## 2.5 SINGLE-PHASE MOTORS

- A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:
  - 1. Permanent-split capacitor.
  - 2. Split phase.
  - 3. Capacitor start, inductor run.
  - 4. Capacitor start, capacitor run.
- B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
- C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
- D. Motors 1/20 HP and Smaller: Shaded-pole type.
- E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

## PART 3 - EXECUTION (Not Applicable)

END OF SECTION 23 05 13



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**SECTION 23 05 16**  
**EXPANSION FITTINGS AND LOOPS FOR HVAC 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 SUMMARY**

- A. Section Includes:
1. Metal-bellows expansion joints.
  2. Expansion compensators.
  3. Rubber expansion joints.
  4. Flexible-hose expansion joints.
  5. Packed slip expansion joints.
  6. Flexible ball joints.
  7. Pipe bends and loops.
  8. Alignment guides and anchors.
- 

**1.3 DEFINITIONS**

- A. BR: Butyl rubber.
- B. Buna-N: Nitrile rubber.
- C. CR: Chlorosulfonated polyethylene synthetic rubber.
- D. CSM: Chlorosulfonyl-polyethylene rubber.
- E. EPDM: Ethylene-propylene-diene terpolymer rubber.
- F. NR: Natural rubber.
- G. PTFE: Polytetrafluoroethylene plastic.

**1.4 PERFORMANCE REQUIREMENTS**

- A. Compatibility: Products shall be suitable for piping system fluids, materials, working pressures, and temperatures.





- B. Capability: Products shall absorb 200 percent of maximum axial movement between anchors.
- C. Expansion Calculations:
  - 1. Installation Temperature: 50 deg F (10 deg C).
  - 2. Low pressure steam: 250 deg F (15 psig).
  - 3. Steam Condensate: 220 deg F (104 deg C).
  - 4. Hot Water Heating: 210 deg F (100 deg C).
  - 5. Use above data unless otherwise noted.

### **1.5 DELIVERY, STORAGE AND HANDLING**

- A. Accept expansion fittings and connectors on site in factory packing with shipping bars and positioning devices intact. Inspect for damage.

### **1.6 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Engineering Submittal: For each anchor and alignment guide indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified and licensed in the State of New York professional engineer responsible for their preparation.
  - 1. Engineering Calculations: Calculate requirements for thermal expansion of piping systems and for selecting and designing expansion joints, loops, and bends.
  - 2. Anchor Details: Detail fabrication of each anchor indicated. Show dimensions and methods of assembly and attachment to building structure.
  - 3. Alignment Guide Details: Detail field assembly and attachment to building structure.
  - 4. Schedule: Indicate type, manufacturer's number, size, material, temperature and pressure rating, end connections, and location for each expansion joint.
- C. Welding certificates.
- D. Product Certificates: For each type of pipe expansion joint, signed by product manufacturer.
- E. Maintenance Data: For pipe expansion joints to include in maintenance manuals. Include adjustment instructions.

### **1.7 QUALITY ASSURANCE**

- A. Provide expansion compensation system under direct supervision of a professional engineer experience in design of this work and licensed in the State of New York.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. Steel Shapes and Plates: AWS D1.1, "Structural Welding Code - Steel."



2. Welding to Piping: ASME Boiler and Pressure Vessel Code: Section IX.

## **PART 2 - PRODUCTS**

### **2.1 EXPANSION JOINTS**

- A. Metal-Bellows Expansion Joints: ASTM F 1120, circular-corrugated-bellows type with external tie rods.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Adscos Manufacturing, LLC.
    - b. Expansion Joint Systems, Inc.
    - c. Flex-Hose Co., Inc.
    - d. Flexicraft Industries.
    - e. Hyspan Precision Products, Inc.
    - f. Metraflex, Inc.
    - g. Piping Technology & Products, Inc.
    - h. Or approved equal.
  2. Metal-Bellows Expansion Joints for Copper Piping: Single- or multiple-ply phosphor-bronze bellows, copper-pipe-solder-end-connections, and brass shrouds.
  3. Metal-Bellows Expansion Joints for Stainless-Steel Waterway: Single-ply stainless-steel bellows, stainless-steel-pipe end connections, and steel shroud.
  4. Metal-Bellows Expansion Joints for Steel Piping: Single- or multiple-ply stainless-steel bellows, self-equalizing with reinforcing rings, internal sleeve, steel pipe end connections, and carbon-steel shroud.
  5. Minimum Pressure Rating: 150 psig, unless otherwise indicated.
  6. Configuration: Single- or double-bellows type with base, unless otherwise indicated.
  7. End Connections: Flanged or weld.
- B. Expansion Compensators: Double-ply corrugated steel, stainless-steel, or copper-alloy bellows in a housing with internal guides, antitorque device, and removable end clip for positioning.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Adscos Manufacturing, LLC.
    - b. Flexicraft Industries.
    - c. Hyspan Precision Products, Inc.
    - d. Metraflex, Inc.
    - e. Senior Flexonics, Inc.; Pathway Division.
    - f. Or approved equal.
  2. Minimum Pressure Rating: 150 psig, unless otherwise indicated.
  3. Configuration for Copper Piping: Two-ply phosphor-bronze or stainless-steel bellows and bronze or stainless-steel shroud.



4. Configuration for Steel Piping: Two-ply stainless-steel bellows and carbon-steel shroud.
  5. End Connections for Copper Tubing NPS 2 and Smaller: Solder joint or threaded.
  6. End Connections for Steel Pipe NPS 2 and Smaller: Threaded.
- C. Rubber Expansion Joints: ASTM F 1123, fabric-reinforced rubber with external control rods and complying with FSA's "Technical Handbook: Non-Metallic Expansion Joints and Flexible Pipe Connectors."
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Flex-Hose Co., Inc.
    - b. Flexicraft Industries.
    - c. Garlock Sealing Technologies.
    - d. General Rubber Corp.
    - e. Mason Industries, Inc.; Mercer Rubber Co.
    - f. Metraflex, Inc.
    - g. MG Piping Products Co.
    - h. Vibration Mountings & Controls, Inc.
    - i. Or approved equal.
  2. Arch Type: Single or multiple arches.
  3. Spherical Type: Single or multiple spheres.
    - a. Minimum Pressure and Temperature Ratings for NPS 1-1/2 to NPS 4: 150 psig at 220 deg F.
  4. Material: BR.
  5. End Connections: Full-faced, integral, steel flanges with steel retaining rings.
- D. Flexible-Hose Expansion Joints: Manufactured assembly with two flexible-metal-hose legs joined by long-radius, 180-degree return bend or center section of flexible hose; with inlet and outlet elbow fittings, corrugated-metal inner hoses, and braided outer sheaths.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Flex-Hose Co., Inc.
    - b. Flexicraft Industries.
    - c. Flex-Pression, Ltd.
    - d. Metraflex, Inc.
    - e. Or approved equal.
  2. Flexible-Hose Expansion Joints for Copper Piping: Copper-alloy fittings with solder-joint end connections.
    - a. NPS 2 and Smaller: Bronze hoses and single-braid bronze sheaths with 450 psig at 70 deg F and 340 psig at 450 deg F ratings.



3. Flexible-Hose Expansion Joints for Copper Piping: Copper-alloy fittings with solder-joint end connections.
  - a. NPS 2 and Smaller: Bronze hoses and double-braid bronze sheaths with 700 psig at 70 deg F and 500 psig at 450 deg F ratings.
4. Flexible-Hose Expansion Joints for Steel Piping: Carbon-steel fittings with threaded end connections for NPS 2 and smaller.
  - a. NPS 2 and Smaller: Stainless-steel hoses and single-braid, stainless-steel sheaths with 450 psig at 70 deg F and 325 psig at 600 deg F ratings.
5. Flexible-Hose Expansion Joints for Steel Piping: Carbon-steel fittings with threaded end connections for NPS 2 and smaller.
  - a. NPS 2 and Smaller: Stainless-steel hoses and double-braid, stainless-steel sheaths with 700 psig at 70 deg F and 515 psig at 600 deg F ratings.
- E. Packed Slip Expansion Joints: ASTM F 1007, carbon-steel, packing type designed for repacking under pressure and pressure rated for 250 psig at 400 deg F minimum. Include asbestos-free PTFE packing, compound limit stops, and drip connection if used for steam piping.
  1. Basis-of-Design Product: Subject to compliance with requirements, provide Advanced Thermal Systems, Inc. Thermal Pak-Type TP2 or comparable product by one of the following:
    - a. Adscio Manufacturing, LLC.
    - b. Advanced Thermal Systems, Inc.
    - c. Hyspan Precision Products, Inc.
  2. Configuration: Single- and double-joint class with base.
  3. End Connections: Flanged or weld ends to match piping system.
  4. Slip: ASTM A53 Grade "B" seamless pipe. Schedule 80 for NPS 1 1/2 to NPS 14 (DN 40 to DN 350) and Schedule 60 for NPS 16 to NPS 24 (DN 400 to DN 600).
    - a. Wall thickness after machining not reduced by more than 1/3 inch (3.1 mm).
    - b. Double layer of chrome plating, with minimum thickness of 0.001 inch (0.03 mm) after each buffing. First layer crack-free hard chrome and second layer standard hard chrome.
  5. Packing Cylinder: Welded steel with internal acme thread and male threaded plunger. Cylinder welded directly to stuffing box.
- F. Flexible Ball Joints: Carbon-steel assembly with asbestos-free composition packing, designed for 360-degree rotation and angular deflection, and 250 psig at 400 deg F minimum pressure rating; complying with ASME Boiler and Pressure Vessel Code: Section II, "Materials," and with ASME B31.9, "Building Services Piping," for materials and design of pressure-containing parts and bolting.



1. Angular Deflection for NPS 6 and Smaller: 30-degree minimum.
2. Angular Deflection for NPS 8 and Larger: 15-degree minimum.
3. End Connections for NPS 2 and Smaller: Threaded.
4. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Advanced Thermal Systems, Inc.
  - b. Hyspan Precision Products, Inc.
  - c. Or approved equal.

## 2.2 ALIGNMENT GUIDES

- A. Description: Steel, factory fabricated, with bolted two-section outer cylinder and base for alignment of piping and two-section guiding spider for bolting to pipe. Guides to be capable of serving as seismic braces if required. See Section 230548 "Vibration and Seismic Controls for HVAC Piping and Equipment."
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Adscos Manufacturing, LLC.
    - b. Advanced Thermal Systems, Inc.
    - c. Flex-Hose Co., Inc.
    - d. Flexicraft Industries.
    - e. Hyspan Precision Products, Inc.
    - f. Metraflex, Inc.
    - g. Or approved equal.

## 2.3 MATERIALS FOR ANCHORS

- A. Steel Shapes and Plates: ASTM A 36/A 36M.
- B. Bolts and Nuts: ASME B18.10 or ASTM A 183, steel, hex head.
- C. Washers: ASTM F 844, steel, plain, flat washers.
- D. Mechanical Fasteners: Insert-wedge-type stud with expansion plug anchor for use in hardened portland cement concrete, and tension and shear capacities appropriate for application.
  1. Stud: Threaded, zinc-coated carbon steel.
  2. Expansion Plug: Zinc-coated steel.
  3. Washer and Nut: Zinc-coated steel.
- E. Chemical Fasteners: Insert-type-stud bonding system anchor for use with hardened portland cement concrete, and tension and shear capacities appropriate for application.
  1. Bonding Material: ASTM C 881, Type IV, Grade 3, 2-component epoxy resin suitable for surface temperature of hardened concrete where fastener is to be installed.



2. Stud: ASTM A 307, zinc-coated carbon steel with continuous thread on stud, unless otherwise indicated.
  3. Washer and Nut: Zinc-coated steel.
- F. Concrete: Portland cement mix, 3000 psi minimum. Comply with requirements for formwork, reinforcement, and concrete.
- G. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink, nonmetallic grout; suitable for interior and exterior applications.
1. Properties: Nonstaining, noncorrosive, and nongaseous.
  2. Design Mix: 5000-psi, 28-day compressive strength.

### **PART 3 - EXECUTION**

#### **3.1 PROVISIONS FOR EXPANSION**

- A. Install piping to permit free expansion and contraction without damaging piping or construction.
- B. Provide offsets, expansion loops, anchors, guides and supports to permit expansion, within stress limits of ANSI B31.1 "Power Piping for temperature ranges specified.
- ~~C. Where pipe loops or changes in direction of piping cannot be employed to absorb expansion and contraction, provide mechanical expansion joints.~~
- D. Flexible pipe connections and expansion joints suitable to connect the adjoining piping:
  1. As specified for pipe units.
  2. Use line sized units.
- E. Rigidly anchor pipe to building structure.
- F. Provide pipe guides so that movement takes place along axis of pipe only.
- G. Use swing or swivel joints for connections as specified in other Sections for piping.
- H. Branch connections to terminal heat transfer units shall have strain on when cold, off when hot.
- I. Make riser offsets in manner to avoid pocket forming due to expansion.
- J. Loops, bends, offsets:
  1. As indicated.
  2. If additional required, because of job required relocation of piping and equipment, design as follows.
    - a. Use spring type loop, U-bend, offset U-bend, L-bend, or Z-bend.
    - b. Join bends only by welding.
    - c. Submit design details for approval before fabrication.



3. Loops with ball type joints may be used in lieu of rigid elbows.
  - a. Submit design details for approval before fabrication.
  - b. Base expansion calculations on temperatures listed under performance requirements. Submit calculations with details before fabrication.

### **3.2 EXPANSION-JOINT INSTALLATION**

- A. Install manufactured, nonmetallic expansion joints according to FSA's "Technical Handbook: Non-Metallic Expansion Joints and Flexible Pipe Connectors" and the manufacturer's published installation instructions.
- B. Install expansion joints of sizes matching size of piping in which they are installed.
- C. Install alignment guides to allow expansion and to avoid end-loading and torsional stress.
- D. Where expansion joints are in concealed locations, provide access doors of size to permit inspection, servicing and replacement, as approved.

### **3.3 PIPE BEND AND LOOP INSTALLATION**

- A. Install pipe bends and loops cold-sprung in tension or compression as required to partly absorb tension or compression produced during anticipated change in temperature.
- B. Attach pipe bends and loops to anchors.
  1. Steel Anchors: Attach by welding. Comply with ASME B31.9 and ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
  2. Concrete Anchors: Attach by fasteners. Follow fastener manufacturer's written instructions.

### **3.4 SWING CONNECTIONS**

- A. Connect risers and branch connections to mains with at least five pipe fittings, including tee in main.
- B. Connect risers and branch connections to terminal units with at least four pipe fittings, including tee in riser.
- C. Connect mains and branch connections to terminal units with at least four pipe fittings, including tee in main.

### **3.5 ALIGNMENT-GUIDE INSTALLATION**

- A. Install guides on piping adjoining pipe expansion fittings and loops.
- B. Attach guides to pipe and secure to building structure.

- C. Locate and secure guides to maintain alignment with center line of pipe and preclude binding of spider in guide housing.

### 3.6 ANCHOR INSTALLATION

- A. Install anchors at locations to prevent stresses from exceeding those permitted by ASME B31.9 and to prevent transfer of loading and stresses to connected equipment.
- B. Fabricate and install steel anchors by welding steel shapes, plates, and bars to piping and to structure. Comply with ASME B31.9 and AWS D1.1.
- C. Construct concrete anchors of poured-in-place concrete of dimensions indicated and include embedded fasteners.
- D. Install pipe anchors according to expansion-joint manufacturer's written instructions if expansion joints or compensators are indicated.
- E. Use grout to form flat bearing surfaces for expansion fittings, guides, and anchors installed on or in concrete.
- F. Submit details of anchoring methods for approval before installation.

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### 3.7 FLEXIBLE CONNECTORS

- A. Install flexible pipe connectors on pipes connected to equipment supported by vibration isolation.
- B. Install flexible connectors at right angles to displacement.
- C. Install one end immediately adjacent to isolated equipment and anchor other end.
- D. Construct spool pieces to exact size for future insertion of flexible connectors.
- E. Seismic and other building separations which allow differential movement.
  - 1. Packless Type Expansion Joints as specified hereinbefore.
    - a. Suitable for pressure and service.
    - b. Single or dual unit as required.
    - c. Limit stops.
    - d. Not to exceed lateral limits of joints.
  - 2. Factory Assembled Seismic Joints.
    - a. Two flexible metal hoses at right angles to each other:
      - 1) Inner corrugated hose: Stainless steel or bronze.
      - 2) Outer stainless steel or bronze braid.
      - 3) Suitable for service temperature and pressure.





- 4) End connections to suit piping system.
  - b. Movement permitted in three planes.
  - c. Minimum movement required.
3. Ball joints as specified hereinbefore. Arranged to provide seismic movement without exceeding angular limits.

F. Supports and Guides:

1. As detailed on Drawings.
2. Describe method of supports and guides.

**END OF SECTION 23 05 16**

**SECTION 23 05 19  
METERS AND GAGES FOR HVAC 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 SUMMARY**

A. Section Includes:

1. Thermometers.
2. Gages.
3. Test plugs.

B. Related Sections:

- 
1. Division 23 Section "Steam and Condensate Heating Piping" for steam and condensate meters.

**1.3 DEFINITIONS**

- A. CR: Chlorosulfonated polyethylene synthetic rubber.
- B. EPDM: Ethylene-propylene-diene terpolymer rubber.

**1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated; include performance curves and installation instructions.
- B. Shop Drawings: Schedule for thermometers and gages indicating manufacturer's number, scale range, and location for each.
- C. Product Certificates: For each type of thermometer and gage, signed by product manufacturer.



## 1.5 QUALITY ASSURANCE

- A. Comply with applicable portions of American Society of Mechanical Engineers (ASME) and Instrument Society of America (ISA) standards pertaining to construction an installation of meters and gauges.
- B. Design Criteria: The drawings indicate types, sizes, capacities, ranges, profiles, connections, and dimensional requirements of meters and gauges and are based on the specific manufacturer types and models indicated. Meters and gauges having equal performance characteristics by other manufacturers may be considered, provided that deviations do not change the design concept or intended performance as judged by the Commissioner.

## 1.6 EXTRA MATERIALS

- A. Furnish extra materials described below to match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Provide six spare pressure gauges for use with valved pressure gauge outlets.
  - 2. Provide six spare thermometers for use with pressure-temperature test stations.

## PART 2 - PRODUCTS

### 2.1 METAL-CASE, LIQUID-IN-GLASS THERMOMETERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Moeller Instrument Co.
  - 2. Palmer - Wahl Instruments Inc.
  - 3. Taylor Instrument Process Control Div.
  - 4. Terice, H. O. Co.
  - 5. Weiss Instruments, Inc.
  - 6. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.
  - 7. Or approved equal.
- B. Case: Die-cast aluminum or brass, 7 inches long.
- C. Tube: Red or blue reading organic-liquid filled, with magnifying lens.
- D. Tube Background: Satin-faced, nonreflective aluminum with permanently etched scale markings.
- E. Window: Glass or plastic.
- F. Connector: Adjustable type, 180 degrees in vertical plane, 360 degrees in horizontal plane, with locking device.



- G. Stem: Copper-plated steel, aluminum, or brass for thermowell installation and of stem length to suit installation pipe size.
1. Below NPS 4 (DN 100): 3 1/2 inch (88 mm) stem, elbow mounted.
  2. NPS 4 – NPS 8 (DN 100 – DN 200): 3 1/2 inch (88 mm) stem.
  3. NPS 10 – NPS 14 (DN 250 – DN 350): 6 inch (150 mm) stem.
  4. NPS 16 – NPS 20 (DN 400 – DN 500): 9 inch (225 mm) stem.
  5. NPS 24 (DN 600): 12 inch (300 mm) stem.
  6. Over NPS 24 (DN 600): Stem length equal to 50% pipe diameter.
- H. Accuracy: Plus or minus 1 percent of range or plus or minus 1 scale division to maximum of 1.5 percent of range.

## 2.2 PLASTIC-CASE, LIQUID-IN-GLASS THERMOMETERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Ernst Gage Co.
  2. Eugene Ernst Products Co.
  3. Marsh Bellofram.
  4. Miljoco Corp.
  5. Trerice, H. O. Co.
  6. ~~Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.~~
  7. Winters Instruments.
  8. Or approved equal.
- B. Case: Plastic, 7 inches long.
- C. Tube: Red or blue reading, organic-liquid filled, with magnifying lens.
- D. Tube Background: Satin-faced, nonreflective aluminum with permanently etched scale markings.
- E. Window: Glass or plastic.
- F. Connector: Adjustable type, 180 degrees in vertical plane, 360 degrees in horizontal plane, with locking device.
- G. Stem: Metal, for thermowell installation and of stem length to suit installation pipe size:
1. Below NPS (DN 100): 3 1/2 inch (88 mm) stem, elbow mounted.
  2. NPS 4 – NPS 8 (DN 100 – DN 200): 3 1/2 inch (88 mm) stem.
  3. NPS 10 – NPS 14 (DN 250 – DN 350): 6 inch (150 mm) stem.
  4. NPS 16 – NPS 20 (DN 400 – DN 500): 9 inch (225 mm) stem.
  5. NPS 24 (DN 600): 12 inch (300 mm) stem.
  6. Over NPS 24 (DN 600): Stem length equal to 50% pipe diameter.



- H. Accuracy: Plus or minus 1 percent of range or plus or minus 1 scale division to maximum of 1.5 percent of range.

### **2.3 DUCT-TYPE, LIQUID-IN-GLASS THERMOMETERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Miljoco Corp.
  - 2. Palmer - Wahl Instruments Inc.
  - 3. Trerice, H. O. Co.
  - 4. Weiss Instruments, Inc.
  - 5. Or approved equal.
- B. Case: Metal or plastic, 7 inches long.
- C. Tube: Red or blue reading, organic filled, with magnifying lens.
- D. Tube Background: Satin-faced, nonreflective aluminum with permanently etched scale markings.
- E. Window: Glass or plastic.
- F. Connector: Adjustable type, 180 degrees in vertical plane, 360 degrees in horizontal plane, with locking device.
- G. Stem: Metal, for installation in mounting bracket and of length to suit installation.
- H. Mounting Bracket: Flanged fitting for attachment to duct and made to hold thermometer stem.
- I. Accuracy: Plus or minus 1 percent of range or plus or minus 1 scale division to maximum of 1.5 percent of range.

### **2.4 DIRECT-MOUNTING, VAPOR-ACTUATED DIAL THERMOMETERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Ashcroft Commercial Instrument Operations; Dresser Industries; Instrument Div.
  - 2. KOBOLD Instruments, Inc.
  - 3. Marsh Bellofram.
  - 4. Moeller Instrument Co.
  - 5. Taylor Instrument Process Control Div.
  - 6. Trerice, H. O. Co.
  - 7. Weiss Instruments, Inc.
  - 8. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.
  - 9. Or approved equal.



- B. Case: Dry type, drawn steel or cast aluminum, 4-1/2-inch diameter.
  - C. Element: Bourdon tube or other type of pressure element. Brass, bronze bushed, recalibrator type.
  - D. Movement: Mechanical, connecting element and pointer.
  - E. Dial: Satin-faced, nonreflective aluminum with permanently etched scale markings.
  - F. Pointer: Red metal.
  - G. Window: Glass or plastic.
  - H. Ring: Stainless steel.
  - I. Connector: Adjustable type, 180 degrees in vertical plane, 360 degrees in horizontal plane, with locking device.
  - J. Thermal System: Liquid-filled bulb in copper-plated steel, aluminum, or brass stem for thermowell installation and of length to suit installation pipe size:
    - 1. Below NPS 4: 3 1/2 inch stem, elbow mounted.
  - K. Accuracy: Plus or minus 1 percent of range or plus or minus 1 scale division to maximum of 1.5 percent of range.
- 

## **2.5 REMOTE-MOUNTING, VAPOR-ACTUATED DIAL THERMOMETERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. AMETEK, Inc.; U.S. Gauge Div.
  - 2. Ashcroft Commercial Instrument Operations; Dresser Industries; Instrument Div.
  - 3. Marsh Bellofram.
  - 4. Moeller Instrument Co.
  - 5. Palmer - Wahl Instruments Inc.
  - 6. Taylor Instrument Process Control Div.
  - 7. Trerice, H. O. Co.
  - 8. Weiss Instruments, Inc.
  - 9. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.
  - 10. Or approved equal.
- B. Case: Dry type, drawn steel or cast aluminum, 6-inch diameter with holes for panel mounting.
- C. Element: Bourdon tube or other type of pressure element. Brass, bronze brushed, recalibrator type.
- D. Movement: Mechanical, connecting element and pointer.

- E. Dial: Satin-faced, nonreflective aluminum with permanently etched scale markings.
- F. Pointer: Red or other dark-color metal.
- G. Window: Glass or plastic.
- H. Ring: Stainless steel.
- I. Connector: Bottom union type. Connecting tubing shall be double braided bronze armor over copper capillary.
- J. Thermal System: Liquid-filled bulb in copper-plated steel, aluminum, or brass stem for thermowell installation and of length to suit installation pipe size:
  - 1. Below NPS 4: 3 1/2 inch stem, elbow mounted.
  - 2. NPS 4 – NPS 8: 3 1/2 inch stem.
- K. Accuracy: Plus or minus 1 percent of range or plus or minus 1 scale division to maximum of 1.5 percent of range.
- L. For use in locations where temperature sensing bulb is located more than 5 feet.

## 2.6 BIMETALLIC-ACTUATED DIAL THERMOMETERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Ashcroft Commercial Instrument Operations; Dresser Industries; Instrument Div.
  - 2. Ernst Gage Co.
  - 3. Eugene Ernst Products Co.
  - 4. Marsh Bellofram.
  - 5. Moeller Instrument Co.
  - 6. Palmer - Wahl Instruments Inc.
  - 7. Taylor Instrument Process Control Div.
  - 8. Terrice, H. O. Co.
  - 9. Weiss Instruments, Inc.
  - 10. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.
  - 11. Or approved equal.
- B. Description: Direct-mounting, bimetallic-actuated dial thermometers complying with ASME B40.3.
- C. Case: Dry type, stainless steel with 3-inch diameter.
- D. Element: Bimetal coil.
- E. Dial: Satin-faced, nonreflective aluminum with permanently etched scale markings.
- F. Pointer: Red or other dark-color metal.



- G. Window: Glass or plastic.
- H. Ring: Stainless steel.
- I. Connector: Adjustable angle type. Dial may be rotated 360° and then stem turned 180° for readability.
- J. Stem: Metal, for thermowell installation and of length to suit installation pipe size.
  - 1. Below NPS 4: 3 1/2 inch stem, elbow mounted.
- K. Accuracy: Plus or minus 1 percent of range or plus or minus 1 scale division to maximum of 1.5 percent of range.

## 2.7 THERMOWELLS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. AMETEK, Inc.; U.S. Gauge Div.
  - 2. Ashcroft Commercial Instrument Operations; Dresser Industries; Instrument Div.
  - 3. Ernst Gage Co.
  - 4. Marsh Bellofram.
  - 5. Moeller Instrument Div.
  - 6. Palmer - Wahl Instruments Inc.
  - 7. Taylor Instrument Process Control Div.
  - 8. Trerice, H. O. Co.
  - 9. Weiss Instruments, Inc.
  - 10. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.
  - 11. Or approved equal.
- B. Manufacturers: Same as manufacturer of thermometer being used.
- C. Description: Pressure-tight, socket-type metal fitting made for insertion into piping and of type, diameter, and length required to hold thermometer. Provide with separable brass socket connection, cap and chain.

## 2.8 PRESSURE GAGES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. AMETEK, Inc.; U.S. Gauge Div.
  - 2. Ashcroft Commercial Instrument Operations; Dresser Industries; Instrument Div.
  - 3. Ernst Gage Co.
  - 4. Eugene Ernst Products Co.
  - 5. Marsh Bellofram.
  - 6. Moeller Instrument Co.





7. Palmer - Wahl Instruments Inc.
  8. Taylor Instrument Process Control Div.
  9. Trerice, H. O. Co.
  10. Weiss Instruments, Inc.
  11. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.
  12. Or approved equal.
- B. Direct-Mounting, Dial-Type Pressure Gages: Indicating-dial type complying with ASME B40.100.
1. Case: Liquid-filled type, drawn steel or cast aluminum, 6-inch diameter.
  2. Pressure-Element Assembly: Bourdon tube, unless otherwise indicated.
  3. Pressure Connection: Brass, NPS 1/4, bottom-outlet type unless back-outlet type is indicated.
  4. Movement: Mechanical, stainless steel, with link to pressure element and connection to pointer.
  5. Dial: Satin-faced, nonreflective aluminum with permanently etched scale markings.
  6. Pointer: Red or other dark-color metal.
  7. Window: Glass or plastic.
  8. Ring: Stainless steel.
  9. Accuracy: Grade B, plus or minus 2 percent of middle half scale.
  10. Vacuum-Pressure Range: 30-in. Hg of vacuum to 15 psig of pressure.
  11. Range for Fluids under Pressure: Two times operating pressure.
- C. Remote-Mounting, Dial-Type Pressure Gages: ASME B40.100, indicating-dial type.
1. Case: Dry type, drawn steel or cast aluminum, 6-inch diameter with holes for panel mounting.
  2. Pressure-Element Assembly: Bourdon tube, unless otherwise indicated.
  3. Pressure Connection: Brass, NPS 1/4, bottom-outlet type unless back-outlet type is indicated.
  4. Movement: Mechanical, stainless steel, with link to pressure element and connection to pointer.
  5. Dial: Satin-faced, nonreflective aluminum with permanently etched scale markings.
  6. Pointer: Red or other dark-color metal.
  7. Window: Glass or plastic.
  8. Ring: Stainless steel.
  9. Accuracy: Grade B, plus or minus 2 percent of middle half scale.
  10. Vacuum-Pressure Range: 30-in. Hg of vacuum to 15 psig of pressure.
  11. Range for Fluids under Pressure: Two times operating pressure.
  12. For use with sensing lines up to 25 ft in length.
- D. Pressure-Gage Fittings:
1. Valves: NPS 1/4 brass or stainless-steel needle type.
  2. Syphons: NPS 1/4 coil of brass tubing with threaded ends.
  3. Snubbers: ASME B40.5, NPS 1/4 brass bushing with corrosion-resistant, porous-metal disc of material suitable for system fluid and working pressure.



## 2.9 TEST PLUGS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Flow Design, Inc.
  2. MG Piping Products Co.
  3. National Meter, Inc.
  4. Peterson Equipment Co., Inc.
  5. Sisco Manufacturing Co.
  6. Trerice, H. O. Co.
  7. Watts Industries, Inc.; Water Products Div.
  8. Or approved equal.
- B. Description: Corrosion-resistant brass or stainless-steel body with core inserts and gasketed and threaded cap, with extended stem for units to be installed in insulated piping.
- C. Minimum Pressure and Temperature Rating: 500 psig at 200 deg F.
- D. Core Inserts: One or two self-sealing rubber valves.
1. Insert material for air, water, oil, or gas service at 20 to 200 deg F shall be CR.
  2. Insert material for air or water service at minus 30 to plus 275 deg F shall be EPDM.
- ~~E. Test Kit: Furnish one test kit containing one pressure gage and adaptor, one thermometer, and carrying case. Pressure gage, adapter probes, and thermometer sensing elements shall be of diameter to fit test plugs and of length to project into piping.~~
1. Pressure Gage: Small bourdon-tube insertion type with 2- to 3-inch- diameter dial and probe. Dial range shall be 0 to 200 psig.
  2. Low-Range Thermometer: Small bimetallic insertion type with 1- to 2-inch- diameter dial and tapered-end sensing element. Dial ranges shall be 25 to 125 deg F.
  3. High-Range Thermometer: Small bimetallic insertion type with 1- to 2-inch- diameter dial and tapered-end sensing element. Dial ranges shall be 0 to 220 deg F.
  4. Carrying case shall have formed instrument padding.

## 2.10 DIFFERENTIAL PRESSURE INDICATORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. ITT Barton.
  2. Meriam Instrument Co.
  3. Rosemount Engineering Co.
  4. Or approved equal.
- B. Description: Pressure sensor, two pressure sensors, meter and connecting tubing.
- C. Die cast aluminum, 6 inch (152 mm) diameter.

- D. Pressure Connections: Brass, NPS 1/4 (DN 8), bottom outlet type, unless otherwise indicated.
- E. Pressure-Element Assemblies: Stainless steel bellows and torque tube; self-draining.
- F. Movement: Jeweled rotary type with zero and range adjustment screws.
- G. Manifold: Stainless steel with carbon steel tubing.
- H. Scale: Uniform, calibrated in psig (kPa).
- I. Accuracy: 1/2 of 1 percent of full scale range.
- J. Pressure Rating: 500 psig (3450 kPa).

### **PART 3 - EXECUTION**

#### **3.1 THERMOMETER APPLICATIONS**

- A. Install liquid-in-glass thermometers in the following locations:
  - 1. Locations as noted on drawings.
- B. Install dry-case-type, bimetallic-actuated dial thermometers at suction and discharge of each pump.
- C. Provide the following temperature ranges for thermometers:
  - 1. Steam and Condensate: 30 to 300 deg F, with 5-degree scale divisions.
  - 2. Air Ducts: Minus 40 to plus 110 deg F, with 2-degree scale divisions.

#### **3.2 GAGE APPLICATIONS**

- A. Install liquid-filled-case-type pressure gages at suction and discharge of each pump, between shut-off valve and pump. Provide compound type gauge if subject to negative pressure.
- B. Install dry-case-type pressure gauge at steam inlets.
- C. Install liquid-filled-case-type compound type pressure gauges at turbine tank drain outlets.
- D. Install pressure gauges at other locations as noted on the drawings.
- E. Pressure gauge ranges shall be selected so that normal system operating pressures occur at the center portion of the scale range.

#### **3.3 INSTALLATIONS**

- A. Install direct-mounting thermometers and adjust vertical and tilted positions.



- B. Install remote-mounting dial thermometers on panel, with tubing connecting panel and thermometer bulb supported to prevent kinks. Use minimum tubing length.
  - C. Install thermowells with socket extending a minimum of 2 inches into fluid and in vertical position in piping tees where thermometers are indicated.
  - D. Duct Thermometer Support Flanges: Install in wall of duct where duct thermometers are indicated. Attach to duct with screws.
  - E. Install direct-mounting pressure gages in piping tees with pressure gage located on pipe at most readable position.
  - F. Install remote-mounting pressure gages on panel.
  - G. Install needle-valve and snubber fitting in piping for each pressure gage for fluids (except steam).
  - H. Install needle-valve and syphon fitting in piping for each pressure gage for steam.
  - I. Install test plugs in tees in piping.
  - J. Install flow indicators, in accessible positions for easy viewing, in piping systems.
  - K. Assemble and install connections, tubing, and accessories between flow-measuring elements and flowmeters as prescribed by manufacturer's written instructions.
- 
- L. Install permanent indicators on walls or brackets in accessible and readable positions.
  - M. Install connection fittings for attachment to portable indicators in accessible locations.

### **3.4 CONNECTIONS**

- A. Install meters and gages adjacent to machines and equipment to allow service and maintenance for meters, gages, machines, and equipment.

### **3.5 ADJUSTING**

- A. Calibrate meters according to manufacturer's written instructions, after installation.
- B. Adjust faces of meters and gages to proper angle for best visibility.

**END OF SECTION 23 05 19**



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**SECTION 23 05 23**  
**GENERAL-DUTY VALVES FOR HVAC 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 SUMMARY**

A. Section Includes:

1. Angle valves.
2. Ball valves.
3. Butterfly valves.
4. Check valves.
5. Check valves with closure control.
6. Gate valves.
7. Globe valves.
8. Plug valves.
9. Radiator valves.
10. Safety and relief valves.

B. Related Sections:

1. Division 23 HVAC piping Sections for specialty valves applicable to those Sections only.
2. Division 23 Section "Identification for HVAC Piping and Equipment" for valve tags and schedules.

**1.3 DEFINITIONS**

- A. CWP: Cold working pressure.
- B. EPDM: Ethylene propylene copolymer rubber.
- C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
- D. NRS: Nonrising stem.
- E. OS&Y: Outside screw and yoke.
- F. RS: Rising stem.

- G. SWP or WSP: Steam working pressure.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of valve indicated. Manufacturer's data indicating body material, valve design, design pressure and temperature ratings and classification, end connection details, seat materials, trim materials, dimensions, required clearances, and installation instructions.
- B. Valve Schedule: Schedule listing type, make, and model number, size, and service for valves and motorized valve operators.

#### 1.5 QUALITY ASSURANCE

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. Codes and Standards: Provide valves conforming to the requirements of the following:
1. Published Specifications' standards, tests or recommended methods of trade, industry apply to work in this Section.
  2. Comply with all applicable national, state, and local codes.
- C. ASME Compliance:
1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
  2. ASME B31.1 for power piping valves.
  3. ASME B31.9 for building services piping valves.
- D. In addition, comply with all standards or associations as specified herein, including, but not limited to, the following:
1. American National Standards Institute (ANSI).
  2. American Society for Testing and Materials (ASTM).
  3. Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
1. Protect internal parts against rust and corrosion.
  2. Protect threads, flange faces, grooves, and weld ends.
  3. Set angle, gate, and globe valves closed to prevent rattling.
  4. Set ball and plug valves open to minimize exposure of functional surfaces.
  5. Set butterfly valves closed or slightly open.
  6. Block check valves in either closed or open position.
- B. Use the following precautions during storage:



1. Maintain valve end protection: Install temporary end caps and closures and maintain in place until installation.
  2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL REQUIREMENTS FOR VALVES**

- A. Refer to HVAC valve schedule articles for applications of valves.
- B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- C. Valve Sizes: Same as upstream piping unless otherwise indicated.
- D. Valve Actuator Types:
  1. Gear Actuator: For quarter-turn valves NPS 8 and larger.
  2. Handwheel: For valves other than quarter-turn types.
  3. Handlever: For quarter-turn valves NPS 6 and smaller.
  4. Wrench: For plug valves with square heads. Furnish City of New York with 1 wrench for every 5 plug valves, for each size square plug-valve head.
  5. Chainwheel: Device for attachment to valve handwheel, stem, or other actuator; of size and with chain for mounting height, as indicated in the "Valve Installation" Article.
  6. Motorized Operator: Electric motor assembly for installation on valve to open and close valve from a remote location or control center.
- E. Valves in Insulated Piping: With 2-inch stem extensions and the following features:
  1. Gate Valves: With rising stem.
  2. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
  3. Butterfly Valves: With extended neck.
- F. Valve-End Connections:
  1. Flanged: With flanges according to ASME B16.1 for iron valves.
  2. Grooved: With grooves according to AWWA C606.
  3. Solder Joint: With sockets according to ASME B16.18.
  4. Threaded: With threads according to ASME B1.20.1.
  5. Socket Weld: With socket ends according to ASME B16.11.
  6. Butt Weld: With butt weld ends according to ASME B16.25.





- G. Valve Bypass and Drain Connections: MSS SP-45.
  - 1. Bypass Globe Valves: NPS ¾ for NPS 8 gate valves, and NPS 1 for NPS 10 and larger gate valves.
  - 2. Bypass Valves shall be of the same pressure rating as the gate valves.

## 2.2 BRONZE ANGLE VALVES

### A. Class 125, Bronze Angle Valves with Bronze Disc:

- 1. Manufacturers: Subject to compliance with requirements,:
  - a. Hammond Valve.
  - b. Milwaukee Valve Company.
  - c. Or approved equal.
- 2. Description:
  - a. Standard: MSS SP-80, Type 1.
  - b. CWP Rating: 200 psig.
  - c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.
  - d. Ends: Threaded.
  - e. Stem and Disc: Bronze.
  - f. Packing: Asbestos free.
  - g. Handwheel: Malleable iron.

### B. Class 125, Bronze Angle Valves with Nonmetallic Disc:

- 1. Manufacturers: Subject to compliance with requirements,:
  - a. American Valve, Inc.
  - b. NIBCO INC.
  - c. Or approved equal.
- 2. Description:
  - a. Standard: MSS SP-80, Type 2.
  - b. CWP Rating: 200 psig.
  - c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.
  - d. Ends: Threaded.
  - e. Stem: Bronze.
  - f. Disc: PTFE or TFE.
  - g. Packing: Asbestos free.
  - h. Handwheel: Malleable iron.

### C. Class 150, Bronze Angle Valves with Bronze Disc:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



- a. Crane Co.; Crane Valve Group; Stockham Division.
  - b. Hammond Valve Company.
  - c. NIBCO, Inc.
  - d. Powell Valves.
  - e. Or approved equal.
2. Description:
- a. Standard: MSS SP-80, Type 1.
  - b. CWP Rating: 300 psig.
  - c. Body Material: ASTM B 62, bronze with integral seat and union-ring bonnet.
  - d. Ends: Threaded, or solder to match connecting piping.
  - e. Stem and Disc: Bronze.
  - f. Packing: Asbestos free.
  - g. Handwheel: Malleable iron.

D. Class 150, Bronze Angle Valves with Nonmetallic Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Crane Co.; Crane Valve Group; Crane Valves.
  - b. Crane Co.; Crane Valve Group; Jenkins Valves.
  - c. Crane Co.; Crane Valve Group; Stockham Division.
  - d. Hammond Valve.
  - e. Milwaukee Valve Company.
  - f. NIBCO INC.
  - g. Powell Valves.
  - h. Or approved equal.
2. Description:
  - a. Standard: MSS SP-80, Type 2.
  - b. CWP Rating: 300 psig.
  - c. Body Material: ASTM B 62, bronze with integral seat and union-ring bonnet.
  - d. Ends: Threaded or solder to match connecting piping.
  - e. Stem: Bronze.
  - f. Disc: PTFE or TFE.
  - g. Packing: Asbestos free.
  - h. Handwheel: Malleable iron.

**2.3 BRASS BALL VALVES**

A. One-Piece, Reduced-Port, Brass Ball Valves with Brass Trim:

1. Manufacturers: Subject to compliance with requirements,
  - a. Kitz Corporation.
  - b. Or approved equal.



2. Description:
  - a. Standard: MSS SP-110.
  - b. CWP Rating: 400 psig.
  - c. Body Design: One piece.
  - d. Body Material: Forged brass.
  - e. Ends: Threaded.
  - f. Seats: PTFE or TFE.
  - g. Stem: Brass.
  - h. Ball: Chrome-plated brass.
  - i. Port: Reduced.

**B. Two-Piece, Full-Port, Brass Ball Valves with Brass Trim:**

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Crane Co.; Crane Valve Group; Crane Valves.
  - b. Crane Co.; Crane Valve Group; Jenkins Valves.
  - c. DynaQuip Controls.
  - d. Hammond Valve.
  - e. Jamesbury; a subsidiary of Metso Automation.
  - f. Milwaukee Valve Company.
  - g. NIBCO INC.
  - h. Or approved equal.

2. Description:
  - a. Standard: MSS SP-110.
  - b. SWP Rating: 150 psig.
  - c. CWP Rating: 600 psig.
  - d. Body Design: Two piece.
  - e. Body Material: Forged brass.
  - f. Ends: Threaded or solder to match connecting piping.
  - g. Seats: PTFE or TFE.
  - h. Stem: Brass, blow-out proof.
  - i. Ball: Chrome-plated brass.
  - j. Port: Full.

**C. Two-Piece, Full-Port, Brass Ball Valves with Stainless-Steel Trim:**

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Crane Co.; Crane Valve Group; Crane Valves.
  - b. Crane Co.; Crane Valve Group; Jenkins Valves.
  - c. Hammond Valve.
  - d. Jamesbury; a subsidiary of Metso Automation.
  - e. Milwaukee Valve Company.
  - f. Or approved equal.



2. Description:
  - a. Standard: MSS SP-110.
  - b. SWP Rating: 150 psig.
  - c. CWP Rating: 600 psig.
  - d. Body Design: Two piece.
  - e. Body Material: Forged brass.
  - f. Ends: Threaded or solder to match connecting piping.
  - g. Seats: PTFE or TFE.
  - h. Stem: Stainless steel blow-out proof.
  - i. Ball: Stainless steel, vented.
  - j. Port: Full.

D. Two-Piece, Regular-Port, Brass Ball Valves with Brass Trim:

1. Manufacturers: Subject to compliance with requirements,:
  - a. Hammond Valve.
  - b. Jamesbury; a subsidiary of Metso Automation.
  - c. Legend Valve.
  - d. Milwaukee Valve Company.
  - e. Or approved equal.

2. Description:

- 
- a. Standard: MSS SP-110.
  - b. SWP Rating: 150 psig.
  - c. CWP Rating: 600 psig.
  - d. Body Design: Two piece.
  - e. Body Material: Forged brass.
  - f. Ends: Threaded.
  - g. Seats: PTFE or TFE.
  - h. Stem: Brass.
  - i. Ball: Chrome-plated brass.
  - j. Port: Regular.

E. Two-Piece, Regular-Port, Brass Ball Valves with Stainless-Steel Trim:

1. Manufacturers: Subject to compliance with requirements,:
  - a. Jamesbury; a subsidiary of Metso Automation.
  - b. Or approved equal.

2. Description:

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Two piece.
- e. Body Material: Brass or bronze.



- f. Ends: Threaded.
- g. Seats: PTFE or TFE.
- h. Stem: Stainless steel.
- i. Ball: Stainless steel, vented.
- j. Port: Regular.

**F. Three-Piece, Full-Port, Brass Ball Valves with Brass Trim:**

**1. Manufacturers: Subject to compliance with requirements:**

- a. Jomar International, LTD.
- b. Kitz Corporation.
- c. Red-White Valve Corporation.
- d. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
- e. Or approved equal.

**2. Description:**

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Three piece.
- e. Body Material: Forged brass.
- f. Ends: Threaded.
- g. Seats: PTFE or TFE.
- h. Stem: Brass.
- i. Ball: Chrome-plated brass.
- j. Port: Full.

**G. Three-Piece, Full-Port, Brass Ball Valves with Stainless-Steel Trim:**

**1. Manufacturers: Subject to compliance with requirements,:**

- a. Jomar International, LTD.
- b. Kitz Corporation.
- c. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
- d. Or approved equal.

**2. Description:**

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Three piece.
- e. Body Material: Forged brass.
- f. Ends: Threaded.
- g. Seats: PTFE or TFE.
- h. Stem: Stainless steel.
- i. Ball: Stainless steel, vented.
- j. Port: Full.



**2.4 BRONZE BALL VALVES**

**A. One-Piece, Reduced-Port, Bronze Ball Valves with Bronze Trim:**

1. Manufacturers: Subject to compliance with requirements:
  - a. American Valve, Inc.
  - b. Conbraco Industries, Inc.; Apollo Valves.
  - c. NIBCO INC.
  - d. Or approved equal.
  
2. Description:
  - a. Standard: MSS SP-110.
  - b. CWP Rating: 400 psig.
  - c. Body Design: One piece.
  - d. Body Material: Bronze.
  - e. Ends: Threaded.
  - f. Seats: PTFE or TFE.
  - g. Stem: Bronze.
  - h. Ball: Chrome-plated brass.
  - i. Port: Reduced.

**B. One-Piece, Reduced-Port, Bronze Ball Valves with Stainless-Steel Trim:**

1. Manufacturers: Subject to compliance with requirements,:
  - a. Conbraco Industries, Inc.; Apollo Valves.
  - b. NIBCO INC.
  - c. Or approved equal.
  
2. Description:
  - a. Standard: MSS SP-110.
  - b. CWP Rating: 600 psig.
  - c. Body Design: One piece.
  - d. Body Material: Bronze.
  - e. Ends: Threaded.
  - f. Seats: PTFE or TFE.
  - g. Stem: Stainless steel.
  - h. Ball: Stainless steel, vented.
  - i. Port: Reduced.

**C. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim:**

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Conbraco Industries, Inc.; Apollo Valves.
  - b. Crane Co.; Crane Valve Group; Crane Valves.



- c. Hammond Valve.
- d. Milwaukee Valve Company.
- e. NIBCO INC. .
- f. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
- g. Or approved equal.

2. Description:

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Two piece.
- e. Body Material: Bronze.
- f. Ends: Threaded or solder to match connecting piping.
- g. Seats: PTFE or TFE.
- h. Stem: Bronze, blow-out proof.
- i. Ball: Chrome-plated brass.
- j. Port: Full.

D. Two-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Conbraco Industries, Inc.; Apollo Valves.
- b. Crane Co.; Crane Valve Group; Crane Valves.
- c. Hammond Valve.
- d. Milwaukee Valve Company.
- e. NIBCO INC.
- f. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
- g. Or approved equal.

2. Description: .

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Two piece.
- e. Body Material: Bronze.
- f. Ends: Threaded or solder to match connecting piping.
- g. Seats: PTFE or TFE.
- h. Stem: Stainless steel, blow-out proof.
- i. Ball: Stainless steel, vented.
- j. Port: Full.

E. Two-Piece, Regular-Port, Bronze Ball Valves with Bronze Trim:

1. Manufacturers:

- a. American Valve, Inc.



- b. Conbraco Industries, Inc.; Apollo Valves.
- c. Crane Co.; Crane Valve Group; Jenkins Valves.
- d. Crane Co.; Crane Valve Group; Stockham Division.
- e. DynaQuip Controls.
- f. Hammond Valve.
- g. Milwaukee Valve Company.
- h. NIBCO INC.
- i. Or approved equal.

2. Description:

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Two piece.
- e. Body Material: Bronze.
- f. Ends: Threaded.
- g. Seats: PTFE or TFE.
- h. Stem: Bronze.
- i. Ball: Chrome-plated brass.
- j. Port: Regular.

F. Two-Piece, Regular-Port, Bronze Ball Valves with Stainless-Steel Trim:

1. Manufacturers:

- a. Conbraco Industries, Inc.; Apollo Valves.
- b. Crane Co.; Crane Valve Group; Jenkins Valves.
- c. Hammond Valve.
- d. Milwaukee Valve Company.
- e. Or approved equal.

2. Description:

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Two piece.
- e. Body Material: Bronze.
- f. Ends: Threaded.
- g. Seats: PTFE or TFE.
- h. Stem: Stainless steel.
- i. Ball: Stainless steel, vented.
- j. Port: Regular.

G. Three-Piece, Full-Port, Bronze Ball Valves with Bronze Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:





- a. Conbraco Industries, Inc.; Apollo Valves.
- b. Hammond Valve.
- c. Milwaukee Valve Company.
- d. NIBCO INC.
- e. Or approved equal.

2. Description:

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Three piece.
- e. Body Material: Bronze.
- f. Ends: Threaded or solder to match connecting piping.
- g. Seats: PTFE or TFE.
- h. Stem: Bronze, blowout proof.
- i. Ball: Chrome-plated brass.
- j. Port: Full.

H. Three-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Conbraco Industries, Inc.; Apollo Valves.
- b. Hammond Valve.
- c. Milwaukee Valve Company.
- d. NIBCO INC.
- e. Or approved equal.

2. Description:

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Three piece.
- e. Body Material: Bronze.
- f. Ends: Threaded or solder to match connecting piping.
- g. Seats: PTFE or TFE.
- h. Stem: Stainless steel, blowout proof.
- i. Ball: Stainless steel, vented.
- j. Port: Full.

**2.5 HIGH-PERFORMANCE BUTTERFLY VALVES**

A. Class 150, Single-Flange, High-Performance Butterfly Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



- a. Bray Controls; a division of Bray International.
  - b. Crane Co.; Crane Valve Group; Flowseal.
  - c. Crane Co.; Crane Valve Group; Stockham Division.
  - d. DeZurik Water Controls.
  - e. Hammond Valve.
  - f. Jamesbury; a subsidiary of Metso Automation.
  - g. Milwaukee Valve Company.
  - h. NIBCO INC.
  - i. Or approved equal.
2. Description:
- a. Standard: MSS SP-68.
  - b. CWP Rating: 285 psig at 100 deg F.
  - c. Body Design: Lug type; suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
  - d. Body Material: Carbon steel, ductile iron, or stainless steel.
  - e. Seat: Reinforced PTFE.
  - f. Stem: Stainless steel; offset from seat plane.
  - g. Disc: Ductile iron or stainless steel.
  - h. Service: Bidirectional.

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**2.6 BRONZE LIFT CHECK VALVES**

**A. Class 125, Lift Check Valves with Bronze Disc:**

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Crane Co.; Crane Valve Group; Crane Valves.
  - b. Crane Co.; Crane Valve Group; Jenkins Valves.
  - c. Crane Co.; Crane Valve Group; Stockham Division.
  - d. Or approved equal.
2. Description:
  - a. Standard: MSS SP-80, Type 1.
  - b. CWP Rating: 300 psig.
  - c. Body Design: Vertical flow.
  - d. Body Material: ASTM B 61 or ASTM B 62, bronze.
  - e. Ends: Threaded.
  - f. Disc and seat ring, nickel alloy.

**B. Class 125, Lift Check Valves with Nonmetallic Disc:**

1. Manufacturers:
  - a. Hammond Valve.
  - b. Milwaukee Valve Company.



- c. Mueller Steam Specialty; a division of SPX Corporation.
- d. NIBCO INC.
- e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
- f. Or approved equal.

2. Description:

- a. Standard: MSS SP-80, Type 2.
- b. CWP Rating: 200 psig.
- c. Body Design: Vertical flow.
- d. Body Material: ASTM B 61 or ASTM B 62, bronze.
- e. Ends: Threaded.
- f. Disc: NBR, PTFE, or TFE.

**2.7 BRONZE SWING CHECK VALVES**

A. Class 125, Bronze Swing Check Valves with Bronze Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Crane Co.; Crane Valve Group; Crane Valves.
- b. Crane Co.; Crane Valve Group; Jenkins Valves.
- c. Crane Co.; Crane Valve Group; Stockham Division.
- d. Hammond Valve.
- e. Milwaukee Valve Company.
- f. NIBCO INC.
- g. Or approved equal.

2. Description:

- a. Standard: MSS SP-80, Type 3.
- b. CWP Rating: 200 psig.
- c. Body Design: Horizontal flow with screw-in cap.
- d. Body Material: ASTM B 62, bronze.
- e. Ends: Threaded.
- f. Disc: Bronze with stainless steel hinge pin.

B. Class 125, Bronze Swing Check Valves with Nonmetallic Disc:

1. Manufacturers:

- a. Crane Co.; Crane Valve Group; Crane Valves.
- b. Crane Co.; Crane Valve Group; Jenkins Valves.
- c. Crane Co.; Crane Valve Group; Stockham Division.
- d. Hammond Valve.
- e. Milwaukee Valve Company.
- f. NIBCO INC.



- g. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
- h. Or approved equal.

2. Description:

- a. Standard: MSS SP-80, Type 4.
- b. CWP Rating: 200 psig.
- c. Body Design: Horizontal flow.
- d. Body Material: ASTM B 62, bronze.
- e. Ends: Threaded.
- f. Disc: PTFE or TFE.

C. Class 150, Bronze Swing Check Valves with Bronze Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Crane Co.; Crane Valve Group; Crane Valves.
- b. Crane Co.; Crane Valve Group; Jenkins Valves.
- c. Crane Co.; Crane Valve Group; Stockham Division.
- d. Milwaukee Valve Company.
- e. NIBCO INC.
- f. Or approved equal.

2. Description:

- a. Standard: MSS SP-80, Type 3.
- b. CWP Rating: 300 psig.
- c. Body Design: Horizontal flow with screw-in cap.
- d. Body Material: ASTM B 62, bronze.
- e. Ends: Threaded.
- f. Disc: Bronze with stainless steel hinge pin.

D. Class 150, Bronze Swing Check Valves with Nonmetallic Disc:

1. Manufacturers:

- a. Crane Co.; Crane Valve Group; Crane Valves.
- b. Crane Co.; Crane Valve Group; Jenkins Valves.
- c. Hammond Valve.
- d. Milwaukee Valve Company.
- e. NIBCO INC.
- f. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
- g. Or approved equal.

2. Description:

- a. Standard: MSS SP-80, Type 4.
- b. CWP Rating: 300 psig.
- c. Body Design: Horizontal flow.



- d. Body Material: ASTM B 62, bronze.
- e. Ends: Threaded.
- f. Disc: PTFE or TFE.

## 2.8 BRONZE GATE VALVES

### A. Class 125, RS Bronze Gate Valves:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Crane Co.; Crane Valve Group; Crane Valves.
  - b. Crane Co.; Crane Valve Group; Jenkins Valves.
  - c. Crane Co.; Crane Valve Group; Stockham Division.
  - d. Hammond Valve.
  - e. Milwaukee Valve Company.
  - f. NIBCO INC.
  - g. Powell Valves.
  - h. Or approved equal.

### 2. Description:

- a. Standard: MSS SP-80, Type 2.
- b. CWP Rating: 200 psig.
- c. Description: Inside screw, rising stem.
- d. Body Material: ASTM B 62, bronze with integral seat and union bonnet.
- e. Ends: Threaded or solder joint.
- f. Stem: Bronze.
- g. Disc: Solid wedge; bronze.
- h. Packing: Asbestos free.
- i. Handwheel: Malleable iron.

### B. Class 150, RS Bronze Gate Valves:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Crane Co.; Crane Valve Group; Crane Valves.
  - b. Crane Co.; Crane Valve Group; Stockham Division.
  - c. Hammond Valve.
  - d. Milwaukee Valve Company.
  - e. NIBCO INC.
  - f. Powell Valves.
  - g. Or approved equal.

### 2. Description:

- a. Standard: MSS SP-80, Type 2.



- b. CWP Rating: 300 psig.
- c. Description: Inside screw, rising stem.
- d. Body Material: ASTM B 62, bronze with integral seat and union bonnet.
- e. Ends: Threaded.
- f. Stem: Bronze.
- g. Disc: Solid wedge; bronze.
- h. Packing: Asbestos free.
- i. Handwheel: Malleable iron.

## 2.9 LUBRICATED PLUG VALVES

### A. Class 125, Regular, Screwed-Gland, Lubricated Plug Valves with Threaded Ends:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Nordstrom Valves, Inc.
  - b. Or approved equal.
- 2. Description:
  - a. Standard: MSS SP-78, Type II.
  - b. ~~CWP Rating: 200 psig.~~
  - c. Body Material: ASTM A 48/A 48M or ASTM A 126, cast iron with lubrication-sealing system.
  - d. Pattern: Regular.
  - e. Tapered Plug: Cast iron or bronze with sealant groove.

### B. Class 125, Regular Bolted Cover-Gland, Lubricated Plug Valves with Flanged Ends:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Nordstrom Valves, Inc.
  - b. Or approved equal.
- 2. Description:
  - a. Standard: MSS SP-78, Type II.
  - b. NPS 2-1/2 to NPS 12, CWP Rating: 200 psig.
  - c. NPS 14 to NPS 24, CWP Rating: 150 psig.
  - d. Body Material: ASTM A 48/A 48M or ASTM A 126, cast iron with lubrication-sealing system.
  - e. Pattern: Regular.
  - f. Tapered Plug: Cast iron or bronze with sealant groove.

### C. Class 125, Cylindrical, Lubricated Plug Valves with Threaded Ends:



1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Homestead Valve; a division of Olson Technologies, Inc.
  - b. Milliken Valve Company.
  - c. R & M Energy Systems; a unit of Robbins & Myers, Inc.
  - d. Or approved equal.
  
2. Description:
  - a. Standard: MSS SP-78, Type IV.
  - b. NPS 2-1/2 to NPS 12, CWP Rating: 200 psig.
  - c. NPS 14 to NPS 24, CWP Rating: 150 psig.
  - d. Body Material: ASTM A 48/A 48M or ASTM A 126, cast iron with lubrication-sealing system.
  - e. Pattern: Venturi
  - f. Plug: Cast iron or bronze with sealant groove.

**D. Class 125, Cylindrical, Lubricated Plug Valves with Flanged Ends:**

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Homestead Valve; a division of Olson Technologies, Inc.
  - b. Milliken Valve Company.
  - c. R & M Energy Systems; a unit of Robbins & Myers, Inc.
  - d. Or approved equal.
  
2. Description:
  - a. Standard: MSS SP-78, Type IV.
  - b. NPS 2-1/2 to NPS 12, CWP Rating: 200 psig.
  - c. NPS 14 to NPS 24, CWP Rating: 150 psig.
  - d. Body Material: ASTM A 48/A 48M or ASTM A 126, cast iron with lubrication-sealing system.
  - e. Pattern: Venturi
  - f. Plug: Cast iron or bronze with sealant groove.

**2.10 ECCENTRIC PLUG VALVES**

**A. 175 CWP, Eccentric Plug Valves with Resilient Seating.**

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Clow Valve Co.; a division of McWane, Inc.
  - b. DeZurik Water Controls.
  - c. Homestead Valve; a division of Olson Technologies, Inc.
  - d. Or approved equal.



2. Description:
  - a. Standard: MSS SP-108.
  - b. CWP Rating: 175 psig minimum.
  - c. Body and Plug: ASTM A 48/A 48M, gray iron; ASTM A 126, gray iron; or ASTM A 536, ductile iron.
  - d. Eccentric Plug: EPDM coated.
  - e. Bearings: Oil-impregnated bronze or stainless steel.
  - f. Ends: Flanged or threaded.
  - g. Stem-Seal Packing: Asbestos free.
  - h. Plug, Resilient-Seating Material: Suitable for potable-water service unless otherwise indicated.
  
- B. Operator:
  1. Lever with memory stop: Smaller than NPS 8.
  2. Gear Operator: NPS 8 and larger.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
  
- B. Test operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
  
- C. Examine threads on valve and mating pipe for form and cleanliness.
  
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
  
- E. Test operate temperature and pressure relief valves at least three times.
  
- F. Do not attempt to repair defective valves; replace with new valves.

#### **3.2 VALVE INSTALLATION**

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
  
- B. Locate valves for easy access and provide separate support where necessary.
  
- C. Install valves in horizontal piping with stem upright or horizontal, not inverted.





- D. Install valves in position to allow full stem movement and locate wheel handles to clear obstructions with hand.
- E. Install check valves for proper direction of flow and as follows:
  - 1. Swing Check Valves: In horizontal position with hinge pin level.
  - 2. Center-Guided Silent Check Valves: In horizontal or vertical position, between flanges.
  - 3. Lift Check Valves: With stem upright and plumb.
- F. Install valves with cast directional arrows in direction of flow.
- G. Install globe valves to close against pressure.
- H. Install valves to be removable without separating or lifting piping in which installed.
- I. Where valves abut flanged strainers or similar devices, position valve with respect to device so as to permit removal of bolts.
- J. Locate equipment shut-off valves to be accessible without climbing over equipment.
- K. Piping adjacent to lugged valves shall be flanged and removable while valve is in use.
- L. Install shut-off valves at inlets and outlets of equipment, on branch connections to mains, at the base of each riser, and elsewhere as noted.
- M. Install drain valves at main shut-off valves, at low points of piping, at bases of vertical risers, and at equipment.
- N. Pressure class for valves for pressure reducing valve stations shall be based on steam pressure at inlet to station.
- O. Install gate valves or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- P. Install globe or ball valves for throttling, by-pass, or manual flow control service.

### **3.3 ADJUSTING**

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

### **3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS**

- A. If valve applications are not indicated, use the following:
  - 1. Shutoff Service: Ball, butterfly, gate, or plug valves.
  - 2. Butterfly Valve Dead-End Service: Single-flange (lug) type.
  - 3. Throttling and By-Pass Service Except Steam: Globe valves.
  - 4. Throttling and By-Pass Service, Steam: Globe valves.



5. Pump-Discharge Check Valves: Center-guided silent check valves.
  6. Lubricated plug valves may be used for throttling service, except steam. Non-lubricated plug valves may be used only when shut-off or isolating valves are also provided.
  7. Install drain valves, with cap and chain, as noted.
    - a. For steam service use 3/4 inch gate valves.
    - b. All other applications use 3/4 inch ball valves.
  8. Provide 1/4 inch ball valve as gauge cacks, except for steam service use needle globe valves.
- B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.
- C. Select valves, with the following end connections:
1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.

### **3.5 LOW-PRESSURE STEAM VALVE SCHEDULE (15 PSIG OR LESS)**

A. Pipe NPS 2 and Smaller:

1. ~~Bronze Angle Valves: Class 125, bronze disc.~~
2. Ball Valves: Two piece, full port, brass with stainless-steel trim.
3. Bronze Swing Check Valves: Class 125, bronze disc.
4. Bronze Gate Valves: Class 125, RS.
5. Bronze Globe Valves: Class 125, bronze disc.

### **3.6 STEAM-CONDENSATE VALVE SCHEDULE**

A. Pipe NPS 2 and Smaller:

1. Bronze Angle Valves: Class 150, bronze disc.
2. Ball Valves: Two piece, full port, with stainless-steel trim.
3. Bronze Swing Check Valves: Class 150, bronze disc.
4. Bronze Gate Valves: Class 150, RS.
5. Bronze Globe Valves: Class 150, bronze disc.

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**SECTION 23 05 29  
HANGERS AND SUPPORTS FOR HVAC 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 SUMMARY**

- A. This Section includes the following hangers and supports for HVAC system piping and equipment:

1. Steel pipe hangers and supports.
2. Trapeze pipe hangers.
3. Metal framing systems.
4. Thermal-hanger shield inserts.
5. Fastener-systems.
6. Pipe stands.
7. Equipment supports.

- B. Related Sections include the following:

1. Division 05 Section "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
2. Division 23 Section "Expansion Fittings and Loops for HVAC Piping" for pipe guides and anchors.
3. Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment" for vibration isolation devices.
4. Division 23 Section(s) "Metal Ducts" for duct hangers and supports.

**1.3 DEFINITIONS**

- A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.
- B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."



#### **1.4 PERFORMANCE REQUIREMENTS**

- A. Supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
- B. Equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- C. Seismic-restraint hangers and supports for piping and equipment.
- D. Where thermal movement in pipe line occurs, hanger assembly shall support pipe line in all operating conditions.

#### **1.5 SUBMITTALS**

- A. Product Data: Manufacturer's catalog data, including load ratings, dimensions and installation instructions, for the following:
  - 1. Steel pipe hangers and supports.
  - 2. Thermal-hanger shield inserts.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
  - 1. Trapeze pipe hangers. Include Product Data for components.
  - 2. Metal framing systems. Include Product Data for components.
  - 3. Pipe stands. Include Product Data for components.
  - 4. Equipment supports.
- C. Welding certificates.

#### **1.6 QUALITY ASSURANCE**

- A. Welding: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1, "Structural Welding Code--Steel."
  - 2. AWS D1.3, "Structural Welding Code--Sheet Steel."
  - 3. AWS D1.4, "Structural Welding Code--Reinforcing Steel."
  - 4. ASME Boiler and Pressure Vessel Code: Section IX.
- B. Codes and Standards: Provide pipe hangers and supports conforming to the following:
  - 1. American Society of Mechanical Engineering:
    - a. B31.1 Power Piping.
    - b. B31.5 Refrigeration Piping and Heat Transfer Components.
    - c. B31.9 Building Services Piping.



2. American Society for Testing and Materials (ASTM):
  - a. A36 Standard Specification for Carbon Structural Steel.
  - b. A123 Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
  - c. A307 Standard Specification for Carbon Steel Bolts and Studs, 60000 PSI Tensile Strength.
  - d. A575 Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades.
  - e. F708 Standard Practice for Design and Installation of Rigid Pipe.
3. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS):
  - a. SP58 Pipe Hangers and Supports - Materials, Design And Manufacture.
  - b. SP69 Pipe Hangers And Supports – Selection And Application.
  - c. SP89 Pipe Hangers And Supports – Fabrication And Installation Practices.
  - d. SP90 Guidelines on Terminology for Pipe Hangers and Supports.

## **PART 2 - PRODUCTS**

### **2.1 STEEL PIPE HANGERS AND SUPPORTS**

~~A. Description:—MSS-SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.~~

B. Manufacturers:

1. AAA Technology & Specialties Co., Inc.
2. Bergen-Power Pipe Supports.
3. B-Line Systems, Inc.; a division of Cooper Industries.
4. Carpenter & Paterson, Inc.
5. Empire Industries, Inc.
6. ERICO/Michigan Hanger Co.
7. Globe Pipe Hanger Products, Inc.
8. Grinnell Corp.
9. GS Metals Corp.
10. National Pipe Hanger Corporation.
11. PHD Manufacturing, Inc.
12. PHS Industries, Inc.
13. Piping Technology & Products, Inc.
14. Tolco Inc.
15. Or approved equal.

C. Galvanized, Metallic Coatings: Pregalvanized or hot dipped.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.



- E. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

## **2.2 TRAPEZE PIPE HANGERS**

- A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural-steel shapes with MSS SP-58 hanger rods, nuts, saddles, and U-bolts.

## **2.3 METAL FRAMING SYSTEMS**

- A. Description: MFMA-3, shop- or field-fabricated pipe-support assembly made of steel channels and other components.

- B. Manufacturers:

1. B-Line Systems, Inc.; a division of Cooper Industries.
2. ERICO/Michigan Hanger Co.; ERISTRUT Div.
3. GS Metals Corp.
4. Power-Strut Div.; Tyco International, Ltd.
5. Thomas & Betts Corporation.
6. Tolco Inc.
7. Unistrut Corp.; Tyco International, Ltd.
8. Or approved equal.

- C. Coatings: Manufacturer's standard finish, unless bare metal surfaces are indicated.

- D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

## **2.4 THERMAL-HANGER SHIELD INSERTS**

- A. Description: 100-psig- minimum, compressive-strength insulation insert encased in sheet metal shield.

- B. Manufacturers:

1. Carpenter & Paterson, Inc.
2. ERICO/Michigan Hanger Co.
3. PHS Industries, Inc.
4. Pipe Shields, Inc.
5. Rilco Manufacturing Company, Inc.
5. Value Engineered Products, Inc.
6. Or approved equal.

- C. Insulation-Insert Material for Cold Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate.



- D. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate.
- E. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- F. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- G. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

## **2.5 FASTENER SYSTEMS**

- A. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated, stainless steel, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
  - 1. Manufacturers:
    - a. B-Line Systems, Inc.; a division of Cooper Industries.
    - b. Empire Industries, Inc.
    - c. Hilti, Inc.
    - d. ITW Ramset/Red Head.
    - e. MKT Fastening, LLC.
    - f. Powers-Fasteners.
    - g. Or approved equal.

## **2.6 PIPE STAND FABRICATION**

- A. Pipe Stands, General: Shop or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.
- B. Compact Pipe Stand: One-piece plastic unit with integral-rod-roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
  - 1. Manufacturers:
    - a. ERICO/Michigan Hanger Co.
    - b. MIRO Industries.
    - c. Anvil International
- C. Low-Type, Single-Pipe Stand: One-piece plastic base unit with plastic roller, for roof installation without membrane penetration.
  - 1. Manufacturers:
    - a. ERICO/Michigan Hanger Co.
    - b. MIRO Industries.
    - c. Portable Pipe Hangers.





- d. Or approved equal.
- D. High-Type, Single-Pipe Stand: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.
  - 1. Manufacturers:
    - a. ERICO/Michigan Hanger Co.
    - b. MIRO Industries.
    - c. Portable Pipe Hangers.
    - d. Or approved equal.
  - 2. Base: Plastic.
  - 3. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuous-thread rods.
  - 4. Horizontal Member: Cadmium-plated-steel or stainless-steel rod with plastic or stainless-steel, roller-type pipe support.
- E. High-Type, Multiple-Pipe Stand: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.
  - 1. Manufacturers:
    - a. Portable Pipe Hangers or approved equal.
  - 2. Bases: One or more plastic.
  - 3. Vertical Members: Two or more protective-coated-steel channels.
  - 4. Horizontal Member: Protective-coated-steel channel.
  - 5. Pipe Supports: Galvanized-steel, clevis-type pipe hangers.
- F. Curb-Mounting-Type Pipe Stands: Shop- or field-fabricated pipe support made from structural-steel shape, continuous-thread rods, and rollers for mounting on permanent stationary roof curb.

## **2.7 EQUIPMENT SUPPORTS**

- A. Description: Welded, shop- or field-fabricated equipment support made from structural-steel shapes.

## **2.8 MISCELLANEOUS MATERIALS**

- A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
  - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
  - 2. Design Mix: 5000-psi, 28-day compressive strength.



- C. Hanger Rods: ASTM A 575, hot rolled Steel, ANSI B1.1 threads, continuously threaded, with electro-galvanized finish.
- D. Steel Pipe Columns: ASTM A 53, Schedule 40, black steel.
- E. Bolts and Nuts: ASTM A 307, Grade A, regular hexagon-head type.

### **PART 3 - EXECUTION**

#### **3.1 HANGER AND SUPPORT INSTALLATION**

- A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- B. Metal Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.
  - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
  - 2. Field-fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D1.1.
- C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.
- D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- E. Fastener System Installation:
  - 1. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- F. Pipe Stand Installation:
  - 1. Pipe Stand Types except Curb-Mounting Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
  - 2. Curb-Mounting-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb.
- G. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
- H. Equipment Support Installation: Fabricate from welded-structural-steel shapes.



- I. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- J. Install lateral bracing with pipe hangers and supports to prevent swaying.
- K. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping.
- L. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- M. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.1 (for power piping) and ASME B31.9 (for building services piping) are not exceeded.
- N. Insulated Piping: Comply with the following:
  1. Attach clamps and spacers to piping.
    - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
    - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
    - c. Do not exceed pipe stress limits according to ASME B31.1 for power piping and ASME B31.9 for building services piping.
  2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
    - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
  3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
    - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
  4. Shield Dimensions for Pipe: Not less than the following:
    - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
    - b. NPS 4: 12 inches long and 0.06 inch thick.
    - c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
    - d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
  5. Pipes NPS 8: Include wood or reinforced calcium-silicate insulation.
  6. Inserts of length at least as long as protective shield.
  7. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.



- O. Miscellaneous Steel: Provide miscellaneous framing, steel members, beams, brackets, etc. for support of work in Division, unless specifically included in other Divisions.

### **3.2 EQUIPMENT SUPPORTS**

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make smooth bearing surface.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

### **3.3 METAL FABRICATIONS**

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1M procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:
  - 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 welding flux immediately.
  - 4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

### **3.4 ADJUSTING**

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

### **3.5 PAINTING**

- A. Touch Up: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 09 painting Sections.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

### 3.6 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports, metal trapeze pipe hangers, and metal framing systems, and attachments for general service applications.
- F. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.
- G. Use thermal-hanger shield inserts for insulated piping and tubing.
- H. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
  - 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS ¾ and larger.
  - 2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of 300 deg F pipes, NPS 4 and larger, requiring up to 4 inches of insulation.
  - 3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes, NPS ¾ to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
  - 4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes, NPS 1/2 and larger, if no insulation is required.
  - 5. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
  - 6. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated stationary pipes, NPS ¾ to NPS 8.
  - 7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
  - 8. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
  - 9. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
  - 10. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 8.
  - 11. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 3.
  - 12. U-Bolts (MSS Type 24): For support of heavy pipes, NPS 1/2 and larger.
  - 13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.



14. Single Pipe Rolls (MSS Type 41): For suspension of pipes, NPS 1 and larger, from 2 rods if longitudinal movement caused by expansion and contraction might occur.
- I. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
  1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 and larger.
  2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 and larger, if longer ends are required for riser clamps.
- J. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
  1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
  2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
  3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
  4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
  5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.
- K. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
  1. ~~Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.~~
  2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
  3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- L. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
  1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
  2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
  3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.
  4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
  5. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
    - a. Horizontal (MSS Type 54): Mounted horizontally.
    - b. Vertical (MSS Type 55): Mounted vertically.
    - c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.



- M. Comply with MSS SP-69 for trapeze pipe hanger selections and applications that are not specified in piping system Sections.
- N. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.
- O. Use mechanical-expansion anchors instead of building attachments where required in concrete construction.
- P. Supports of wire rope, wood, chain, strap perforated bar or any other makeshift device shall not be permitted.

**END OF SECTION 23 05 29**



**SECTION 23 05 48  
VIBRATION AND SEISMIC CONTROLS FOR HVAC 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 SUMMARY**

- A. This Section includes the following:
1. Isolation pads.
  2. Isolation mounts.
  3. Freestanding and restrained spring isolators.
  4. Housed spring mounts.
  5. Spring hangers.
  6. Spring hangers with vertical-limit stops.
  7. Pipe riser resilient supports.
  8. Resilient pipe guides.
  9. Restrained vibration isolation roof-curb rails.
  10. Seismic snubbers.
  11. Restraining braces and cables.

**1.3 DEFINITIONS**

- A. IBC: International Building Code.
- B. ICC-ES: ICC-Evaluation Service.
- C. ASHRAE: American Society of Heating, Refrigerating and Air-Conditioning Engineers.
- D. Life Safety and Hazardous Components - All systems involved with fire protection including sprinkler piping, fire pumps, jockey pumps, fire pump control panels, service water supply piping, water tanks, fire dampers and smoke exhaust systems and mechanical, electrical, plumbing or fire protection systems that support the operation of or are connected to emergency power equipment including all lighting, generators, transfer switches and transformers. Hazardous components include any pipe, vessel, duct or piece of equipment that contains flammable or toxic material.
- E. Component – a part or element of an architectural, mechanical, electrical or structural system.





- F. Positive Attachment – a cast in place anchor, a drill in wedge anchor, a chemical anchor, a double sided beam clamp loaded perpendicular to the beam or a welded or bolted connection to the structure.

#### **1.4 PERFORMANCE REQUIREMENTS**

- A. Wind-Restraint Loading:
  - 1. Values as specified as per ASCE/SEI and as identified by a Licensed Engineer in NYS.
- B. Seismic-Restraint Loading:
  - 1. Values as specified as per ASCE/SEI and as identified by a Licensed Engineer in NYS.

#### **1.5 SUBMITTALS**

- A. Product Data: For the following:
  - 1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
  - 2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of seismic-restraint component used.
    - a. Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by an evaluation service member of ICC-ES.
    - b. Annotate to indicate application of each product submitted and compliance with requirements.
  - 3. Interlocking Snubbers: Include ratings for horizontal, vertical, and combined loads.
  - 4. Catalog cuts and data sheets on specific vibration isolators and restraints to be utilized showing compliance with specifications.
  - 5. An itemized list showing the items of equipment or piping to be isolated, the isolator type and model number selected, isolator loading and deflection, and reference to specific drawings showing base and construction where applicable.
  - 6. Seismic restraint calculations and structural or civil engineers stamp verifying design and calculations for seismic restraining system used.
  - 7. Drawings showing equipment base construction for each piece of equipment, including dimensions, structural member sizes and support point locations.
  - 8. Drawing showing methods of suspension, support guides for piping.
  - 9. Drawings showing methods for isolation of pipes piercing walls and slabs.
  - 10. Concrete and steel details for bases including anchor bolt locations.
  - 11. Number and location of seismic restraints and anchors for each piece of equipment.
  - 12. Specific details of restraints including anchor bolts for mounting and maximum loading at each location, for each piece of equipment and or pipe.



- B. For vibration isolation and seismic-restraint details indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified and licensed in the State of New York professional engineer responsible for their preparation.
1. Design Calculations: Calculate static and dynamic loading due to equipment weight and operation, seismic forces required to select vibration isolators, seismic restraints, and for designing vibration isolation bases.
    - a. Coordinate design calculations with wind load calculations required for equipment mounted outdoors. Comply with requirements in other Division 23 Sections for equipment mounted outdoors.
  2. Riser Supports: Include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on building structure, spring deflection changes, and seismic loads. Include certification that riser system has been examined for excessive stress and that none will exist.
  3. Vibration Isolation Base Details: Detail overall dimensions, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, base weights, equipment static loads, power transmission, component misalignment, and cantilever loads.
  4. Seismic-Restraint Details:
    - a. Design Analysis: To support selection and arrangement of seismic restraints. Include calculations of combined tensile and shear loads.
    - b. Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events. Indicate association with vibration isolation devices.
    - c. Coordinate seismic-restraint and vibration isolation details with wind-restraint details required for equipment mounted outdoors. Comply with requirements in other sections for equipment mounted outdoors.
    - d. Preapproval and Evaluation Documentation: By an evaluation service member of ICC-ES, showing maximum ratings of restraint items and the basis for approval (tests or calculations).
- C. Coordination Drawings: Show coordination of seismic bracing for HVAC piping and equipment with other systems and equipment in the vicinity, including other supports and seismic restraints.
- D. Welding certificates.
- E. Qualification Data: For professional and licensed in the State of New York engineer and testing agency.
- F. Air-Mounting System Performance Certification: Include natural frequency, load, and damping test data performed by an independent agency.
- G. Field quality-control test reports.

- H. Operation and Maintenance Data: For air-mounting systems to include in operation and maintenance manuals.

## 1.6 QUALITY ASSURANCE

- A. 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.
- B. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.
- C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- D. Seismic-restraint devices shall have horizontal and vertical load testing and analysis and shall bear anchorage preapproval OPA number from OSHPD, preapproval by ICC-ES, or preapproval by another agency acceptable, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are not available, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional and licensed in the State of New York engineer.
- E. It is the objective of this Specification to provide the necessary design for the seismic restraint and control of excessive noise and vibration in the buildings due to the operation of machinery or equipment, and/or due to interconnected piping. The installation of all vibration isolation units, and associated hangers and bases, shall be under the direct supervision of the vibration isolation manufacturer's representatives.
  - 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. Load versus deflection curves shall be furnished by the manufacturer, and must be linear over a deflection range of not less than 50 percent above the design deflection.
  - 3. The theoretical 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 whole by more than plus or minus 10 percent.
  - 4. All neoprene mountings shall have a shore hardness of 30 to 60 plus or minus 5, after minimum aging of 20 days or corresponding oven aging.

## 1.7 MANUFACTURER RESPONSIBILITIES

- A. Manufacturer of vibration isolation and seismic control equipment shall have the following responsibilities:



1. Determine vibration isolation and seismic restraint sizes and locations.
2. Provide piping and equipment isolation systems and seismic restraints as scheduled or specified.
3. Guarantee specified isolation system deflection.
4. Provide installation instructions, drawings and field supervision to assure proper installation and performance.
5. Purchased and/or fabricated equipment must be designed to safely accept external forces of one-half "G" load in any direction for all rigidly and resiliently supported equipment and piping without failure and permanent displacement of the equipment. Life safety equipment including, but not limited to, fire pumps, sprinkler piping, and machinery must be capable of safely accepting external forces up to one "G" load in any direction without permanent displacement of the supported equipment. 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 accelerations are certified in writing by equipment manufacturer and stamped by a licensed in the State of New York civil or structural engineer.

## 1.8 CONTRACTOR RESPONSIBILITIES

- A. The Contractor performing the work on equipment in the section shall have the following responsibilities.

1. Identify the components that are part of the Quality Assurance Plan.
2. All electrical components for standby or emergency power systems.
3. All flammable, combustible and highly toxic piping and their associated mechanical systems.
4. All ductwork containing hazardous materials.
5. All equipment using combustible or toxic energy sources.
6. List control procedures within the contractor's organization including methods and frequency of reporting and their distribution.
7. Purchased and/or fabricated equipment must be designed to safely accept external forces of load in any direction for all rigidly and resiliently supported life safety or hazardous equipment components, piping and ductwork without failure and permanent displacement of the equipment.

## PART 2 - PRODUCTS

### 2.1 VIBRATION ISOLATORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Amber/Booth Company, Inc.
2. Kinetics Noise Control.
3. Mason Industries.
4. Vibration Eliminator Co., Inc.
5. Vibration Mountings & Controls, Inc.



6. Or approved equal.

B. Vibration Isolator Types:

1. Type A: Spring isolators shall incorporate the following:

- a. Minimum diameter of 0.8 of the loaded operating height.
- b. Corrosion resistance where exposed to corrosive environment with:
  - 1) Springs cadmium plated or electro-galvanized.
  - 2) Hardware cadmium plated.
  - 3) All other metal parts hot-dip galvanized.
- c. Reserve deflection (from loaded to solid height) of 50 percent of rated deflection.
- d. Minimum 1/4 inch thick neoprene acoustical base pad on underside, unless designated otherwise.
- e. Designed and installed so that ends of springs remain parallel and all springs installed with adjustment bolts.
- f. Non-resonant with equipment forcing frequencies or support structure natural frequencies.
- g. Spring isolators to be Mason Type SLF or a similar product as manufactured by one of the manufacturers listed above.
- h. This isolator must be accompanied by seismic isolator Type II.

2. Type B: Spring isolators shall be same as Type A, except:

- a. Provide built-in vertical limit stops with minimum 1/4 inch clearance under normal operation.
- b. Tapped holes in top plate for bolting to equipment when subject to wind load.
- c. Capable of supporting equipment at a fixed elevation during equipment erection. Installed and operating heights shall be identical.
- d. Adjustable and removable spring pack with separate neoprene pad isolation.
- e. Housing shall be designed to accept 1 G of acceleration.
- f. Mason Type SLR or a similar product as manufactured by one of the manufacturers listed above.

3. Type C: Spring hanger rod isolators shall 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. Requires seismic restraint Type III.
- d. Mason Type HS or a similar product as manufactured by one of the manufacturers listed above.

4. Type E: Elastomer hanger rod isolators shall be incorporate the following:

- a. Molded unit type neoprene element with projecting bushing lining rod clearance hole.
- b. Neoprene element shall be minimum 1-3/4 inch thick.



- c. Steel retainer box encasing neoprene mounting.
  - d. Clearance between mounting hanger rod and neoprene bushing shall be minimum of 1/8 inch.
  - e. Requires seismic restraint Type III.
  - f. Mason Type HD or a similar product as manufactured by one of the manufacturers listed above.
5. Type F: Combination spring/elastomer hanger rod isolators to incorporate the following:
  - a. Spring and neoprene isolator elements in a steel box retainer. Neoprene of double deflection type. Single deflection is unacceptable. Spring seated in a neoprene cup with extended rod bushing.
  - b. Characteristics of spring and neoprene as describe in Type A and Type E isolators.
  - c. Requires seismic restraint Type III.
  - d. Mason Type 30N or a similar product as manufactured by one of the manufacturers listed above.
6. Type G: Pad type elastomer mountings to incorporate the following:
  - a. 0.750 inch minimum thickness.
  - b. 50 psi maximum loading.
  - c. Ribbed or waffled design.
  - d. 0.10 inch deflection per pad thickness.
  - e. 1/16 inch galvanized steel plate between multiple layers or pad thickness.
  - f. Suitable bearing plate to distribute load.
  - g. Mason Type Super W or a similar product as manufactured by one of the manufacturers listed above.
7. Type H: Pad type elastomer mountings to incorporate the following:
  - a. Laminate canvas duck and neoprene.
  - b. Maximum loading 1000 psi.
  - c. Suitable bearing plate to distribute load.
  - d. Minimum thickness, 1/2 inch.
  - e. Mason Type HL or a similar product as manufactured by one of the manufacturers listed above.
8. Type J: Rail type spring isolators:
  - a. Rail type spring isolators shall provide steel members of sufficient strength to prevent flexure with equipment operation.
  - b. Springs shall be the same as Type A with seismic restraint Type II or seismic restraint Type I isolation.
  - c. Mason Type ICS or a similar product as manufactured by one of the manufacturers listed above.
9. Type K: Pipe anchors:
  - a. Vibration isolator manufacturer shall provide an all directional acoustical pipe anchor, consisting of a telescopic arrangement of two sizes of steel tubing



separated by a minimum half inch thickness of heavy duty neoprene and duck or neoprene isolation material.

- b. Vertical restraints shall be provided by similar material arranged to prevent vertical travel in either direction.
- c. Allowable loads on the isolation material shall not exceed 500 psi and the design shall be balanced for equal resistance in any direction.
- d. Mason Type ADA or a similar product as manufactured by one of the manufacturers listed above.

## 2.2 AIR-MOUNTING SYSTEMS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Kinetics Noise Control.
2. Mason Industries.
3. Vibration Eliminator Co., Inc.
4. Or approved equal.

B. Air Mounts: Freestanding, single or multiple, compressed-air bellows.

1. Assembly: Upper and lower steel sections connected by a replaceable, flexible, nylon-reinforced neoprene bellows.
2. Maximum Natural Frequency: 3 Hz.
3. Operating Pressure Range: 25 to 100 psig.
4. Burst Pressure: At least three times manufacturer's published maximum operating pressure.
5. Leveling Valves: Minimum of 3 required to maintain leveling within plus or minus 1/8 inch.

C. Restrained Air Mounts: Housed compressed-air bellows.

1. Assembly: Upper and lower steel sections connected by a replaceable, flexible, nylon-reinforced neoprene bellows and spring, with angle-iron frame having vertical-limit stops and channel-section top with leveling adjustment and attachment screws.
2. Maximum Natural Frequency: 3 Hz.
3. Operating Pressure Range: 25 to 100 psig.
4. Burst Pressure: At least three times manufacturer's published maximum operating pressure.
5. Leveling Valves: Minimum of 3 required to maintain leveling within plus or minus 1/8 inch.

## 2.3 VIBRATION ISOLATION EQUIPMENT BASES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Amber/Booth Company, Inc.



2. Kinetics Noise Control.
3. Mason Industries.
4. Vibration Eliminator Co., Inc.
5. Vibration Mountings & Controls, Inc.
6. Or approved equal.

**B. Type B-1: Integral Structural Steel Base**

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.
2. Mason Type M, WF or a similar product as manufactured by one of the manufacturers listed above.

**C. Type B-2: Concrete Inertia Base**

1. Concrete inertia bases shall be formed in a structural steel perimeter base, reinforced as required to prevent flexure, misalignment of drive and driven unit or stress transferal into equipment. The base shall 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 shall be according to the following tabulation:

Motor Size		Minimum Thickness	
(hp)	(kW)	(in)	(mm)
5-15	(4-11)	6	(150)
20-50	(15-37)	8	(200)
60-75	(45-55)	10	(250)
100-250	(75-190)	12	(300)
300-500	(220-375)	18	(350)

3. Mason Type K, BMK, or a similar product as manufactured by one of the manufacturers listed above.

**D. Type B-3: Curb Mounted Base**

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 1.0 g seismic loads for life safety or hazardous components.
5. Curbs shall be Mason Type CMAB or RSC (depending on deflection required), or a similar product as manufactured by one of the manufacturers listed above.





## 2.4 SEISMIC-RESTRAINT DEVICES

### A. Type I: Spring Incorporating Seismic Restraint

1. Shall comply with general characteristics of spring isolators.
2. Shall have vertical restraints and are capable of supporting equipment at fixed elevation during equipment erection. Vertical restraint shall be separate from equipment load support.
3. Shall 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 1.0 g.
5. Mason Type SSLR, or a similar product as manufactured by one of the manufacturers listed above.

### B. Type II: Stationary Seismic Restraint

1. Each corner or side seismic restraint shall incorporate minimum 5/8" (16 mm) 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 1.0 g acceleration capacity.
2. Seismic spring mountings as described above are an acceptable alternative providing all seismic loading requirements are met.
3. Mason Industries Type Z-1011, Type Z-1225, or a similar product as manufactured by one of the manufacturers listed above.

### C. Type III: Cable Seismic Restraint,

1. Metal cable type with approved end fastening devices to equipment and structure. System to be field bolted to deck or overhead structural members or deck with aircraft cable and clamps as per SMACNA guidelines.

### D. General Requirements for Restraint Components: Rated strengths, features, and applications shall be as defined in reports by an evaluation service member of ICC-ES.

1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.

### E. Channel Support System: MFMA-3, shop- or field-fabricated support assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; and rated in tension, compression, and torsion forces.

### F. Restraint Cables: ASTM A 603 galvanized-steel cables with end connections made of steel assemblies with thimbles, brackets, swivel, and bolts designed for restraining cable service; and with a minimum of two clamping bolts for cable engagement.

### G. Hanger Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections to hanger rod.



- H. Bushings for Floor-Mounted Equipment Anchor Bolts: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchor bolts and studs.
- I. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices used.
- J. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.
- K. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.
- L. Adhesive Anchor Bolts: Adhesive anchor bolts are not permitted where seismic restraint is required. Drilled-in and capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

## 2.5 FLEXIBLE CONNECTORS

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- A. Elastomer Type FC-1:
  - 1. Manufactured of nylon tire cord and EPDM both molded and cured with hydraulic presses.
  - 2. Straight connectors shall 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 degrees F dropping in a straight line to 170 psi at 250 degrees F for sizes 1-1/2 inch to 12 inch elbows. Elbows shall be rated no less than 90 percent of straight connections.
  - 5. Sizes 10 inches to 12 inches to employ control cables with neoprene end fittings isolated from anchor plates by means of 1/2 inch bridge bearing neoprene bushings.
  - 6. Minimum safety factor, 4 to 1 at maximum pressure ratings.
  - 7. Submittals shall include test reports.
  - 8. Mason Type MFTNC Superflex or a similar product as manufactured by one of the manufacturers listed above.
- B. Flexible Stainless Hose, Type FC-2:
  - 1. Braided flexible metal hose.
  - 2. 2 inch pipe size and smaller with male nipple fittings.
  - 3. 2-1/2 inch and larger pipe size with fixed steel flanges.
  - 4. Suitable for operating pressure with 4 to 1 minimum safety factor.
  - 5. Length as required or shown on drawings.



6. Mason Type BSS or a similar product as manufactured by one of the manufacturers listed above.

## **2.6 FACTORY FINISHES**

- A. Finish: Manufacturer's standard prime-coat finish ready for field painting.
- B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested equipment before shipping.
  1. Powder coating on springs and housings.
  2. All hardware shall be galvanized. Hot-dip galvanize metal components for exterior use.
  3. Baked enamel or powder coat for metal components on isolators for interior use.
  4. Color-code or otherwise mark vibration isolation and seismic-control devices to indicate capacity range.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 APPLICATIONS**

- A. Multiple Pipe Supports: Secure pipes to trapeze member with clamps approved for application by an evaluation service member of ICC-ES.
- B. Hanger Rod Stiffeners: Install hanger rod stiffeners where indicated or scheduled on Drawings to receive them and where required to prevent buckling of hanger rods due to seismic forces.
- C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits.

### **3.3 VIBRATION-CONTROL AND SEISMIC-RESTRAINT DEVICE INSTALLATION**

- A. Comply with requirements for installation of roof curbs, equipment supports, and roof penetrations.



B. Equipment Restraints:

1. Install seismic snubbers on HVAC equipment mounted on vibration isolators. Locate snubbers as close as possible to vibration isolators and bolt to equipment base and supporting structure.
2. Install resilient bolt isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch.
3. Install seismic-restraint devices using methods approved by an evaluation service member of ICC-ES providing required submittals for component.

C. Piping Restraints:

1. Comply with requirements in MSS SP-127.
2. Space lateral supports a maximum of 40 feet o.c., and longitudinal supports a maximum of 80 feet o.c.
3. Brace a change of direction longer than 12 feet.

D. Install cables so they do not bend across edges of adjacent equipment or building structure.

E. Install seismic-restraint devices using methods approved by an evaluation service member of ICC-ES providing required submittals for component.

F. Install bushing assemblies for anchor bolts for floor-mounted equipment, arranged to provide resilient media between anchor bolt and mounting hole in concrete base.

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G. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.

H. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.

I. Drilled-in Anchors:

1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the Commissioner if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
5. Set anchors to manufacturer's recommended torque, using a torque wrench.
6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.



### 3.4 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION

- A. Install flexible connections in piping where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where the connections terminate with connection to equipment that is anchored to a different structural element from the one supporting the connections as they approach equipment.

### 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
  - 1. Provide evidence of recent calibration of test equipment by a testing agency.
  - 2. Schedule test with the City of New York, through Commissioner, before connecting anchorage device to restrained component (unless postconnection testing has been approved), and with at least seven days' advance notice.
  - 3. Obtain Commissioner's approval before transmitting test loads to structure. Provide temporary load-spreading members.
  - 4. Test at least four of each type and size of installed anchors and fasteners selected by the Commissioner.
  - 5. Test to 90 percent of rated proof load of device.
  - 6. Measure isolator restraint clearance.
  - 7. Measure isolator deflection.
  - 8. Verify snubber minimum clearances.
  - 9. Air-Mounting System Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
  - 10. Air-Mounting System Operational Test: Test the compressed-air leveling system.
  - 11. Test and adjust air-mounting system controls and safeties.
  - 12. If a device fails test, modify all installations of same type and retest until satisfactory results are achieved.
- D. Remove and replace malfunctioning units and retest as specified above.
- E. Prepare test and inspection reports.

### 3.6 ADJUSTING

- A. Adjust isolators after piping system is at operating weight.
- B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.
- C. Adjust air-spring leveling mechanism.



- D. Adjust active height of spring isolators.
- E. Adjust restraints to permit free movement of equipment within normal mode of operation.

**3.7 DEMONSTRATION**

- A. Engage a factory-authorized service representative to instruct City of New York’s maintenance personnel to adjust, operate, and maintain air-mounting systems. Refer to “DDC General Conditions.”

**3.8 HVAC VIBRATION-CONTROL AND SEISMIC-RESTRAINT DEVICE SCHEDULE**

- A. As scheduled on drawings.
  - 1. Equipment Location
  - 2. Pads:
    - a. Material: Neoprene.
    - b. Thickness: 2 inches.
    - c. Number of Pads: thick.
  - 3. Isolator Type
  - 4. Base Type
  - 5. Minimum Deflection: 2 inches.
  - 6. Component Importance Factor: 1.5.
  - 7. Component Response Modification Factor: 1.5.
  - 8. Component Amplification Factor: 1.0.

Equipment	Base Type	Isolator Type	Minimum Static Deflection (inches)	Seismic Restraint Type (if part of life safety or hazardous component)
Floor Mounted Centrifugal Fans	B-1	A	1.0	II
Pumps	B-2	A	1.0	II
Generators	--	B	1.0	I

**END OF SECTION 23 05 48**



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**SECTION 23 05 53  
IDENTIFICATION FOR HVAC 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 SUMMARY**

- A. Section Includes:
1. Equipment labels.
  2. Warning signs and labels.
  3. Pipe labels.
  4. Duct labels.
  5. Stencils.
  6. Valve tags.
  7. Access Tile Identification.
  8. Warning tags.
- 

**1.3 SUBMITTALS**

- A. Product Data: For each type of product indicated, manufacturer's catalog data, including size, color and materials.
- B. Samples: For color, letter style, and graphic representation required for each identification material and device.
- C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.
- D. Valve numbering scheme.
- E. Valve Schedules: For each piping system to include in maintenance manuals.

**1.4 QUALITY ASSURANCE**

- A. Comply with ASME A 13.1 "Scheme for the Identification of Piping Systems."



## 1.5 COORDINATION

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.

## PART 2 - PRODUCTS

### 2.1 EQUIPMENT LABELS

#### A. Metal Labels for Equipment:

- 1. Material and Thickness: anodized aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
- 2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- 3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- 4. Fasteners: Stainless-steel rivets or self-tapping screws.
- 5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

#### B. Plastic Labels for Equipment:

- 1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
- 2. Letter Color: Black.
- 3. Background Color: White.
- 4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- 5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- 6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- 7. Fasteners: Stainless-steel rivets or self-tapping screws.
- 8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

#### C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

#### D. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where



equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

## 2.2 WARNING SIGNS AND LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
- B. Letter Color: Black.
- C. Background Color: White.
- D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: ~~Stainless-steel rivets or self-tapping screws.~~
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Label Content: Include caution and warning information, plus emergency notification instructions.

## 2.3 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
- B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to partially cover circumference of pipe and to attach to pipe without fasteners or adhesive.
  - 1. NPS 5 and smaller: Attach to pipe without fasteners or adhesive.
- C. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
  - 1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
  - 2. Lettering Size: At least 1-1/2 inches high.
- D. Maximum Temperature: Able to withstand temperatures up to 180 deg F.

## 2.4 DUCT LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
- B. Letter Color: Black.
- C. Background Color: White.
- D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless-steel rivets or self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Duct Label Contents: Include identification of duct service using same designations or abbreviations as used on Drawings, duct size, and an arrow indicating flow direction.
  - 1. Flow-Direction Arrows: Integral with duct system service lettering to accommodate both directions, or as separate unit on each duct label to indicate flow direction.
  - 2. Lettering Size: At least 1-1/2 inches high.

## 2.5 STENCILS

- A. Stencils: Prepared with letter sizes according to ASME A13.1 for piping; minimum letter height of 1-1/4 inches for ducts; and minimum letter height of 3/4 inch for access panel and door labels, equipment labels, and similar operational instructions.
  - 1. Stencil Material: Aluminum.
  - 2. Stencil Paint: Exterior, gloss, acrylic enamel black unless otherwise indicated. Paint may be in pressurized spray-can form.
  - 3. Identification Paint: Exterior, acrylic enamel in colors according to ASME A13.1 unless otherwise indicated.

## 2.6 VALVE TAGS

- A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.



1. Tag Material: anodized aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
  2. Fasteners: Brass wire-link or beaded chain; or S-hook.
- B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
1. Valve-tag schedule shall be included in operation and maintenance data.

## **2.7 ACCESS TILE IDENTIFICATION**

- A. Buttons, tabs, and markers: To identify location of concealed work.
- B. Type: As approved by Commissioner.

## **2.8 WARNING TAGS**

- A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.
  1. Size: Approximately 4 by 7 inches.
  2. Fasteners: Brass grommet and wire.
  3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
  4. Color: Yellow background with black lettering.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

### **3.2 EQUIPMENT LABEL INSTALLATION**

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.



### 3.3 PIPE LABEL INSTALLATION

- A. Stenciled Pipe Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels, complying with ASME A13.1, on each piping system.
  - 1. Identification Paint: Use for contrasting background.
  - 2. Stencil Paint: Use for pipe marking.
  
- B. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
  - 1. Near each valve and control device.
  - 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
  - 3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
  - 4. At access doors, manholes, and similar access points that permit view of concealed piping.
  - 5. Near major equipment items and other points of origination and termination.
  - 6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
  - 7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.
  
- C. Pipe Label Color Schedule:
  - 1. Steam Piping:
    - a. Background Color: Black.
    - b. Letter Color: White.
  
  - 2. Steam Condensate Piping:
    - a. Background Color: Black.
    - b. Letter Color: White.
  
  - 3. Vent and Relief Piping:
    - a. Background Color: White.
    - b. Letter Color: Black.
  
  - 4. Fuel and Diesel Oil Piping:
    - a. Background Color: White.
    - b. Letter Color: Black.



### 3.4 DUCT LABEL INSTALLATION

- A. Install plastic-laminated duct labels with permanent adhesive on air ducts in the following color codes:
  - 1. Blue: For cold-air supply ducts.
  - 2. Green: For exhaust-air ducts.
  - 3. ASME A13.1 Colors and Designs: For hazardous material exhaust.
- B. Stenciled Duct Label Option: Stenciled labels, showing service and flow direction, may be provided instead of plastic-laminated duct labels, at Installer's option, if lettering larger than 1 inch high is needed for proper identification because of distance from normal location of required identification.
- C. Locate labels near points where ducts enter into concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system.

### 3.5 VALVE-TAG INSTALLATION

- A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.
- 
- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:
    - 1. Valve-Tag Size and Shape:
      - a. Steam: 2 inches, round.
      - b. Steam Condensate 2 inches (50mm) round
      - c. Vent and Relief: 2 inches, round.
      - d. Fuel and Diesel Oil: 2 inches, round.
    - 2. Valve-Tag Color:
      - a. Low-Pressure Steam: Yellow.
      - b. Steam Condensate: Green.
      - c. Vent and Relief: Green.
      - d. Fuel and Diesel Oil: Green.
    - 3. Letter Color:
      - a. Steam: White.
      - b. Steam Condensate: White.
      - c. Vent and Fill: White.
      - d. Fuel and Diesel Oil: White.



**3.6 ACCESS TILE IDENTIFICATION**

- A. Install buttons, tabs, or markers, where removable ceiling tiles are provided, to identify location of:
  - 1. Valves.
  - 2. Volume dampers.
  - 3. Terminal Units.
  - 4. Other concealed equipment requiring access.

**3.7 WARNING-TAG INSTALLATION**

- A. Write required message on, and attach warning tags to, equipment and other items where required.

**END OF SECTION 23 05 53**

**SECTION 23 05 93**  
**TESTING, ADJUSTING, AND BALANCING FOR HVAC**

**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 providing of labor, materials, equipment, and services necessary for complete testing, adjusting, balancing (TAB) of all heating, ventilating and air conditioning systems in accordance with the contract documents and all applicable codes for the following:
1. Air Systems: Balancing of air distribution systems including supply, return and exhaust systems, condensing units, all fan-coils and related equipment for:

a. Constant-volume air systems.

- 
2. Steam systems.
  3. HVAC equipment quantitative-performance settings.
  4. Vibration measuring.
  5. Sound level measuring.
  6. Indoor-air quality measuring.
  7. Verifying that automatic control devices are functioning properly.
  8. Reporting results of activities and procedures specified in this Section.

**1.3 DEFINITIONS**

- A. Adjust: To regulate fluid flow rate and air patterns at the terminal equipment, such as to reduce fan speed or adjust a damper.
- B. Balance: To proportion flows within the distribution system, including submains, branches, and terminals, according to indicated quantities.
- C. Barrier or Boundary: Construction, either vertical or horizontal, such as walls, floors, and ceilings that are designed and constructed to restrict the movement of airflow, smoke, odors, and other pollutants.
- D. Draft: A current of air, when referring to localized effect caused by one or more factors of high air velocity, low ambient temperature, or direction of airflow, whereby more heat is withdrawn from a person's skin than is normally dissipated.





- E. NC: Noise criteria.
- F. RC: Room criteria.
- G. Report Forms: Test data sheets for recording test data in logical order.
- H. Smoke-Control System: An engineered system that uses fans to produce airflow and pressure differences across barriers to limit smoke movement.
- I. Smoke-Control Zone: A space within a building that is enclosed by smoke barriers and is a part of a zoned smoke-control system.
- J. Stair Pressurization System: A type of smoke-control system that is intended to positively pressurize stair towers with outdoor air by using fans to keep smoke from contaminating the stair towers during an alarm condition.
- K. Static Head: The pressure due to the weight of the fluid above the point of measurement. In a closed system, static head is equal on both sides of the pump.
- L. Suction Head: The height of fluid surface above the centerline of the pump on the suction side.
- M. System Effect: A phenomenon that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
- N. System Effect Factors: Allowances used to calculate a reduction of the performance ratings of a fan when installed under conditions different from those presented when the fan was performance tested.
- O. TAB: Testing, adjusting, and balancing.
- P. Terminal: A point where the controlled medium, such as fluid or energy, enters or leaves the distribution system.
- Q. Testing, Adjusting, and Balancing (TAB) Firm: The entity responsible for performing and reporting TAB procedures.

#### **1.4 SUBMITTALS**

- A. Qualification Data: Within 30 days from Contractor's Notice to Proceed, as directed by the commissioner's representative submit 4 copies of evidence that TAB firm and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article. Contractor shall also submit Form TR 1 listing person designated to perform controlled inspection so as not to impede the obtaining of required building permits.
- B. Contract Documents Examination Report: Within 30 days from Contractor's Notice to Proceed, as directed by the commissioner's representative submit 4 copies of the Contract Documents review report as specified in Part 3.

- C. Strategies and Procedures Plan: Within 30 days from Contractor's Notice to Proceed, as directed by the commissioner's representative submit 4 copies of TAB strategies and step-by-step procedures as specified in Part 3 "Preparation" Article. Include a complete set of report forms intended for use on this Project.
- D. Certified TAB Reports: Submit two copies of reports prepared, as specified in this Section, on approved forms certified by TAB firm.
- E. Sample Report Forms: Submit two sets of sample TAB report forms.

### 1.5 QUALITY ASSURANCE

- A. TAB Firm Qualifications: Engage a TAB firm certified by AABC, NEBB, or TABB.
- B. TAB Conference: Meet with Commissioner on approval of TAB strategies and procedures plan to develop a mutual understanding of the details. Ensure the participation of TAB team members, equipment manufacturers' authorized service representatives, HVAC controls installers, and other support personnel. Provide seven days' advance notice of scheduled meeting time and location.
  - 1. Agenda Items: Include at least the following:
    - a. ~~Submittal distribution requirements.~~
    - b. The Contract Documents examination report.
    - c. TAB plan.
    - d. Work schedule and Project-site access requirements.
    - e. Coordination and cooperation of trades and subcontractors.
    - f. Coordination of documentation and communication flow.
- C. Certification of TAB Reports: Certify TAB field data reports. This certification includes the following:
  - 1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
  - 2. Certify that TAB team complied with approved TAB plan and the procedures specified and referenced in this Specification.
- D. TAB Report Forms: Use standard forms from NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems."
- E. Instrumentation Type, Quantity, and Accuracy: As described in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems," Section II, "Required Instrumentation for NEBB Certification."
- F. Instrumentation Calibration: Calibrate instruments at least every six months or more frequently if required by instrument manufacturer.



1. Keep an updated record of instrument calibration that indicates date of calibration and the name of party performing instrument calibration.
- G. ASHRAE Compliance: Applicable requirements in the latest edition of ASHRAE 62.1-, Section 7.2.2 - "Air Balancing."
- H. ASHRAE/IESNA 90.1 Latest Edition Compliance: Applicable requirements in the latest edition of ASHRAE/IESNA 90.1, Section 6.7.2.3 - "System Balancing."

## **1.6 PROJECT CONDITIONS**

- A. Full City of New York Occupancy: City of New York will occupy the site and existing building during entire TAB period. Cooperate with City of New York during TAB operations to minimize conflicts with City of New York's operations.
- B. Partial City of New York Occupancy: City of New York may occupy completed areas of building before Substantial Completion. Cooperate with City of New York during TAB operations to minimize conflicts with City of New York's operations.

## **1.7 COORDINATION**

- A. Coordinate the efforts of factory-authorized service representatives for systems and equipment, HVAC controls installers, and other mechanics to operate HVAC systems and equipment to support and assist TAB activities.
- B. Notice: Provide seven days' advance notice for each test. Include scheduled test dates and times.
- C. Perform TAB after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

## **PART 2 - PRODUCTS (Not Applicable)**

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
  1. Verify that balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers, are required by the Contract Documents. Verify that quantities and locations of these balancing devices are accessible and appropriate for effective balancing and for efficient system and equipment operation.



- B. Examine approved submittal data of HVAC systems and equipment.
- C. Examine Project Record Documents described in DDC General Conditions.
- D. Examine design data, including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine equipment performance data including fan and pump curves. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system. Calculate system effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from those presented when the equipment was performance tested at the factory. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," Sections 7 through 10; or in SMACNA's "HVAC Systems--Duct Design," Sections 5 and 6. Compare this data with the design data and installed conditions.
- F. Examine system and equipment installations to verify that they are complete and that testing, cleaning, adjusting, and commissioning specified in individual Sections have been performed.
- G. Examine system and equipment test reports.
- H. Examine HVAC system and equipment installations to verify that indicated balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers, are properly installed, and that their locations are accessible and appropriate for effective balancing and for efficient system and equipment operation.
- I. Examine systems for functional deficiencies that cannot be corrected by adjusting and balancing.
- J. Examine HVAC equipment to ensure that clean filters have been installed, bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
- K. Examine plenum ceilings used for supply air to verify that they are airtight. Verify that pipe penetrations and other holes are sealed.
- L. Examine strainers for clean screens and proper perforations.
- M. Examine three-way valves for proper installation for their intended function of diverting or mixing fluid flows.
- N. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- O. Examine system pumps to ensure absence of entrained air in the suction piping.
- P. Examine equipment for installation and for properly operating safety interlocks and controls.
- Q. Examine automatic temperature system components to verify the following:



1. Dampers, valves, and other controlled devices are operated by the intended controller.
  2. Dampers and valves are in the position indicated by the controller.
  3. Automatic modulating and shutoff valves, including two-way valves and three-way mixing and diverting valves, are properly connected.
  4. Thermostats and humidistats are located to avoid adverse effects of sunlight, drafts, and cold walls.
  5. Sensors are located to sense only the intended conditions.
  6. Sequence of operation for control modes is according to the Contract Documents.
  7. Controller set points are set at indicated values.
  8. Interlocked systems are operating.
  9. Changeover from heating to cooling mode occurs according to indicated values.
- R. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values. Submit report recommending addition and/or relocation of balancing devices, including, but not limited to, volume dampers, balancing valves, flow metering devices for air and water, and pressure and temperature measuring points.

### **3.2 PREPARATION**

- A. Prepare a TAB plan that includes strategies and step-by-step procedures.
- B. Complete system readiness checks and prepare system readiness reports. Verify the following:
1. Permanent electrical power wiring is complete.
  2. Hydronic systems are filled, clean, and free of air.
  3. Automatic temperature-control systems are operational.
  4. Equipment and duct access doors are securely closed.
  5. Balance, smoke, and fire dampers are open.
  6. Isolating and balancing valves are open and control valves are operational.
  7. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
  8. Windows and doors can be closed so indicated conditions for system operations can be met.
  9. Ensure that special equipment such as computers, laboratory equipment, and electronic equipment are in full operation.
- C. Dummy Loads:
1. When operation testing is performed before final computer, laboratory and other equipment are installed, provide temporary electric heat loads in rooms, at no extra cost to City of New York. Capacity of heating devices shall be such as to equal full heat gain in rooms, with exact capacity and location as directed by the Commissioner. Provide heating devices, wiring, connecting fittings compatible with electric circuits, operating and safety controls and other devices, as required. Other heating mediums than electrical may be proposed for approval by Commissioner.

### 3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and this Section.
  - 1. Comply with requirements in the latest edition of ASHRAE 62.1, Section 7.2.2 - "Air Balancing."
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. After testing and balancing, close probe holes and patch insulation with new materials identical to those removed. Restore vapor barrier and finish according to insulation Specifications for this Project.
- C. Mark equipment and balancing device settings with paint or other suitable, permanent identification material, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

### 3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. ~~Crosscheck the summation of required outlet volumes with required fan volumes.~~
- B. Prepare schematic diagrams of systems' "as-built" duct layouts.
- C. Determine the best locations in main and branch ducts for accurate duct airflow measurements.
- D. Check airflow patterns from the outside-air louvers and dampers and the return- and exhaust-air dampers, through the supply-fan discharge and mixing dampers.
- E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- F. Verify that motor starters are equipped with properly sized thermal protection.
- G. Check dampers for proper position to achieve desired airflow path.
- H. Check for airflow blockages.
- I. Check condensate drains for proper connections and functioning.
- J. Check for proper sealing of air-handling unit components.
- K. Check for proper sealing of air duct system.



### 3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
1. Measure fan static pressures to determine actual static pressure as follows:
    - a. Measure outlet static pressure as far downstream from the fan as practicable and upstream from restrictions in ducts such as elbows and transitions.
    - b. Measure static pressure directly at the fan outlet or through the flexible connection.
    - c. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from flexible connection and downstream from duct restrictions.
    - d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.
  2. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.
    - a. Simulate dirty filter operation and record the point at which maintenance personnel must change filters.
  3. Measure static pressures entering and leaving other devices such as sound traps, heat recovery equipment, and air washers, under final balanced conditions.
  4. Compare design data with installed conditions to determine variations in design static pressures versus actual static pressures. Compare actual system effect factors with calculated system effect factors to identify where variations occur. Recommend corrective action to align design and actual conditions.
  5. Obtain approval from the Commissioner for adjustment of fan speed higher or lower than indicated speed. Make required adjustments to pulley sizes, motor sizes, and electrical connections to accommodate fan-speed changes.
  6. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload will occur. Measure amperage in full cooling, full heating, economizer, and any other operating modes to determine the maximum required brake horsepower.
- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.
1. Measure static pressure at a point downstream from the balancing damper and adjust volume dampers until the proper static pressure is achieved.
    - a. Where sufficient space in submain and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.
  2. Remeasure each submain and branch duct after all have been adjusted. Continue to adjust submain and branch ducts to indicated airflows within specified tolerances.

- C. Measure terminal outlets and inlets without making adjustments.
  - 1. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.

### 3.6 PROCEDURES FOR STEAM SYSTEMS

- A. Measure and record upstream and downstream pressure of each piece of equipment.
- B. Measure and record upstream and downstream steam pressure of pressure-reducing valves.
- C. Check the setting and operation of automatic temperature-control valves, self-contained control valves, and pressure-reducing valves. Record the final setting.
- D. Check the settings and operation of each safety valve. Record settings.
- E. Verify the operation of each steam trap.

### 3.7 PROCEDURES FOR MOTORS

- A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:
  - 1. Manufacturer, model, and serial numbers.
  - 2. Motor horsepower rating.
  - 3. Motor rpm.
  - 4. Efficiency rating.
  - 5. Nameplate and measured voltage, each phase.
  - 6. Nameplate and measured amperage, each phase.
  - 7. Starter thermal-protection-element rating.
- B. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass for the controller to prove proper operation. Record observations, including controller manufacturer, model and serial numbers, and nameplate data.

### 3.8 PROCEDURES FOR VIBRATION MEASUREMENTS

- A. Use a vibration meter meeting the following criteria:
  - 1. Solid-state circuitry with a piezoelectric accelerometer.
  - 2. Velocity range of 0.1 to 10 inches per second.
  - 3. Displacement range of 1 to 100 mils.
  - 4. Frequency range of at least 0 to 1000 Hz.
  - 5. Capable of filtering unwanted frequencies.
- B. Calibrate the vibration meter before each day of testing.





1. Use a calibrator provided with the vibration meter.
  2. Follow vibration meter and calibrator manufacturer's calibration procedures.
- C. Perform vibration measurements when other building and outdoor vibration sources are at a minimum level and will not influence measurements of equipment being tested.
1. Turn off equipment in the building that might interfere with testing.
  2. Clear the space of people.
- D. Perform vibration measurements after air and water balancing and equipment testing is complete.
- E. Clean equipment surfaces in contact with the vibration transducer.
- F. Position the vibration transducer according to manufacturer's written instructions and to avoid interference with the operation of the equipment being tested.
- G. Measure and record vibration on rotating equipment over 3 hp.
- H. Measure and record equipment vibration, bearing vibration, equipment base vibration, and building structure vibration. Record velocity and displacement readings in the horizontal, vertical, and axial planes.
1. Pumps:
    - a. Pump Bearing: Drive end and opposite end.
    - b. Motor Bearing: Drive end and opposite end.
    - c. Pump Base: Top and side.
    - d. Building: Floor.
    - e. Piping: To and from the pump after flexible connections.
  2. Fans and HVAC Equipment with Fans:
    - a. Fan Bearing: Drive end and opposite end.
    - b. Motor Bearing: Drive end and opposite end.
    - c. Equipment Casing: Top and side.
    - d. Equipment Base: Top and side.
    - e. Building: Floor.
    - f. Ductwork: To and from equipment after flexible connections.
    - g. Piping: To and from equipment after flexible connections.

### **3.9 PROCEDURES FOR SOUND-LEVEL MEASUREMENTS**

- A. Perform sound-pressure-level measurements with an octave-band analyzer complying with ANSI S1.4 for Type 1 sound-level meters and ANSI S1.11 for octave-band filters. Comply with requirements in ANSI S1.13, unless otherwise indicated.
- B. Calibrate sound meters before each day of testing. Use a calibrator provided with the sound meter complying with ANSI S1.40 and that has NIST certification.



- C. Use a microphone that is suitable for the type of sound levels measured. For areas where air velocities exceed 100 fpm, use a windscreen on the microphone.
  - D. Perform sound-level testing after air and water balancing and equipment testing are complete.
  - E. Close windows and doors to the space.
  - F. Perform measurements when the space is not occupied and when the occupant noise level from other spaces in the building and outside are at a minimum.
  - G. Clear the space of temporary sound sources so unrelated disturbances will not be measured. Position testing personnel during measurements to achieve a direct line-of-sight between the sound source and the sound-level meter.
  - H. Take sound measurements at a height approximately 48 inches above the floor and at least 36 inches from a wall, column, and other large surface capable of altering the measurements.
  - I. Take sound measurements in dBA and in each of the 8 unweighted octave bands in the frequency range of 63 to 8000 Hz.
  - J. Take sound measurements with the HVAC systems off to establish the background sound levels and take sound measurements with the HVAC systems operating.
    - 1. Calculate the difference between measurements. Apply a correction factor depending on the difference and adjust measurements.
- 

- K. Perform sound testing at three locations on Project for each of the following space types. For each space type tested, select a measurement location that has the greatest sound level. If testing multiple locations for each space type, select at least one location that is near and at least one location that is remote from the predominant sound source.
  - 1. Private office.
  - 2. Open office area.
  - 3. Conference room.
  - 4. Auditorium/large meeting room/lecture hall.
  - 5. Classroom/training room.
  - 6. Patient room/exam room.
  - 7. Sound or vibration sensitive laboratory.
  - 8. Each space with a noise criterion of RC or NC 25 or lower.
  - 9. Each space with an indicated noise criterion of RC or NC 35 and lower that is adjacent to a mechanical equipment room or roof mounted equipment.
  - 10. Inside each mechanical equipment room.

### **3.10 PROCEDURES FOR SMOKE-CONTROL SYSTEM TESTING**

- A. Before testing smoke-control systems, verify that construction is complete and verify the integrity of each smoke-control zone boundary. Verify that windows and doors are closed and that applicable safing, gasket, and sealants are installed. Report deficiencies and postpone testing until after the reported deficiencies are corrected.



- B. Measure and record wind speed and direction, outside-air temperature, and relative humidity on each test day.
- C. Measure, adjust, and record airflow of each smoke-control system with all fans that are a part of the system operating as intended by the design.
- D. Measure, adjust, and record the airflow of each fan. For ducted systems, measure the fan airflow by duct Pitot-tube traverse.
- E. After air balancing is complete, perform the following pressurization testing for each smoke-control zone as indicated on the plans.
- F. Operational Tests:
  - 1. Check the proper activation of each zoned smoke-control system in response to all means of activation, both automatic and manual.
  - 2. Check automatic activation in response to fire alarm signals received from the building's fire alarm and detection system. Initiate a separate alarm for each means of activation to ensure that the proper operation of the correct zoned smoke-control system occurs.
  - 3. Check and record the proper operation of fans, dampers, and related equipment as indicated on the plans for each separate zone of the smoke-control system.
- G. Perform testing without the use of smoke or products that simulate smoke.
- H. Prepare a complete report of observations, measurements, and deficiencies.

### **3.11 TEMPERATURE-CONTROL VERIFICATION**

- A. Verify that controllers are calibrated and commissioned.
- B. Check transmitter and controller locations and note conditions that would adversely affect control functions.
- C. Record controller settings and note variances between set points and actual measurements.
- D. Check the operation of limiting controllers (i.e., high- and low-temperature controllers).
- E. Check free travel and proper operation of control devices such as damper and valve operators.
- F. Check the sequence of operation of control devices. Note air pressures and device positions and correlate with airflow and water flow measurements. Note the speed of response to input changes.
- G. Check the interaction of electrically operated switch transducers.
- H. Check the interaction of interlock and lockout systems.
- I. Check main control supply-air pressure and observe compressor and dryer operations.



- J. Record voltages of power supply and controller output. Determine whether the system operates on a grounded or nongrounded power supply.
- K. Note operation of electric actuators using spring return for proper fail-safe operations.

### **3.12 TOLERANCES**

- A. Set HVAC system airflow and water flow rates within the following tolerances:
  - 1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus 5 to plus 10 percent.
  - 2. Air Outlets and Inlets: 0 to minus 10 percent.
  - 3. Heating-Water Flow Rate: 0 to minus 10 percent.
  - 4. Cooling-Water Flow Rate: 0 to minus 5 percent.

### **3.13 REPORTING**

- A. Initial Construction-Phase Report: When directed by Commissioner's representative based on examination of the Contract Documents as specified in "Examination" Article 3.1, Contractor shall prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.
- 
- B. Status Reports: As Work progresses, prepare reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

### **3.14 FINAL REPORT**

- A. General: Typewritten, or computer printout in letter-quality font, on standard bond paper, in three-ring binder, tabulated and divided into sections by tested and balanced systems.
- B. Include a certification sheet in front of binder signed and sealed by the certified testing and balancing engineer.
  - 1. Include a list of instruments used for procedures, along with proof of calibration.
- C. Final Report Contents: In addition to certified field report data, include the following:
  - 1. Pump curves.
  - 2. Fan curves.
  - 3. Manufacturers' test data.
  - 4. Field test reports prepared by system and equipment installers.
  - 5. Other information relative to equipment performance, but do not include Shop Drawings and Product Data.



D. General Report Data: In addition to form titles and entries, include the following data in the final report, as applicable:

1. Title page.
2. Name and address of TAB firm.
3. Project name.
4. Project location.
5. Commissioner's name and address.
6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB firm who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
11. Summary of contents including the following:
  - a. Indicated versus final performance.
  - b. Notable characteristics of systems.
  - c. Description of system operation sequence if it varies from the Contract Documents.
12. Nomenclature sheets for each item of equipment.
13. Notes to explain why certain final data in the body of reports varies from indicated values.
14. Test conditions for fans and pump performance forms including the following:
  - a. Settings for outside-, return-, and exhaust-air dampers.
  - b. Conditions of filters.
  - c. Cooling coil, wet- and dry-bulb conditions.
  - d. Face and bypass damper settings at coils.
  - e. Fan drive settings including settings and percentage of maximum pitch diameter.
  - f. Inlet vane settings for variable-air-volume systems.
  - g. Settings for supply-air, static-pressure controller.
  - h. Other system operating conditions that affect performance.

E. Fan Test Reports: For supply, return, and exhaust fans, include the following:

1. Fan Data:
  - a. System identification.
  - b. Location.
  - c. Make and type.
  - d. Model number and size.
  - e. Manufacturer's serial number.
  - f. Arrangement and class.
  - g. Sheave make, size in inches, and bore.
  - h. Sheave dimensions, center-to-center, and amount of adjustments in inches.
2. Motor Data:



- a. Make and frame type and size.
  - b. Horsepower and rpm.
  - c. Volts, phase, and hertz.
  - d. Full-load amperage and service factor.
  - e. Sheave make, size in inches, and bore.
  - f. Sheave dimensions, center-to-center, and amount of adjustments in inches.
  - g. Number of belts, make, and size.
3. Test Data (Indicated and Actual Values):
- a. Total airflow rate in cfm.
  - b. Total system static pressure in inches wg.
  - c. Fan rpm.
  - d. Discharge static pressure in inches wg.
  - e. Suction static pressure in inches wg.
- F. Pump Test Reports: Calculate impeller size by plotting the shutoff head on pump curves and include the following:
1. Unit Data:
    - a. Unit identification.
    - b. Location.
    - c. Service.
    - d. Make and size.
    - e. Model and serial numbers.
    - f. Water flow rate in gpm.
    - g. Water pressure differential in feet of head or psig.
    - h. Required net positive suction head in feet of head or psig.
    - i. Pump rpm.
    - j. Impeller diameter in inches.
    - k. Motor make and frame size.
    - l. Motor horsepower and rpm.
    - m. Voltage at each connection.
    - n. Amperage for each phase.
    - o. Full-load amperage and service factor.
    - p. Seal type.
  2. Test Data (Indicated and Actual Values):
    - a. Static head in feet of head or psig.
    - b. Pump shutoff pressure in feet of head or psig.
    - c. Actual impeller size in inches.
    - d. Full-open flow rate in gpm.
    - e. Full-open pressure in feet of head or psig.
    - f. Final discharge pressure in feet of head or psig.
    - g. Final suction pressure in feet of head or psig.
    - h. Final total pressure in feet of head or psig.
    - i. Final water flow rate in gpm.
    - j. Voltage at each connection.



k. Amperage for each phase.

G. Vibration Measurement Reports:

1. Date and time of test.
2. Vibration meter manufacturer, model number, and serial number.
3. Equipment designation, location, equipment, speed, motor speed, and motor horsepower.
4. Diagram of equipment showing the vibration measurement locations.
5. Measurement readings for each measurement location.
6. Calculate isolator efficiency using measurements taken.
7. Description of predominant vibration source.

H. Sound Measurement Reports: Record sound measurements on octave band and dBA test forms and on an NC or RC chart indicating the decibel level measured in each frequency band for both "background" and "HVAC system operating" readings. Record each tested location on a separate NC or RC chart. Record the following on the forms:

1. Date and time of test. Record each tested location on its own NC curve.
2. Sound meter manufacturer, model number, and serial number.
3. Space location within the building including floor level and room number.
4. Diagram or color photograph of the space showing the measurement location.
5. Time weighting of measurements, either fast or slow.
6. Description of the measured sound: steady, transient, or tonal.
7. Description of predominant sound source.

I. Indoor-Air Quality Measurement Reports for Each HVAC System:

1. HVAC system designation.
2. Date and time of test.
3. Outdoor temperature, relative humidity, wind speed, and wind direction at start of test.
4. Room number or similar description for each location.
5. Measurements at each location.
6. Observed deficiencies.

J. Instrument Calibration Reports:

1. Report Data:
  - a. Instrument type and make.
  - b. Serial number.
  - c. Application.
  - d. Dates of use.
  - e. Dates of calibration.

### 3.15 INSPECTIONS

A. Initial Inspection:



1. After testing and balancing are complete, operate each system and randomly check measurements to verify that the system is operating according to the final test and balance readings documented in the Final Report.
2. Randomly check the following for each system:
  - a. Measure airflow of at least 10 percent of air outlets.
  - b. Measure room temperature at each thermostat/temperature sensor. Compare the reading to the set point.
  - c. Measure sound levels at two locations.
  - d. Measure space pressure of at least 10 percent of locations.
  - e. Verify that balancing devices are marked with final balance position.
  - f. Note deviations to the Contract Documents in the Final Report.

**B. Final Inspection:**

1. After initial inspection is complete and evidence by random checks verifies that testing and balancing are complete and accurately documented in the final report, request that a final inspection be made by the City of New York.
2. TAB firm test and balance engineer shall conduct the inspection in the presence of the City of New York
3. The City of New York shall randomly select measurements documented in the final report to be rechecked. The rechecking shall be limited to either 10 percent of the total measurements recorded, or the extent of measurements that can be accomplished in a normal 8-hour business day.
4. If the rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
5. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.
6. TAB firm shall recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes and resubmit the final report.

**3.16 ADDITIONAL TESTS**

- A. Within 90 days of completing TAB, perform additional testing and balancing to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
- B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional testing, inspecting, and adjusting during near-peak summer and winter conditions.

**3.17 RECORD OF EXISTING WATER FLOW RATES**

- A. Prior to demolition of existing work, measure and record existing flow rates in chilled water, heating water and condenser water systems.





- B. Procedure: Make flow meter readings. Where no flow meters are installed in existing systems, measure and record differential pressures across pumps, coils, heat exchangers, and differential temperatures across coils, heat exchangers, boilers, chillers, cooling towers, etc. In sections of existing piping systems which are to remain, or as near as practicable, use these recorded measurements to rebalance existing water systems after completion of new systems.

**END OF SECTION 23 05 93**



**SECTION 23 07 00  
HVAC 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. Section Includes:

1. Insulation Materials:
  - a. Calcium silicate.
  - b. Cellular glass.
  - c. Flexible elastomeric.
  - d. Mineral fiber.
  - e. Phenolic.
  - f. Polyisocyanurate.
  - g. Polyolefin.
  - h. Polystyrene.
2. Fire-rated insulation systems.
3. Insulating cements.
4. Adhesives.
5. Mastics.
6. Lagging adhesives.
7. Sealants.
8. Factory-applied jackets.
9. Field-applied fabric-reinforcing mesh.
10. Field-applied cloths.
11. Field-applied jackets.
12. Tapes.
13. Securements.
14. Corner angles.

B. Related Sections:

1. Division 23 Section "Metal Ducts" for duct liners.

### 1.3 DEFINITIONS

- A. Exposed: Indoor ducts, piping or equipment located in mechanical equipment rooms and in areas in which they will be visible without removing ceilings or opening access panels.
- B. Concealed: Indoor ducts, piping or equipment which are not exposed.
- C. Outdoor: Ducts, piping or equipment which are exposed to the weather.
- D. Underground: Ducts, piping or equipment which are buried, whereas ducts, piping or equipment located in a trench below grade are considered concealed.

### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, thickness, and jackets (both factory and field applied, if any).
- B. Shop Drawings:
  - 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
  - 2. Detail attachment and covering of heat tracing inside insulation.
  - 3. Detail insulation application at pipe expansion joints for each type of insulation.
  - 4. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
  - 5. Detail removable insulation at piping specialties, equipment connections, and access panels.
  - 6. Detail application of field-applied jackets.
  - 7. Detail application at linkages of control devices.
  - 8. Detail field application for each equipment type.
- C. Samples: For each type of insulation and jacket indicated. Identify each Sample, describing product and intended use.
  - 1. Sample Sizes:
    - a. Preformed Pipe Insulation Materials: 12 inches long by NPS 2.
    - b. Sheet Form Insulation Materials: 12 inches square.
    - c. Jacket Materials for Pipe: 12 inches long by NPS 2.
    - d. Sheet Jacket Materials: 12 inches square.
    - e. Manufacturer's Color Charts: For products where color is specified, show the full range of colors available for each type of finish material.
- D. Schedule:
  - 1. List of work that will be insulated and a description of insulation materials and finishing procedures.
  - 2. A certificate indicating compliance with all applicable codes.



- E. Qualification Data: For qualified Installer.
- F. Material Test Reports: From a qualified testing agency indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- G. Field quality-control reports.

### **1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: Skilled mechanics.
- B. Insulation Materials: All products shall carry ISO 9000 certification or guarantee to meet the ISO quality standards.
- C. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing and inspecting agency.
  - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
  - 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.
  - 3. Flame proofing treatments which are subject to deterioration from moisture or humidity are not acceptable.

### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

### **1.7 COORDINATION**

- A. Coordinate size and location of supports, hangers, and insulation shields specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment."
- B. Coordinate clearance requirements with piping Installer for piping insulation application, duct Installer for duct insulation application, and equipment Installer for equipment insulation application. Before preparing piping and ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.
- C. Coordinate installation and testing of heat tracing.



## 1.8 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.
- B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

## PART 2 - PRODUCTS

### 2.1 INSULATION MATERIALS

- A. Comply with requirements in Part 3 schedule articles for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- F. Calcium Silicate:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Industrial Insulation Group (The); Thermo-12 Gold.
    - b. Johns Manville; Thermo-12 Gold
    - c. Pabco Gold, Inc.
    - d. Or approved equal.
  - 2. Thermal Conductivity (k-value) at 300°F (151°C) mean temperature is 0.40 Btu x in./hr. x ft. x degree F. (0.064 W/m x K) or less.
  - 3. Preformed Pipe Sections: Flat-, curved-, and grooved-block sections of noncombustible, inorganic, hydrous calcium silicate with a non-asbestos fibrous reinforcement. Comply with ASTM C 533, Type I.
  - 4. Flat-, curved-, and grooved-block sections of noncombustible, inorganic, hydrous calcium silicate with a non-asbestos fibrous reinforcement. Comply with ASTM C 533, Type I.
  - 5. Prefabricated Fitting Covers: Comply with ASTM C 450 and ASTM C 585 for dimensions used in preforming insulation to cover valves, elbows, tees, and flanges.



- G. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
1. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.27 Btu x in./hr. x ft. x degree F. (0.04 W/m x K) or less.
  2. Block Insulation: ASTM C 552, Type I.
  3. Special-Shaped Insulation: ASTM C 552, Type III.
  4. Board Insulation: ASTM C 552, Type IV.
  5. Preformed Pipe Insulation without Jacket: Comply with ASTM C 552, Type II, Class 1.
  6. Preformed Pipe Insulation with Factory-Applied ASJ-SSL: Comply with ASTM C 552, Type II, Class 2.
  7. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.
- H. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Aeroflex USA Inc.; Aerocel.
    - b. Armacell LLC; AP Armaflex.
    - c. RBX Corporation; Insul-Sheet 1800 and Insul-Tube 180.
    - d. Or approved equal.
  2. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.27 Btu x in./hr. x ft. x degree F. (0.04 W/m x K) or less. Water absorption not be more than 0.2% by volume.
- I. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSP jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. CertainTeed Corp.; Duct Wrap.
    - b. Johns Manville; Microlite.
    - c. Knauf Insulation; Duct Wrap.
    - d. Manson Insulation Inc.; Alley Wrap.
    - e. Owens Corning; All-Service Duct Wrap.
    - f. Or approved equal.
  2. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.29 Btu x in./hr. x ft. x degree F. (0.043 W/m x K) or less.
- J. High-Temperature, Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type V, without factory-applied jacket.
1. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.23 Btu x in./hr. x ft. x degree F. (0.033 W/m x K) or less.



- K. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied FSK jacket. For equipment applications, provide insulation with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. CertainTeed Corp.; Commercial Board.
    - b. Fibrex Insulations Inc.; FBX.
    - c. Johns Manville; 800 Series Spin-Glas.
    - d. Knauf Insulation; Insulation Board.
    - e. Manson Insulation Inc.; AK Board.
    - f. Owens Corning; Fiberglas 700 Series.
    - g. Or approved equal
  2. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.23 Btu x in./hr. x ft. x degree F. (0.033 W/m x K) or less.
- L. High-Temperature, Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type III, without factory-applied jacket.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Fibrex Insulations Inc.; FBX.
    - b. Johns Manville; 1000 Series Spin-Glas.
    - c. Owens Corning; High Temperature Industrial Board Insulations.
    - d. Rock Wool Manufacturing Company; Delta Board.
    - e. Roxul Inc.; Roxul RW.
    - f. Thermafiber; Thermafiber Industrial Felt.
    - g. Or approved equal
  2. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.23 Btu x in./hr. x ft. x degree F. (0.033 W/m x K) or less.
- M. Mineral-Fiber, Preformed Pipe Insulation:
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Fibrex Insulations Inc.; Coreplus 1200.
    - b. Johns Manville; Micro-Lok.
    - c. Knauf Insulation; 1000 Pipe Insulation.
    - d. Manson Insulation Inc.; Alley-K.
    - e. Owens Corning; Fiberglas Pipe Insulation.
    - f. Or approved equal
  2. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.23 Btu x in./hr. x ft. x degree F. (0.033 W/m x K) or less.



3. Type I, 850 deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ-SSL. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
  4. Type II, 1200 deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type II, Grade A, in "Factory-Applied Jackets" with factory-applied ASJ-SSL. Factory-applied jacket requirements are specified Article.
- N. Mineral-Fiber, Pipe Insulation Wicking System: Preformed pipe insulation complying with ASTM C 547, Type I, Grade A, with absorbent cloth factory applied to the entire inside surface of preformed pipe insulation and extended through the longitudinal joint to outside surface of insulation under insulation jacket. Factory apply a white, polymer, vapor-retarder jacket with self-sealing adhesive tape seam and evaporation holes running continuously along the longitudinal seam, exposing the absorbent cloth.
1. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.23 Btu x in./hr. x ft. x degree F. (0.033 W/m x K) or less.
- O. Mineral-Fiber, Pipe and Tank Insulation: Mineral or glass fibers bonded with a thermosetting resin. Semirigid board material with factory-applied ASJ complying with ASTM C 1393, Type II or Type IIIA Category 2, or with properties similar to ASTM C 612, Type IB. Nominal density is 2.5 lb/cu. ft. or more. Thermal conductivity (k-value) at 100 deg F is 0.29 Btu x in./h x sq. ft. x deg F or less. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
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1. Products: Subject to compliance with requirements, provide one of the following:
- a. CertainTeed Corp.; CrimpWrap.
  - b. Johns Manville; MicroFlex.
  - c. Knauf Insulation; Pipe and Tank Insulation.
  - d. Manson Insulation Inc.; AK Flex.
  - e. Owens Corning; Fiberglas Pipe and Tank Insulation.
  - f. Or approved equal
- P. Phenolic:
1. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.22 Btu x in./hr. x ft. x degree F. (0.031 W/m x K) or less.
  2. Preformed pipe insulation of rigid, expanded, closed-cell structure. Comply with ASTM C 1126, Type III, Grade 1.
  3. Block insulation of rigid, expanded, closed-cell structure. Comply with ASTM C 1126, Type II, Grade 1.
  4. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.
  5. Factory-Applied Jacket: Requirements are specified in "Factory-Applied Jackets" Article.
    - a. Preformed Pipe Insulation: None.
    - b. Board for Duct and Plenum Applications: None.
    - c. Board for Equipment Applications: None.
- Q. Polyisocyanurate: Unfaced, preformed, rigid cellular polyisocyanurate material intended for use as thermal insulation.





1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Apache Products Company; ISO-25.
    - b. Dow Chemical Company (The); Trymer.
    - c. Duna USA Inc.; Corafoam.
    - d. Elliott Company; Elfoam.
    - e. Or approved equal
  2. Comply with ASTM C 591, Type I or Type IV, except thermal conductivity (k-value) shall not exceed 0.19 Btu x in./h x sq. ft. x deg F at 75 deg F after 180 days of aging.
  3. Flame-spread index shall be 25 or less and smoke-developed index shall be 50 or less for thickness up to 1-1/2 inches as tested by ASTM E 84.
  4. Fabricate shapes according to ASTM C 450 and ASTM C 585.
  5. Factory-Applied Jacket: Requirements are specified in "Factory-Applied Jackets" Article.
    - a. Pipe Applications: ASJ-SSL
    - b. Equipment Applications: ASJ-SSL
- R. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials and Type II, Grade 1 for sheet materials.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Armacell LLC; Tubolit.
    - b. Nomaco Inc.; IMCOLOCK, IMCOSHEET, NOMALOCK, and NOMAPLY.
    - c. RBX Corporation; Therma-cell.
    - d. Or approved equal
  2. Thermal Conductivity (k-value) at 75°F (24°C) mean temperature is 0.25 Btu x in./hr. x ft. x degree F. (0.035 W/m x K) or less.
- S. Polystyrene: Rigid, extruded cellular polystyrene intended for use as thermal insulation. Comply with ASTM C 578, Type IV or Type XIII, except thermal conductivity (k-value) shall not exceed 0.26 Btu x in./h x sq. ft. x deg F after 180 days of aging. Fabricate shapes according to ASTM C 450 and ASTM C 585.

## 2.2 FIRE-RATED INSULATION SYSTEMS

- A. Fire-Rated Board: Structural-grade, press-molded, xonolite calcium silicate, fireproofing board suitable for operating temperatures up to 1700 deg F. Comply with ASTM C 656, Type II, Grade 6. tested and certified to provide a 2-hour fire rating by a NRTL.
- B. Fire-Rated Blanket: High-temperature, flexible, blanket insulation with FSK jacket that is tested and certified to provide a 2-hour fire rating by a NRTL.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. CertainTeed Corp.; FlameChek.
    - b. Johns Manville; Firetemp Wrap.



- c. Nelson Firestop Products; Nelson FSB Flameshield Blanket.
- d. Thermal Ceramics; FireMaster Duct Wrap.
- e. 3M; Fire Barrier Wrap Products.
- f. Unifrax Corporation; FyreWrap.
- g. Vesuvius; PYROSCAT FP FASTR Duct Wrap.
- h. Or approved equal

### 2.3 INSULATING CEMENTS

- A. Mineral-Fiber Insulating Cement: Comply with ASTM C 195.
- B. Expanded or Exfoliated Vermiculite Insulating Cement: Comply with ASTM C 196.
- C. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449/C 449M.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Insulco, Division of MFS, Inc.; SmoothKote.
    - b. P. K. Insulation Mfg. Co., Inc.; PK No. 127, and Quik-Cote.
    - c. Rock Wool Manufacturing Company; Delta One Shot.
    - d. Or approved equal

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### 2.4 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.
- B. Calcium Silicate Adhesive: Fibrous, sodium-silicate-based adhesive with a service temperature range of 50 to 800 deg F.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Childers Products, Division of ITW; CP-97.
    - b. Foster Products Corporation, H. B. Fuller Company; 81-27/81-93.
    - c. Marathon Industries, Inc.; 290.
    - d. Mon-Eco Industries, Inc.; 22-30.
    - e. Vimasco Corporation; 760.
    - f. Or approved equal
  - 2. For indoor applications, use adhesive that has a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Cellular-Glass, Phenolic, Polyisocyanurate, and Polystyrene Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F.
  - 1. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).



- D. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Aeroflex USA Inc.; Aero seal.
    - b. Armacell LCC; 520 Adhesive.
    - c. Foster Products Corporation, H. B. Fuller Company; 85-75.
    - d. RBX Corporation; Rubatex Contact Adhesive.
    - e. Or approved equal
  2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- E. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Childers Products, Division of ITW; CP-82.
    - b. Foster Products Corporation, H. B. Fuller Company; 85-20.
    - c. ITW TACC, Division of Illinois Tool Works; S-90/80.
    - d. Marathon Industries, Inc.; 225.
    - e. Mon-Eco Industries, Inc.; 22-25.
    - f. Or approved equal
  2. For indoor applications, use adhesive that has a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- F. Polystyrene Adhesive: Solvent- or water-based, synthetic resin adhesive with a service temperature range of minus 20 to plus 140 deg F.
- G. ASJ Adhesive, and FSK and PVDC Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Childers Products, Division of ITW; CP-82.
    - b. Foster Products Corporation, H. B. Fuller Company; 85-20.
    - c. ITW TACC, Division of Illinois Tool Works; S-90/80.
    - d. Marathon Industries, Inc.; 225.
    - e. Mon-Eco Industries, Inc.; 22-25.
    - f. Or approved equal
  2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- H. PVC Jacket Adhesive: Compatible with PVC jacket.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Chemical Company (The); 739, Dow Silicone.



- b. Johns-Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.
  - c. P.I.C. Plastics, Inc.; Welding Adhesive.
  - d. Speedline Corporation; Speedline Vinyl Adhesive.
  - e. Or approved equal
2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.5 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-C-19565C, Type II.

1. For indoor applications, use mastics that have a VOC content of less than calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Vapor-Barrier Mastic: Water based; suitable for indoor and outdoor use on below ambient services.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Childers Products, Division of ITW; CP-35.
- b. Foster Products Corporation, H. B. Fuller Company; 30-90.
- c. ITW TACC, Division of Illinois Tool Works; CB-50.
- d. Marathon Industries, Inc.; 590.
- e. Mon-Eco Industries, Inc.; 55-40.
- f. Vimasco Corporation; 749.
- g. Or approved equal

2. Water-Vapor Permeance: ASTM E 96, Procedure B, 0.013 perm at 43-mil dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: ASTM D 1644, 59 percent by volume and 71 percent by weight.
5. Color: White.

C. Vapor-Barrier Mastic: Solvent based; suitable for indoor use on below ambient services.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Childers Products, Division of ITW; CP-30.
- b. Foster Products Corporation, H. B. Fuller Company; 30-35.
- c. ITW TACC, Division of Illinois Tool Works; CB-25.
- d. Marathon Industries, Inc.; 501.
- e. Mon-Eco Industries, Inc.; 55-10.
- f. Or approved equal

2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 35-mil dry film thickness.
3. Service Temperature Range: 0 to 180 deg F.
4. Solids Content: ASTM D 1644, 44 percent by volume and 62 percent by weight.



5. Color: White.

D. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below ambient services.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Childers Products, Division of ITW; Encacel.
- b. Foster Products Corporation, H. B. Fuller Company; 60-95/60-96.
- c. Marathon Industries, Inc.; 570.
- d. Mon-Eco Industries, Inc.; 55-70.
- e. Or approved equal

2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 30-mil dry film thickness.

3. Service Temperature Range: Minus 50 to plus 220 deg F.

4. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.

5. Color: White.

E. Breather Mastic: Water based; suitable for indoor and outdoor use on above ambient services.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Childers Products, Division of ITW; CP-10.
- b. Foster Products Corporation, H. B. Fuller Company; 35-00.
- c. ITW TACC, Division of Illinois Tool Works; CB-05/15.
- d. Marathon Industries, Inc.; 550.
- e. Mon-Eco Industries, Inc.; 55-50.
- f. Vimasco Corporation; WC-1/WC-5.
- g. Or approved equal

2. Water-Vapor Permeance: ASTM F 1249, 3 perms at 0.0625-inch dry film thickness.

3. Service Temperature Range: Minus 20 to plus 200 deg F.

4. Solids Content: 63 percent by volume and 73 percent by weight.

5. Color: White.

## 2.6 LAGGING ADHESIVES

A. Description: Comply with MIL-A-3316C Class I, Grade A and shall be compatible with insulation materials, jackets, and substrates.

1. For indoor applications, use lagging adhesives that have a VOC content of 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. Childers Products, Division of ITW; CP-52.
- b. Foster Products Corporation, H. B. Fuller Company; 81-42.
- c. Marathon Industries, Inc.; 130.
- d. Mon-Eco Industries, Inc.; 11-30.
- e. Vimasco Corporation; 136.
- f. Or approved equal



3. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over duct, equipment, and pipe insulation.
4. Service Temperature Range: Minus 50 to plus 180 deg F.
5. Color: White.

## 2.7 SEALANTS

### A. Joint Sealants:

1. Joint Sealants for Cellular-Glass, Phenolic, and Polyisocyanurate Products: Subject to compliance with requirements, provide one of the following:
  - a. Childers Products, Division of ITW; CP-76.
  - b. Foster Products Corporation, H. B. Fuller Company; 30-45.
  - c. Marathon Industries, Inc.; 405.
  - d. Mon-Eco Industries, Inc.; 44-05.
  - e. Pittsburgh Corning Corporation; Pittseal 444.
  - f. Vimasco Corporation; 750.
  - g. Or approved equal
2. Joint Sealants for Polystyrene Products: Subject to compliance with requirements, one of the following:
  - a. ~~Childers Products, Division of ITW; CP-70.~~
  - b. Foster Products Corporation, H. B. Fuller Company; 30-45/30-46.
  - c. Marathon Industries, Inc.; 405.
  - d. Mon-Eco Industries, Inc.; 44-05.
  - e. Vimasco Corporation; 750.
  - f. Or approved equal
3. Materials shall be compatible with insulation materials, jackets, and substrates.
4. Permanently flexible, elastomeric sealant.
5. Service Temperature Range: Minus 100 to plus 300 deg F.
6. Color: White or gray.
7. For indoor applications, use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

### B. FSK and Metal Jacket Flashing Sealants:

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Childers Products, Division of ITW; CP-76-8.
  - b. Foster Products Corporation, H. B. Fuller Company; 95-44.
  - c. Marathon Industries, Inc.; 405.
  - d. Mon-Eco Industries, Inc.; 44-05.
  - e. Vimasco Corporation; 750.
  - f. Or approved equal
2. Materials shall be compatible with insulation materials, jackets, and substrates.



3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.
6. For indoor applications, use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F.
4. Color: White.
5. For indoor applications, use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.8 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.
4. FSP Jacket: Aluminum-foil, fiberglass-reinforced scrim with polyethylene backing; complying with ASTM C 1136, Type II.
5. PVDC Jacket for Indoor Applications: 4-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.02 perms when tested according to ASTM E 96 and with a flame-spread index of 5 and a smoke-developed index of 20 when tested according to ASTM E 84.
6. PVDC Jacket for Outdoor Applications: 6-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.01 perms when tested according to ASTM E 96 and with a flame-spread index of 5 and a smoke-developed index of 25 when tested according to ASTM E 84.
7. PVDC-SSL Jacket: PVDC jacket with a self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip.
8. Vinyl Jacket: White vinyl with a permeance of 1.3 perms when tested according to ASTM E 96, Procedure A, and complying with NFPA 90A and NFPA 90B.

## 2.9 FIELD-APPLIED FABRIC-REINFORCING MESH

A. Woven Glass-Fiber Fabric for Pipe Insulation: Approximately 2 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. inch for covering pipe and pipe fittings.



- B. Woven Glass-Fiber Fabric for Duct and Equipment Insulation: Approximately 6 oz./sq. yd. with a thread count of 5 strands by 5 strands/sq. inch for covering equipment.
- C. Woven Polyester Fabric: Approximately 1 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. inch, in a Leno weave, for duct, equipment, and pipe.

**2.10 FIELD-APPLIED CLOTHS**

- A. Woven Glass-Fiber Fabric: Comply with MIL-C-20079H, Type I, plain weave, and presized a minimum of 8 oz./sq. yd..

**2.11 FIELD-APPLIED JACKETS**

- A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.
- B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.
- C. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.

- 1. Products: Subject to compliance with requirements, provide one of the following:

- a. Johns Manville; Zeston.
- b. P.I.C. Plastics, Inc.; FG Series.
- c. Proto PVC Corporation; LoSmoke.
- d. Speedline Corporation; SmokeSafe.
- e. Or approved equal

- 2. Adhesive: As recommended by jacket material manufacturer.

- 3. Color: White

- 4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.

- a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

- 5. Factory-fabricated tank heads and tank side panels.

- D. Metal Jacket:

- 1. Products: Subject to compliance with requirements, provide one of the following:

- a. Childers Products, Division of ITW; Metal Jacketing Systems.
- b. PABCO Metals Corporation; Surefit.
- c. RPR Products, Inc.; Insul-Mate.
- d. Or approved equal





2. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105 or 5005, Temper H-14.
  - a. Factory cut and rolled to size.
  - b. Finish and thickness are indicated in field-applied jacket schedules.
  - c. Moisture Barrier for Indoor Applications: 1-mil- thick, heat-bonded polyethylene and kraft paper 1-mil- thick, heat-bonded polyethylene and kraft paper.
  - d. Moisture Barrier for Outdoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper
  - e. Factory-Fabricated Fitting Covers:
    - 1) Same material, finish, and thickness as jacket.
    - 2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
    - 3) Tee covers.
    - 4) Flange and union covers.
    - 5) End caps.
    - 6) Beveled collars.
    - 7) Valve covers.
    - 8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.
- E. Underground Direct-Buried Jacket: 125-mil- thick vapor barrier and waterproofing membrane consisting of a rubberized bituminous resin reinforced with a woven-glass fiber or polyester scrim and laminated aluminum foil.
- F. Self-Adhesive Outdoor Jacket: 60-mil- thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a crosslaminated polyethylene film covered with stucco-embossed aluminum-foil facing.
- G. PVDC Jacket for Indoor Applications: 4-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.02 perms when tested according to ASTM E 96 and with a flame-spread index of 5 and a smoke-developed index of 20 when tested according to ASTM E 84.
- H. PVDC Jacket for Outdoor Applications: 6-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.01 perms when tested according to ASTM E 96 and with a flame-spread index of 5 and a smoke-developed index of 25 when tested according to ASTM E 84.
- I. PVDC-SSL Jacket: PVDC jacket with a self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip.

## 2.12 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, provide one of the following:



- a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0835.
  - b. Compac Corp.; 104 and 105.
  - c. Ideal Tape Co., Inc., an American Biltrite Company; 428 AWF ASJ.
  - d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.
  - e. Or approved equal
2. Width: 3 inches.
  3. Thickness: 11.5 mils.
  4. Adhesion: 90 ounces force/inch in width.
  5. Elongation: 2 percent.
  6. Tensile Strength: 40 lbf/inch in width.
  7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0827.
    - b. Compac Corp.; 110 and 111.
    - c. Ideal Tape Co., Inc., an American Biltrite Company; 491 AWF FSK.
    - d. Venture Tape; 1525 CW, 1528 CW, and 1528 CW/SQ.
    - e. Or approved equal
  2. ~~Width: 3 inches.~~
  3. Thickness: 6.5 mils.
  4. Adhesion: 90 ounces force/inch in width.
  5. Elongation: 2 percent.
  6. Tensile Strength: 40 lbf/inch in width.
  7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.
- C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive. Suitable for indoor and outdoor applications.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0555.
    - b. Compac Corp.; 130.
    - c. Ideal Tape Co., Inc., an American Biltrite Company; 370 White PVC tape.
    - d. Venture Tape; 1506 CW NS.
    - e. Or approved equal
  2. Width: 2 inches.
  3. Thickness: 6 mils.
  4. Adhesion: 64 ounces force/inch in width.
  5. Elongation: 500 percent.
  6. Tensile Strength: 18 lbf/inch in width.
- D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.



1. Products: Subject to compliance with requirements, provide one of the following:

- a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0800.
- b. Compac Corp.; 120.
- c. Ideal Tape Co., Inc., an American Biltrite Company; 488 AWF.
- d. Venture Tape; 3520 CW.
- e. Or approved equal

2. Width: 2 inches.

3. Thickness: 3.7 mils.

4. Adhesion: 100 ounces force/inch in width.

5. Elongation: 5 percent.

6. Tensile Strength: 34 lbf/inch in width.

E. PVDC Tape for Indoor Applications: White vapor-retarder PVDC tape with acrylic adhesive.

1. Width: 3 inches.

2. Film Thickness: 4 mils.

3. Adhesive Thickness: 1.5 mils.

4. Elongation at Break: 145 percent.

5. Tensile Strength: 55 lbf/inch in width.

F. PVDC Tape for Outdoor Applications: White vapor-retarder PVDC tape with acrylic adhesive.

1. Width: 3 inches.

2. Film Thickness: 6 mils.

3. Adhesive Thickness: 1.5 mils.

4. Elongation at Break: 145 percent.

5. Tensile Strength: 55 lbf/inch in width.

## 2.13 SECUREMENTS

A. Bands:

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Childers Products; Bands.
- b. PABCO Metals Corporation; Bands.
- c. RPR Products, Inc.; Bands.
- d. Or approved equal

2. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 3/4 inch wide with wing or closed seal.

3. Springs: Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.

B. Insulation Pins and Hangers:



1. Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch- diameter shank, length to suit depth of insulation indicated.
  - a. Products: Subject to compliance with requirements, provide one of the following:
    - 1) AGM Industries, Inc.; CWP-1.
    - 2) GEMCO; CD.
    - 3) Midwest Fasteners, Inc.; CD.
    - 4) Nelson Stud Welding; TPA, TPC, and TPS.
    - 5) Or approved equal
  
2. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.135-inch- diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
  - a. Products: Subject to compliance with requirements, provide one of the following:
    - 1) AGM Industries, Inc.; CWP-1.
    - 2) GEMCO; Cupped Head Weld Pin.
    - 3) Midwest Fasteners, Inc.; Cupped Head.
    - 4) Nelson Stud Welding; CHP.
    - 5) Or approved equal
  
3. ~~Metal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:~~
  - a. Products: Subject to compliance with requirements, provide one of the following:
    - 1) AGM Industries, Inc.; Tactoo Insul-Hangers, Series T.
    - 2) GEMCO; Perforated Base.
    - 3) Midwest Fasteners, Inc.; Spindle.
    - 4) Or approved equal
  
  - b. Baseplate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
  
  - c. Spindle: Copper- or zinc-coated, low carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.
  
  - d. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.
  
4. Nonmetal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate fastened to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
  - a. Baseplate: Perforated, nylon sheet, 0.030 inch thick by 1-1/2 inches in diameter.



- b. Spindle: Nylon, 0.106-inch- diameter shank, length to suit depth of insulation indicated, up to 2-1/2 inches.
  - c. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.
5. Self-Sticking-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
- a. Products: Subject to compliance with requirements, provide one of the following:
    - 1) AGM Industries, Inc.; Tactoo Insul-Hangers, Series TSA.
    - 2) GEMCO; Press and Peel.
    - 3) Midwest Fasteners, Inc.; Self Stick.
    - 4) Or approved equal
  - b. Baseplate: Galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
  - c. Spindle: Copper- or zinc-coated, low carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.
  - d. Adhesive-backed base with a peel-off protective cover.
6. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- thick, galvanized-steel, stainless-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
- a. Products: Subject to compliance with requirements, provide one of the following:
    - 1) AGM Industries, Inc.; RC-150.
    - 2) GEMCO; R-150.
    - 3) Midwest Fasteners, Inc.; WA-150.
    - 4) Nelson Stud Welding; Speed Clips.
    - 5) Or approved equal
  - b. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.
7. Nonmetal Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick nylon sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
- C. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.
- D. Wire: 0.062-inch soft-annealed, galvanized steel.
1. Manufacturers: Subject to compliance with requirements, provide one of the following:
- a. C & F Wire.
  - b. Childers Products.
  - c. PABCO Metals Corporation.



- d. RPR Products, Inc.
- e. Or approved equal.

## **2.14 CORNER ANGLES**

- A. PVC Corner Angles: 30 mils thick, minimum 1 by 1 inch, PVC according to ASTM D 1784, Class 16354-C. White or color-coded to match adjacent surface.
- B. Aluminum Corner Angles: 0.040 inch thick, minimum 1 by 1 inch, aluminum according to ASTM B 209, Alloy 3003, 3005, 3105 or 5005; Temper H-14.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.
  - 1. Verify that systems and equipment to be insulated have been tested and are free of defects.
  - 2. Verify that surfaces to be insulated are clean and dry.
  - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

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### **3.2 PREPARATION**

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:
  - 1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
  - 2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
- C. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.



### 3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment, ducts and fittings, and piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment, duct system, and pipe system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during application and finishing.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
  - 1. Install insulation continuously through hangers and around anchor attachments.
  - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
  - 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
  - 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Install insulation with factory-applied jackets as follows:
  - 1. Draw jacket tight and smooth.
  - 2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.



3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
    - a. For below ambient services, apply vapor-barrier mastic over staples.
  4. Cover joints and seams with tape as recommended by insulation material manufacturer to maintain vapor seal.
  5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct and pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.
- P. For above ambient services, do not install insulation to the following:
1. Vibration-control devices.
  2. ~~Testing agency labels and stamps.~~
  3. Nameplates and data plates.
  4. Manholes.
  5. Handholes.
  6. Cleanouts.

### 3.4 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
1. Seal penetrations with flashing sealant.
  2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
  3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
  4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
1. Seal penetrations with flashing sealant.





2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
  3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
  4. Seal jacket to wall flashing with flashing sealant.
- C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions. Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches.
- E. Insulation Installation at Floor Penetrations:
1. Duct: Install insulation continuously through floor penetrations that are not fire rated. For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches.
  2. Pipe: Install insulation continuously through floor penetrations.
  3. Seal penetrations through fire-rated assemblies.

### **3.5 GENERAL PIPE INSULATION INSTALLATION**

- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity, unless otherwise indicated.
  2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
  3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
  4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
  5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe



insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below ambient services, provide a design that maintains vapor barrier.

6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
  7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below ambient services and a breather mastic for above ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
  8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
  9. Stencil or label the outside insulation jacket of each union with the word "UNION." Match size and color of pipe labels.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes, vessels, and equipment. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
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- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
  2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
  3. Construct removable valve insulation covers in same manner as for flanges except divide the two-part section on the vertical center line of valve body.
  4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
  5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

### 3.6 CALCIUM SILICATE INSULATION INSTALLATION

- A. Insulation Installation on Straight Pipes and Tubes:



1. Secure single-layer insulation with stainless-steel bands at 12-inch intervals and tighten bands without deforming insulation materials.
2. Install 2-layer insulation with joints tightly butted and staggered at least 3 inches. Secure inner layer with wire spaced at 12-inch intervals. Secure outer layer with stainless-steel bands at 12-inch intervals.
3. Apply a skim coat of mineral-fiber, hydraulic-setting cement to insulation surface. When cement is dry, apply flood coat of lagging adhesive and press on one layer of glass cloth or tape. Overlap edges at least 1 inch. Apply finish coat of lagging adhesive over glass cloth or tape. Thin finish coat to achieve smooth, uniform finish.

**B. Insulation Installation on Pipe Flanges:**

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of block insulation of same material and thickness as pipe insulation.
4. Finish flange insulation same as pipe insulation.

**C. Insulation Installation on Pipe Fittings and Elbows:**

1. Install preformed sections of same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
2. When preformed insulation sections of insulation are not available, install mitered sections of calcium silicate insulation. Secure insulation materials with wire or bands.
3. Finish fittings insulation same as pipe insulation.

**D. Insulation Installation on Valves and Pipe Specialties:**

1. Install mitered segments of calcium silicate insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
2. Install insulation to flanges as specified for flange insulation application.
3. Finish valve and specialty insulation same as pipe insulation.

### **3.7 CELLULAR-GLASS INSULATION INSTALLATION**

**A. Insulation Installation on Straight Pipes and Tubes:**

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above ambient services, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below ambient services, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.



B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of cellular-glass block insulation of same thickness as pipe insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of cellular-glass insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

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### **3.8 FLEXIBLE ELASTOMERIC INSULATION INSTALLATION**

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:



1. Install preformed valve covers manufactured of same material as pipe insulation when available.
2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

### **3.9 MINERAL-FIBER INSULATION INSTALLATION**

#### **A. Insulation Installation on Straight Pipes and Tubes:**

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above ambient surfaces, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below ambient surfaces, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

#### **B. Insulation Installation on Pipe Flanges:**

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

#### **C. Insulation Installation on Pipe Fittings and Elbows:**

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

#### **D. Insulation Installation on Valves and Pipe Specialties:**

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.



3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
  4. Install insulation to flanges as specified for flange insulation application.
- E. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
  2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
  3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
    - a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
    - b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
    - c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
    - d. Do not overcompress insulation during installation.
    - e. Impale insulation over pins and attach speed washers.
    - f. ~~Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.~~
  4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from 1 edge and 1 end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
    - a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
    - b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to 2 times the insulation thickness but not less than 3 inches.
  5. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches o.c.
  6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.



7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch- wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

F. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
  - a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
  - b. On duct sides with dimensions larger than 18 inches, space pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
  - c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
  - d. Do not overcompress insulation during installation.
  - e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from 1 edge and 1 end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
  - a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
  - b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to 2 times the insulation thickness but not less than 3 inches.
5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch- wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.



### 3.10 PHENOLIC INSULATION INSTALLATION

#### A. General Installation Requirements:

1. Secure single-layer insulation with stainless-steel bands at 12-inch intervals and tighten bands without deforming insulation materials.
2. Install 2-layer insulation with joints tightly butted and staggered at least 3 inches. Secure inner layer with 0.062-inch wire spaced at 12-inch intervals. Secure outer layer with stainless-steel bands at 12-inch intervals.

#### B. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above ambient services, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets with vapor retarders on below ambient services, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

#### C. Insulation Installation on Pipe Flanges:

1. ~~Install preformed pipe insulation to outer diameter of pipe flange.~~
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of block insulation of same material and thickness as pipe insulation.

#### D. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.

#### E. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

### 3.11 POLYISOCYANURATE INSULATION INSTALLATION

#### A. Insulation Installation on Straight Pipes and Tubes:





1. Secure each layer of insulation to pipe with tape or bands and tighten without deforming insulation materials. Orient longitudinal joints between half sections in 3 and 9 o'clock positions on the pipe.
2. For insulation with factory-applied jackets with vapor barriers, do not staple longitudinal tabs but secure tabs with additional adhesive or tape as recommended by insulation material manufacturer and seal with vapor-barrier mastic.
3. All insulation shall be tightly butted and free of voids and gaps at all joints. Vapor barrier must be continuous. Before installing jacket material, install vapor-barrier system.

**B. Insulation Installation on Pipe Flanges:**

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, same thickness of adjacent pipe insulation, not to exceed 1-1/2-inch thickness.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyisocyanurate block insulation of same thickness as pipe insulation.

**C. Insulation Installation on Fittings and Elbows:**

1. Install preformed sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.

**D. Insulation Installation on Valves and Pipe Specialties:**

1. Install preformed sections of polyisocyanurate insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

### **3.12 POLYOLEFIN INSULATION INSTALLATION**

**A. Insulation Installation on Straight Pipes and Tubes:**

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

**B. Insulation Installation on Pipe Flanges:**

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.



C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

### 3.13 POLYSTYRENE INSULATION INSTALLATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation with tape or bands and tighten bands without deforming insulation materials. Orient longitudinal joints between half sections in 3 and 9 o'clock positions on the pipe.
2. ~~For insulation with factory-applied jackets with vapor barriers, do not staple longitudinal tabs but secure tabs with additional adhesive or tape as recommended by insulation material manufacturer and seal with vapor-barrier mastic.~~
3. All insulation shall be tightly butted and free of voids and gaps at all joints. Vapor barrier must be continuous. Before installing jacket material, install vapor-barrier system.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, same thickness of adjacent pipe insulation, not to exceed 1-1/2-inch thickness.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polystyrene block insulation of same thickness as pipe insulation.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed section of polystyrene insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.



### 3.14 FIELD-APPLIED JACKET INSTALLATION

- A. Where glass-cloth jackets are indicated, install directly over bare insulation or insulation with factory-applied jackets.
1. Draw jacket smooth and tight to surface with 2-inch overlap at seams and joints.
  2. Embed glass cloth between two 0.062-inch- thick coats of lagging adhesive.
  3. Completely encapsulate insulation with coating, leaving no exposed insulation.
- B. Where FSK jackets are indicated, install as follows:
1. Draw jacket material smooth and tight.
  2. Install lap or joint strips with same material as jacket.
  3. Secure jacket to insulation with manufacturer's recommended adhesive.
  4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
  5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.
- C. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints; for horizontal applications, install with longitudinal seams along top and bottom of tanks and vessels. Seal with manufacturer's recommended adhesive.
1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.
- D. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.
- E. Where PVDC jackets are indicated, install as follows:
1. Apply three separate wraps of filament tape per insulation section to secure pipe insulation to pipe prior to installation of PVDC jacket.
  2. Wrap factory-presizes jackets around individual pipe insulation sections with one end overlapping the previously installed sheet. Install presized jacket with an approximate overlap at butt joint of 2 inches over the previous section. Adhere lap seal using adhesive or SSL, and then apply 1-1/4 circumferences of appropriate PVDC tape around overlapped butt joint.
  3. Continuous jacket can be spiral wrapped around a length of pipe insulation. Apply adhesive or PVDC tape at overlapped spiral edge. When electing to use adhesives, refer to manufacturer's written instructions for application of adhesives along this spiral edge to maintain a permanent bond.
  4. Jacket can be wrapped in cigarette fashion along length of roll for insulation systems with an outer circumference of 33-1/2 inches or less. The 33-1/2-inch- circumference limit allows for 2-inch- overlap seal. Using the length of roll allows for longer sections of jacket to be installed at one time. Use adhesive on the lap seal. Visually inspect lap seal for "fishmouthing," and use PVDC tape along lap seal to secure joint.

5. Repair holes or tears in PVDC jacket by placing PVDC tape over the hole or tear and wrapping a minimum of 1-1/4 circumferences to avoid damage to tape edges.

### **3.15 FIRE-RATED INSULATION SYSTEM INSTALLATION**

- A. Where fire-rated insulation system is indicated, secure system to ducts and duct hangers and supports to maintain a continuous fire rating.
- B. Insulate duct access panels and doors to achieve same fire rating as duct.
- C. Install firestopping at penetrations through fire-rated assemblies. "

### **3.16 FINISHES**

- A. Duct, Equipment, and Pipe Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Division 09 painting Sections.

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

- a. Finish Coat Material: Interior, flat, latex-emulsion size.

- 
- B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.
  - C. Color: Final color as selected by Commissioner. Vary first and second coats to allow visual inspection of the completed Work.
  - D. Do not field paint aluminum or stainless-steel jackets.

### **3.17 FIELD QUALITY CONTROL**

- A. Testing Agency: The Contractor will engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
  1. Inspect ductwork, randomly selected by the Commissioner, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location for each duct system.
  2. Inspect field-insulated equipment, randomly selected by Commissioner, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location for each type of equipment. For large equipment, remove only a portion adequate to determine compliance.



3. Inspect pipe, fittings, strainers, and valves, randomly selected by Commissioner, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe.
- D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

### **3.18 ENGINE EXHAUST PIPE**

- A. For all pipe sizes shall be the following:
  1. Calcium Silicate: 4 inches thick.

### **3.19 DUCT INSULATION SCHEDULE, GENERAL**

- A. Ducts Requiring Insulation:
  1. Indoor, concealed supply and outdoor air.
  2. Indoor, exposed supply and outdoor air.
  3. Indoor, concealed return located in nonconditioned space.
  4. Indoor, exposed return located in nonconditioned space.
  5. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
  6. Indoor, exposed exhaust between isolation damper and penetration of building exterior.
  7. Any ductwork where ductwork air temperature exceeds 85°F.
- B. Items Not Insulated:
  1. Fibrous-glass ducts.
  2. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
  3. Factory-insulated flexible ducts.
  4. Factory-insulated plenums and casings.
  5. Flexible connectors.
  6. Vibration-control devices.
  7. Factory-insulated access panels and doors.

### **3.20 INDOOR DUCT AND PLENUM INSULATION SCHEDULE**

- A. Concealed, rectangular, exhaust-air duct insulation between isolation damper and penetration of building exterior shall be the following:
  1. Flexible Elastomeric: 1 inch thick.
  2. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
  3. Mineral-Fiber Board: 1-1/2 inches thick and 2-lb/cu. ft. nominal density.



4. Phenolic: 1 inch thick.
  5. Polyolefin: 1 inch thick.
- B. Exposed, rectangular, supply-air duct insulation shall be the following:
1. Flexible Elastomeric: 1 inch thick.
  2. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
  3. Mineral-Fiber Board: 1-1/2 inches thick and 2-lb/cu. ft. nominal density.
  4. Phenolic: 1 inch thick.
  5. Polyolefin: 1 inch thick.
- C. Exposed, rectangular, return-air duct insulation shall be the following:
1. Flexible Elastomeric: 1 inch thick.
  2. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
  3. Mineral-Fiber Board: 1-1/2 inches thick and 2-lb/cu. ft. nominal density.
  4. Phenolic: 1 inch thick.
  5. Polyolefin: 1 inch thick.
- D. Exposed, rectangular, outdoor-air duct insulation shall be the following:
1. Flexible Elastomeric: 1 inch thick.
  2. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
  3. Mineral-Fiber Board: 1-1/2 inches thick and 2-lb/cu. ft. nominal density.
  4. Phenolic: 1 inch thick.
  5. Polyolefin: 1 inch thick.
- 
- E. Exposed, rectangular, exhaust-air duct insulation shall be the following:
1. Flexible Elastomeric: 1 inch thick.
  2. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
  3. Mineral-Fiber Board: 1-1/2 inches thick and 2-lb/cu. ft. nominal density.
  4. Phenolic: 1 inch thick.
  5. Polyolefin: 1 inch thick.
- F. Exposed, supply-air plenum insulation shall be the following:
1. Flexible Elastomeric: 1 inch thick.
  2. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
  3. Mineral-Fiber Board: 1-1/2 inches thick and 2-lb/cu. ft. nominal density.
- G. Exposed, return-air plenum insulation shall be the following:
1. Flexible Elastomeric: 1 inch thick.
  2. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
  3. Mineral-Fiber Board: 1-1/2 inches thick and 2-lb/cu. ft. nominal density.
  4. Phenolic: 1 inch thick.
  5. Polyolefin: 1 inch thick.
- H. Exposed, outdoor-air plenum insulation shall be the following:



1. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 1-1/2 inches thick and 2-lb/cu. ft. nominal density.
3. Phenolic: 1 inch thick.

I. Exposed, exhaust-air plenum insulation shall be the following:

1. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 1-1/2 inches thick and 2-lb/cu. ft. nominal density.
3. Phenolic: 1 inch thick.

J. Concealed, rectangular, outdoor-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.

### **3.21 PIPING INSULATION SCHEDULE, GENERAL**

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

### **3.22 INDOOR PIPING INSULATION SCHEDULE**

A. Steam and Steam Condensate, 251 Degree F to 350 Degree F:

1. NPS 1½ and Smaller: Insulation shall be the following:
  - a. Mineral-Fiber, Preformed Pipe, Type I or II: 1½ inches thick.
2. NPS 2 and Larger: Insulation shall be the following:
  - a. Mineral-Fiber, Preformed Pipe, Type I or II: 3 inches thick.

### **3.23 INDOOR, FIELD-APPLIED JACKET SCHEDULE**

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

C. Ducts and Plenums, Concealed:

1. PVC: 20 mils thick.

D. Ducts and Plenums, Exposed:

1. PVC: 20 mils thick.



- E. Piping, Concealed:
  - 1. PVC: 20 mils thick.
  
- F. Piping, Exposed:
  - 1. PVC: 20 mils thick.
  - 2. Aluminum, Smooth: 0.016 inch thick.

### **3.24 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE**

- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
  
- B. If more than one material is listed, selection from materials listed is Contractor's option.
  
- C. Rectangular Ducts and Plenums, Concealed:
  - 1. Self-Adhesive Outdoor Jacket: 60-mil- thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a crosslaminated polyethylene film covered with stucco-embossed aluminum-foil facing.
    - a. Products: Subject to compliance with requirements, provide one of the following:
      - 1) Polyguard; Alumaguard 60 or approved equal
  
- D. Rectangular Ducts and Plenums, Exposed, up to 48 Inches in Diameter or with Flat Surfaces up to 72 Inches:
  - 1. Self-Adhesive Outdoor Jacket: 60-mil- thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a crosslaminated polyethylene film covered with stucco-embossed aluminum-foil facing.
    - a. Products: Subject to compliance with requirements, provide one of the following:
      - 1) Polyguard; Alumaguard 60 or approved equal.

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**SECTION 23 11 13  
FACILITY FUEL-OIL 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 SUMMARY**

- A. This Section includes diesel-fuel-oil distribution systems and the following:

1. Pipes, tubes, and fittings.
2. Piping and tubing joining materials.
3. Piping specialties.
4. Valves.
5. Containment-dike, steel, fuel-oil ASTs.
6. Fuel-oil AST accessories.
7. Fuel-oil storage tank piping specialties.
8. Fuel-transfer pumps.
9. Liquid-level gage system.
10. Leak-detection and monitoring system.
11. Mechanical sleeve seals.
12. Grout.
13. Concrete bases.
14. Fuel oil filtration system

**1.3 DEFINITIONS**

- A. AST: Aboveground storage tank.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- E. FPM: Vinylidene fluoride-hexafluoropropylene copolymer rubber.



- F. FRP: Glass-fiber-reinforced plastic.
- G. UST: Underground storage tank.

#### **1.4 PERFORMANCE REQUIREMENTS**

- A. Maximum Operating-Pressure Ratings: 3-psig fuel-oil supply pressure at oil-fired appliances.
- B. Seismic Performance: Factory-installed support attachments for AST shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
  - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

#### **1.5 SUBMITTALS**

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, and dimensions of individual components and profiles. Also include, where applicable, rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
  - 1. Piping specialties.
  - 2. Valves: Include pressure rating, capacity, settings, and electrical connection data of selected models.
  - 3. Each type and size of fuel-oil storage tank. Indicate dimensions, weights, loads, components, and location and size of manholes and each field connection.
  - 4. Fuel-oil storage tank accessories.
  - 5. Fuel-oil storage tank piping specialties.
  - 6. Fuel-oil transfer pumps.
  - 7. Fuel maintenance system.
  - 8. Liquid-level gage system.
  - 9. Leak-detection and monitoring system.
- B. Electrical wiring diagrams for power supply, interlocks, and controls
- C. Control system and components including controls and instrumentation wiring diagrams.
- D. Shop Drawings: For facility fuel-oil piping layout. Include plans, piping layout and elevations, sections, and details for fabrication of pipe anchors, hangers, supports for multiple pipes, alignment guides, expansion joints and loops, and attachments of the same to building structure. Detail location of anchors, alignment guides, and expansion joints and loops.
  - 1. Shop Drawing Scale: 1/4 inch per foot.
  - 2. For fuel-oil storage tanks and pumps, include details of supports and anchors.
- E. Coordination Drawings: Plans and details, 3/8" scale, on which fuel-oil piping is shown and coordinated with other installations, using input from installers of the items involved.



- F. Site Survey: Plans, drawn to scale, on which fuel-oil piping and tanks are shown and coordinated with other services and utilities.
- G. Qualification Data: For qualified professional engineer licensed in the State of New York.
- H. Welding certificates
- I. Field quality-control reports.
- J. Seismic Qualification Certificates: For ASTs, accessories, and components, from manufacturer.
  - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- K. Brazing certificates.
- L. Welding certificates.
- M. Field quality-control reports.
- ~~N. Operation and Maintenance Data: For fuel-oil equipment and accessories to include in emergency, operation, and maintenance manuals.~~
- O. Warranty: Sample of special warranty.

## 1.6 QUALITY ASSURANCE

- A. Comply with the following governing codes & standards:
  - 1. New York City Mechanical Code 2008.
  - 2. Energy Conservation Code – NYC-ECC.
  - 3. New York City Fire Code 2008.
  - 4. Underwriters' Laboratories, Inc. – UL 142
  - 5. National Fire Protection Association (NFPA 30 - 2003) Flammable and Combustible Liquids Code and (NFPA 31 – 2001) Standards for Installation of Oil Burning Equipment.
  - 6. National Sanitation Foundation Testing Laboratory, January 1984, listing of Plastic Piping System Components and Related Materials, Standard 15.
  - 7. Steel Tank Institute.
  - 8. New York State Department of Environmental Conservation Petroleum Bulk Storage, Code 6 NYCRR.
- B. Construct, test and install the tanks in accordance with NFPA recommendations and furnish with Underwriters' label. Comply with all governing Federal, State, and local 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 local codes. Comply with Underwriters' Laboratories requirements and Department of Environmental Protection.
- D. Factory test all fuel tanks at 25 psig after fabrication.
- E. Brazing: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX.
- F. Steel Support Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- G. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.
- H. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- I. Comply with ASME B31.9, "Building Services Piping," for fuel-oil piping materials, installation, testing, and inspecting.
- J. Vessels: Manufacturer's name and pressure rating marked on nameplate.

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Lift and support fuel-oil storage tanks only at designated lifting or supporting points, as shown on Shop Drawings. Do not move or lift tanks unless empty.
- B. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- C. Store pipes and tubes with protective PE coating to avoid damaging the coating and to protect from direct sunlight.
- D. Store PE pipes and valves protected from direct sunlight.
- E. Deliver equipment with factory installed wooden skids and lifting lugs; pack components in factory fabricated protective containers.
- F. Handle equipment carefully to avoid damage to components, enclosures, and finish.
- G. Store equipment in clean, dry spaces and protect them from weather and construction debris.
- H. Comply with manufacturer's rigging instructions for unloading equipment, and moving equipment to final location for installation.
- I. Loose-shipped items shall be packed, protected and secured with units.



**1.8 PROJECT CONDITIONS**

- A. Interruption of Existing Fuel-Oil Service: Do not interrupt fuel-oil service to facilities occupied by City of New York or others unless permitted under the following conditions and then only after arranging to provide temporary fuel-oil supply according to requirements indicated:
  - 1. Notify City of New York no fewer than seven days in advance of proposed interruption of fuel-oil service.
  - 2. Do not proceed with interruption of fuel-oil service without Commissioner's written permission.

**1.9 COORDINATION**

- A. Coordinate sizes and locations of concrete bases with actual equipment provided.

**1.10 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of fuel-oil storage tanks and double-containment piping and related equipment that fail in materials or workmanship within specified warranty period.
  - 1. Storage Tanks:
    - a. Failures include, but are not limited to, the following when used for storage of fuel oil at temperatures not exceeding 150 deg F:
      - 1) Structural failures including cracking, breakup, and collapse.
      - 2) Corrosion failure including external and internal corrosion of steel tanks.
    - b. Warranty Period: 30 years from date of Substantial Completion.
- B. Automatic Fuel Oil Transfer Pump Set System manufacturer shall provide a one year warranty on all parts and appurtenances from date of system acceptance
  - 1. Warranty shall include all labor and parts.
  - 2. If within the warranty period described above, upon written notice from the City of New York, it is found to be defective in operation, workmanship or materials, it shall be replaced, repaired or adjusted to satisfy the Commissioner at no additional cost to the City of New York.
- C. Fuel oil Specialties and instruments:
  - 1. One year warranty on all parts and appurtenances from date of system acceptance.



### 1.11 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Drive Belt: Two for each belt-driven pump.

## PART 2 - PRODUCTS

### 2.1 PIPES, TUBES, AND FITTINGS

- A. All piping materials shall be per sections 1302 and 1305.9.5 of the 2008 NYC Mechanical Code
- B. See Part 3 piping schedule articles for where pipes, tubes, fittings, and joining materials are applied in various services.
- C. Wall thickness of wrought-iron and steel pipe shall comply with the specifications of ANSI/ASME B36.10 Standard on welded and seamless wrought steel pipe.
- D. Steel Pipe: ASTM A 53, black steel, plain ends, Schedule 40, Type S, Grade B, or ASTM A 106, Grade B, Schedule 40, seamless.
  - 1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern.
  - 2. Wrought-Steel Welding Fittings: ASTM A 234, for butt and socket welding, wall thickness to match adjoining pipe.
  - 3. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.
  - 4. Forged-Steel Flanges and Flanged Fittings: ASME B16.5, minimum Class 150, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
    - a. Material Group: 1.1.
    - b. End Connections: Threaded or butt welding to match pipe.
    - c. Lapped Face: Not permitted underground.
    - d. Gasket Materials: Asbestos free, ASME B16.20 metallic, or ASME B16.21 nonmetallic, gaskets compatible with fuel oil.
    - e. Bolts and Nuts: ASME B18.2.1, cadmium-plated steel.
    - f. Forged Steel Fittings: ASME B16.11, Class 2000 (threaded) and Class 3000 (socket welded).
    - g. Steel Pipe Nipples: ASTM A 733, made of ASTM A 53, black steel of same type, grade and schedule as pipe in which installed.
- E. Drawn-Temper Copper Tube: Comply with ASTM B 88, Type K.
  - 1. Copper Fittings: ASME B16.22, wrought copper, streamlined pattern.
  - 2. Bronze Flanges and Flanged Fittings: ASME B16.24, Class 150.



- a. Gasket Material: Asbestos free, ASME B16.20, metallic, or ASME B16.21 nonmetallic, gaskets compatible with fuel oil.
  - b. Bolts and Nuts: ASME B18.2.1, cadmium-plated steel.
- F. Annealed-Temper Copper Tube: Comply with ASTM B 88, Type K.
- 1. Copper Fittings: ASME B16.22, wrought copper, streamlined pattern.
  - 2. Flare Fittings: Comply with ASME B16.26 and SAE J513.
    - a. Copper fittings with long nuts.
    - b. Metal-to-metal compression seal without gasket.
    - c. Dryseal threads complying with ASME B1.20.3.

## 2.2 DOUBLE-CONTAINMENT PIPE AND FITTINGS

### A. Rigid, Double-Containment Piping:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Insul-Tek.
  - b. Perma-Pipe, Inc.
  - c. Rovanco.
  - d. Thermacor.
  - e. Or approved equal.
- 2. Carrier Pipe:
  - a. Pipe: ASTM A 53, black steel, plain ends, Schedule 40, Type S, Grade B, or ASTM A 106, Grade B, Schedule 40, seamless.
  - b. Fittings: ASTM A 234, wrought steel, for butt and socket welding.
  - c. Minimum Operating-Pressure Range: 150 psig.
- 3. Containment Conduit:
  - a. Smooth wall steel conduit, minimum 10 gauge wall thickness.
  - b. Containment conduit shall be at least two sizes larger than carrier pipe.

## 2.3 PIPING SPECIALTIES

### A. Flexible Connectors: Comply with UL 567.

- 1. Metallic Connectors:
  - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - 1) American Flexible Hose Co., Inc.
    - 2) Flexicraft Industries.





- 3) Metraflex Company (The).
  - 4) Proco Products, Inc.
  - 5) Tru-Flex Metal Hose Corp.
  - 6) Or approved equal.
- b. Listed and labeled for aboveground and underground applications by an NRTL.
  - c. Stainless-steel bellows with woven, flexible, bronze or stainless-steel, wire-reinforcing protective jacket.
  - d. Minimum Operating Pressure: 150 psig.
  - e. End Connections: Socket, flanged, or threaded end to match connected piping.
  - f. Maximum Length: 30 inches.
  - g. Swivel end, 250-psig maximum operating pressure.
  - h. Factory-furnished anode.
- B. Fuel Oil Strainer**  
Factory install, One (1) Duplex strainer, basin mounted, on the suction side of the pumps. Strainer to be sized for less than ½ psi of mercury drop through a clean strainer basket with the maximum anticipated flow in the suction line. Strainer shall be one piece cast iron body and shall be suitable for 200 psi. Strainer baskets shall be 40 mesh stainless steel. Strainer shall come complete with lever wrench handle and be bolted in place without bolting through pan.
- C. Strainer Differential Pressure Switch**  
Strainer shall be equipped with an optional factory mounted and wired differential pressure switch to indicate that the basket needs to be cleaned. Indicating scale plate shall be three position color coded for easy indication of strainer basket flow status. Switch shall provide indication on the main pumpset control cabinet to alert operators.
- D. Manual Air Vents:**
1. Body: Bronze.
  2. Internal Parts: Nonferrous.
  3. Operator: Screwdriver or thumbscrew.
  4. Inlet Connection: NPS 1/2.
  5. Discharge Connection: NPS 1/8.
  6. CWP Rating: 150 psig.
  7. Maximum Operating Temperature: 225 deg F.

## 2.4 JOINING MATERIALS

- A. Joint Compound and Tape: Suitable for fuel oil.
- B. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- C. Brazing Filler Metals: Alloy with melting point greater than 1000 deg F complying with AWS A5.8. Brazing alloys containing more than 0.05 percent phosphorus are prohibited.
- D. Bonding Adhesive for Fiberglass Piping: As recommended by fiberglass piping manufacturer.



## 2.5 MANUAL FUEL-OIL SHUTOFF VALVES

- A. See valve schedule in Part 3 for where each valve type is applied in various services.
- B. General Requirements for Metallic Valves, NPS 2 and Smaller for Liquid Service: Comply with UL 842.
  - 1. CWP Rating: 150 psig.
  - 2. Threaded Ends: Comply with ASME B1.20.1.
  - 3. Dryseal Threads on Flare Ends: Comply with ASME B1.20.3.
  - 4. Tamperproof Feature: Locking feature for valves indicated in the valve schedule.
  - 5. Service Mark: Initials "WOG" shall be permanently marked on valve body.
- C. General Requirements for Metallic Valves, NPS 2-1/2 and Larger: Comply with UL 842.
  - 1. CWP Rating: 150 psig.
  - 2. Flanged Ends: Comply with ASME B16.5 for steel flanges.
  - 3. Tamperproof Feature: Locking feature for valves indicated in the valve schedule.
  - 4. Service Mark: Initials "WOG" shall be permanently marked on valve body.
- D. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim: MSS SP-110.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. BrassCraft Manufacturing Company; a Masco company.
    - b. Conbraco Industries, Inc.; Apollo Div.
    - c. Lyall, R. W. & Company, Inc.
    - d. McDonald, A. Y. Mfg. Co.
    - e. Perfection Corporation; A Subsidiary of American Meter Company.
    - f. Or approved equal.
  - 2. Body: Bronze, complying with ASTM B 584.
  - 3. Ball: Chrome-plated bronze.
  - 4. Stem: Bronze; blowout proof.
  - 5. Seats: Reinforced TFE; blowout proof.
  - 6. Packing: Threaded-body packnut design with adjustable-stem packing.
  - 7. Ends: Threaded, flared, or socket as indicated in the valve schedule.
  - 8. CWP Rating: 600 psig.
  - 9. Service Mark: Initials "WOG" shall be permanently marked on valve body.

## 2.6 SPECIALTY VALVES

- A. Relief Valves, External Piped, Comply with UL 842
  - 1. Provide and mount for each pump a relief valves sized to relieve the full outlet flow of the pump without causing the pump motor to overload or any component's pressure rating to be exceeded if the discharge is inadvertently valved off. Relief valves must be



externally mounted from the pumps and piped to the return line in the field according to NFPA 30. Pump internal relief valves shall not be accepted.

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Preferred Utilities Manufacturing Corporation.
  - b. Anderson Greenwood; Division of Tyco Flow Control.
  - c. Fulflo Specialties, Inc.
  - d. Webster Fuel Pumps & Valves; a division of Capital City Tool, Inc.
  - e. Or approved equal.
3. Listed and labeled for fuel-oil service by an NRTL.
4. Body: Brass, bronze, or cast steel.
5. Springs: Stainless steel, interchangeable.
6. Seat and Seal: Nitrile rubber.
7. Orifice: Stainless steel, interchangeable.
8. Factory-Applied Finish: Baked enamel.
9. Maximum Inlet Pressure: 200 psig.
10. Relief Pressure Setting: 175 psig.

**B. Emergency Shutoff Valves: Comply with UL 842.**

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Preferred Utilities Manufacturing Corporation.
  - b. Ameron International; Fiberglass Pipe Group.
  - c. Conley Corporation.
  - d. EMCO Wheaton; a Gardner Denver Company.
  - e. Environ Products, Inc.
  - f. OPW.
  - g. Or approved equal.
2. Listed and labeled for fuel-oil service by an NRTL.
3. Single poppet valve.
4. Body: ASTM A 126, cast iron.
5. Disk: FPM.
6. Poppet Spring: Stainless steel.
7. Stem: Plated brass.
8. O-Ring: FPM.
9. Packing Nut: PTFE-coated brass.
10. Fusible link to close valve at 165 deg F.
11. Thermal relief to vent line pressure buildup due to fire.
12. Air test port.
13. Maximum Operating Pressure: 0.5 psig.

**C. Oil Lever Gate Valve, model 110 Fire Safety Fuel Shut-off Valve (FV): Comply with UL 842.**

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



- a. Preferred Utilities Manufacturing Corporation.
  - b. Anderson Greenwood; Division of Tyco Flow Control.
  - c. Fulflo Specialties, Inc.
  - d. Webster Fuel Pumps & Valves; a division of Capital City Tool, Inc.
  - e. Or approved equal.
2. The fire safety shut-off valve is as specified on PARA C 1-13.
  3. Listed and labeled for fuel-oil service by an NRTL acceptable to authorities having jurisdiction.
  4. 125 lb screwed full ported.
  5. Body: Bronze.
  6. Disc: Lever operated, quick closing mechanism with zinc plated malleable iron lever.
  7. Springs: Cadmium plated steel spring.
  8. Seat and Discs: hand lapped and extra-long stem packing to avoid suction line air leaks.
  9. Factory-Applied Finish: -the fire safety shut-off valve has a cast bronze body, the handle is painted steel, color black, spring is cadmium plated steel.
  10. Maximum Inlet Pressure: - the valve body is rated at 125psig.
  11. There is a pressure safety valve on each pump discharge that is field set at 15 psig above system operating pressure.
  12. 165°F fusible links and interlock wiring as required
  13. The valve to be equipped with automatic fuel shut-off limit switch assembly. Switch to be wired to the Fuel Oil Management System to provide "Fire and "Loss of fuel supply: alarm and interlock fuel oil pump set operation.
  14. Testing:
    - a. The lever gate valve should be tested upon completion of installation and regularly thereafter to ensure that it will close in the event of excess temperatures.

**D. Pump Containment Basin Leak Detection Switch, Comply with UL 842**

Provide a factory mounted and wired float operated Containment Basin Leak detection Switch to shut off the pumps and energize an audible and visual alarm should a leak be detected. The leak sensor shall be a plasma welded stainless steel construction. The leak sensor shall be internally mounted within the pump basin. Electrical connections shall be contained in a factory installed weatherproof junction box.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Preferred Utilities Manufacturing Corporation.
  - b. FE Petro, Inc.
  - c. Red Jacket Pumps; a division of Veeder-Root.
  - d. Or approved equal.
2. Listed and labeled for fuel-oil service by an NRTL.
3. Body: ASTM A 126, cast iron.
4. O-Rings: Elastomeric compatible with fuel oil.
5. Piston and Stem Seals: PTFE.
6. Stem and Spring: Stainless steel.
7. Piston Cylinder: Burnished brass.
8. Indicated Leak Rate: Maximum 3 gph at 10 psig.
9. Leak Indication: Reduced flow.



- E. **Pump Isolation and Check Valves**  
Provide and mount four (4) pump isolation valves. Locate one (1) valve on the suction and discharge side of each pump. Isolation valves will allow off-line pump maintenance without system loss of availability. Isolation valves shall be ball type, rated 400 WOG, include stainless steel ball and Teflon seat. Valve to provide full flow while open and positive shutoff when closed. Additionally, two (2) class 150 swing check valves shall be provided and mounted, one (1) located on the discharge of each pump. Valves to have a re-grindable bronze seat and a threaded cap.
- F. **Compound and Pressure Gauges**  
Provide and mount a compound gauge on the suction side of the strainer. The gauge shall read 30" vacuum -15 psig. Provide and mount a pressure gauge on the discharge side of each pump. Each gauge shall be equipped with an isolation ball valve.

## **2.7 SHOP-BUILT MAIN STORAGE TANK (AST)**

- A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
1. Mass Tank.
  2. Areo Power Unitized Fueler Inc.
  3. Buffalo Tank Company, Inc.
  4. Cardinal Tank Corp.
  5. Clawson Tank Company.
  6. Containment Solutions, Inc.
  7. Hall Tank Co.
  8. Highland Tank & Manufacturing Company, Inc.
  9. Or approved equal.
- B. **Description:**
1. Provide one (1) Steel Fuel Oil Storage Tank. Aboveground rectangular steel tank to be 1,500- gallons capacity and shall be approximately 72" wide x 156" long x 36" high. Tank to be atmospherically vented.
  2. Tank shall be single wall steel and fabricated in accordance with New York City Building code section 1305.14 and per section 1308 and New York State Department of Environmental Conservation Standards 6NYCRR Part 613 and 6NYCRR Part 614 for Petroleum Bulk storage latest edition.
  3. Tank to be UL 142 Approved.
  4. Tank shall bear the New York City and New York State labels, and also bear Underwriters' Label, which shall:
    - a. Certify the tanks conform with 6NYCRR Part 614
    - b. The name of the manufacturer and the year of manufacture
    - c. The standard of design by which the tank was manufactured
    - d. The thickness of the tank plates
    - e. Capacity of the tank
    - f. Type of petroleum products to be stored, etc.



5. A second label showing all the above information as well as the date of installation shall be conspicuously displayed and permanently affixed to the fill box.
6. Tank shall be built from steel plates made by the open hearth process and known as "tank steel". The minimum shell thickness shall be 1/4". All tanks shall be continuously welded inside and outside with either double- welded butt joints or double- welded full fillet lap joint with a minimum overlap of 3/4". Welding shall be in accordance with AWS D1- 1 to provide a watertight tank that will not warp or deform excessively under load.
7. Tank shall be jobsite fabricated and tested prior to shipment. Manufacturer to supply test affidavit/ certification.
8. Aboveground rectangular steel tank shall be fabricated of new carbon steel that shall comply with one of the following classifications:
  - a. Comply with Specifications for structural Steel ASTM A 36- 81a.
  - b. Specification for steel, Carbon (0.15 maximum percent) Hot- rolled
  - c. Sheet and Strip, Commercial Quality, Heavy thickness coils (formerly plate) ASTM A635- 81.
  - d. Have a carbon content of 0.3% or less, or a carbon equivalent of 0.53% or less and (2) mechanical strength and welding characteristics at least equivalent to one of the steels specified in Item A.
9. Fittings to be supplied as shown on the drawings and as per jobsite requirements. All fittings to be located on the top centerline of the tank. Openings on the tank shall be as follows:
  - a. One (1) Fill line connection
  - b. One (1) Normal vent line connection
  - c. One (1) Emergency vent line connection
  - d. One (1) Suction line connection
  - e. One (1) Return/ overfill line connection
  - f. One (1) Gauge connection, 4" NPT for WF Float
  - g. Two (4) Spare
10. A square striker plate, 1/8" minimum thickness and 12" square shall be installed at the tank invert under each tank fitting, except vent line connection.
11. Cylindrical tank to be mounted and welded to saddles. Quantity of saddles as required by tank size/ capacity.
12. Exterior protective primer coating to be red oxide. Two coats minimum dry thickness of 3 mils on shell and heads.
13. Finish coat to be black enamel. Finish coat to be a minimum dry thickness of 3 mils on shell and heads.
14. Tank to be hydrostatically tested at 25 PSI in accordance with New York City Building code and Fire Department requirements.
15. Repair any leaks or defects detected during test procedure and retest.
16. Provide a rupture basin. Basin to be manufactured from made same tank steel.
17. Tank to be as supplied by Analytical & Combustion Systems.
18. 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.

## **2.8 SHOP PAINTING OF AST**

- A. Prepare exterior steel surface of AST and tank supports.



- B. Shop Cleaning: After fabrication, blast clean according to SSPC-SP 6/NACE No. 3.
- C. After cleaning, remove dust or residue from cleaned surfaces.
- D. If surface develops rust before prime coat is applied, repeat surface preparation.
- E. Apply manufacturer's standard prime coat to shop-cleaned, dry surface same day as surface preparation.
- F. Apply manufacturer's standard two-component, epoxy finish coats.

## **2.9 FUEL-OIL STORAGE TANK PIPING SPECIALTIES**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Preferred Utilities Manufacturing Corporation.
  - 2. EBW, Inc.
  - 3. Environ Products, Inc.
  - 4. Morrison Bros. Co.
  - 5. OPW.
  - 6. Universal Valve Company.
  - 7. Or approved equal.
- B. Tank Gauging, Leak Monitoring & Overfill Prevention:
  - 1. The Liquid Level Sensor:
    - a. Shall consist of an aluminum, submersible (NEMA 6P) electronics head external to the tank and a float internal to the tank. The float shall be connected to the sensor head by a flexible stainless cable. The flexible cable shall allow installation or removal when overhead obstructions are present. The sensor shall include an external test mechanism to allow overfill alarm and full tank calibration checks without removing the sensor from the tank.
    - b. Tests that electronically simulate a high tank level instead of physically moving the float are not acceptable. The sensors operation shall be unaffected by internal tank obstructions located within 7" of the float. The assembly shall mount to the tank through a standard 4" 125/150 lb. flat faced flange opening with standard bolt pattern. The mechanism's control head shall be constructed of 1/4" cast aluminum. This sealed transducer housing shall encapsulate all transmitter electronics in a non-conductive oil and be moisture tight. Sensors assembly shall be water resistant and capable of operating in a submerged or manhole environment without damage.
    - c. The unit shall be capable of easy installation and maintenance with only 14 inches of clearance between the flange and any overhead obstructions. If buried suitable access for removal of the wire float assembly must be provided. Tank gauge calibration shall be possible at any tank fluid level (empty, part full, or full.) The sensor operation and accuracy shall be unaffected by changes in the specific gravity of the tank liquid, and be suitable for use with non-corrosive fluids and fuels up to and including No. 4 fuel oil. The level sensor shall be Preferred Instruments Model TG-EL-WF- 7C- Z1121 or approved equal.



2. The Leak Detector:
  - a. Detectors shall be solid state and discriminate between oil and water, display the leak with (2) LED's on its indicating transmitter, and send an appropriate alarm signal to the instrument. All leak sensors shall be intrinsically safe, have continuous electronic checking, fail safe to an alarm condition, and have indicating transmitters with a magnetic test mechanism at grade level to exercise the sensors and check the indicating instrument response. Test systems that bypass the sensors or rely only on electronic simulation are unacceptable. Leak sensors shall be mounted (annular space within the double wall tank, the polyethylene piping sump, double wall containment piping) as shown on the drawing. Leak sensors shall be as manufactured by Preferred HD-A2. Or approved equal.
3. Overfill Prevention:
  - a. Emergency High Level Switch shall be arranged to sound an alarm and provide an electrical interlock in the pump panel and activate the overfill alarm at the Fuel Oil Management Center PLC logic when the liquid level reaches 90 percent of tank capacity. Unit shall be float operated, suitable for #2 oil at 150 psi, have brass and Buna N wetted parts, and be mounted in a 1 1/4" tapping in the tank top. Switch shall be hermetically sealed and fully isolated from tank contents and external atmosphere. Electrical connections shall be made externally to the tank in an explosion-proof head assembly approved by UL for Class 1, Group D applications. Switch shall be as manufactured by Preferred Utilities Mfg. Corp. Model: PLS- 1- Z1121 or approved equal.
4. ~~The Fill Station Overfill Alarm:~~
  - a. Provide and install where shown on the drawings an Audible/Visual Overfill Alarm Station for 1 tank to be activated by Preferred Instruments PLS-1 High Level Switch and overfill alarm system. The system shall consist of a Preferred FA-S Caution Sign and NEMA 4 Weatherproof Cabinet to include a 4" weatherproof bell with automatic silencing, 180° visible flashing lamp, bell silencing pushbutton, and Alarm Test Pushbutton. Overfill Alarm Station shall be a Preferred Utilities Mfg. Corp., Danbury, CT, Model FA-AV-1D3- Z1121 or approved equal.
5. The Fil-A-Larm Sign
  - a. Provide and install an Overfill Caution Sign near the Overfill Alarm Station. The sign shall be 20"W by 14"H of 18 gauge steel with porcelain baked enamel finished bright yellow background and minimum 2"H black lettering.

The Caution Sign shall read as follows:  
**CAUTION WHEN ALARM BELL SOUNDS  
OIL TANK FILLED TO CAPACITY  
DO NOT OVERFILL.**

Sign shall be a Preferred Utilities, Alarm Sign Model FA-S or approved equal.

6. Gauge Installation Requirements:
  - a. Contractor must adhere strictly to manufacturer's installation procedures. Factory startup and calibration to be included for tank gauging and leak detection system by Gauge manufacturer. This requirement shall not be waived by the contractor.





- b. A letter from the tank gauge and leak detection systems manufacturer shall be provided to the Commissioner stating that the system was checked out and calibrated by a factory trained representative and that all components are in working order.
  - c. Tank manufacturer's certified tank print and stick chart must be provided to properly calibrate and manufacture gauge. This information must be provided to the tank gauge and leak detection manufacturer at the time of order.
7. Wall Fill Station (Flood proof)
- a. Storage tank fill lines shall terminate at the building in wall cabinet enclosure 24" w x 24" h x 12" d - NEMA 6P, 10 Gauges type 304 SST welded construction.
  - b. The Fill Station shall have a minimum of a 5 U.S. Gal. holding capacity and include: an internal overfill alarm system with gallons display, a door-seal, locking handle, NEMA 6P rated construction and oil connection fill adapter for gravity fill.
  - c. The Fill Station shall be equipped with a "stitch" weld 2" X 2" X 1/4" angle steel flanges.
  - d. Flange shall be mounted to assure that cabinet body is flush with mounting surface. Fill Station shall be 304 stainless steel 12 gauge construction, and be equipped with 1/2" NPT drain connection.
  - e. The door shall match the Fill Station construction and will include a neoprene gasket around all of the door.
  - f. The door shall mount to the Fill Station with:
    - 1) a full length stainless steel piano hinge on the swing side
    - 2) a three point latch with locking handle on the access side
    - 3) three point locking mechanism shall latch at center/ top and bottom.
8. The entire interior shall be prime coated and painted with white enamel.
9. Provide an Overfill Alarm Station integral to the Model 2 Horizontal Spill Container to be activated by a Tank Gauge or Pump Control Panel. The station shall consist of an explosion proof "Overfill Alarm" light, alarm horn and "Alarm Silence" pushbutton. Provide an explosion proof digital tank content display. Explosion proof components are required to prevent the ignition of the fuel oil vapors generated from the sun heating the spill container. The light and bell shall be automatically silenced in 90 seconds or instantly silenced when the operator selects the "Alarm Silence" button.
10. The Fill Station shall come with an oil fill adapter #1611AN rated for diesel oil/ #2 oil fill applications.
11. Fill Coupler Include for the fill adapter connection a coupler Model 1711D. Unit to be aluminum body. Assembly shall be the full size of the pipe. Cam connection on one end and NPT connection on the other end.
12. Furnish and install for the fuel oil tank a weatherproof cast aluminum vent brick. Vent brick shall be installed flush in the wall be designed to prohibit water infiltration in to the vent line and shall be the full size of the vent pipe in accordance with NFPA-30 2-4.5.2. and NFPA 31 and include NPT threaded connection. A slip on connections are not acceptable.
13. Provide where shown in the fuel oil supply line a quick-closing, spring loaded, Lever Gate Valve held open by a wire with fusible link rated for 165 deg. F. arranged so that the valve will automatically close if the link melts. An oil tight, NEMA 4, electromechanical switch shall be provided to alert the fuel oil management system of valve closure.
14. Provide and install on the tank suction stub a brass, 1" Single Poppet Foot Valve, with lapped-in seat, guided poppet stem and 20 mesh monel screen. The foot valve shall come



with a 233-FV foot valve extractor fitting which shall allow for easy access to and repair of the foot valve. The foot valve extractor fitting shall come with an extractor wrench of the appropriate size.

Provide where shown on the drawings a switch for leak sensing on all containment piping within the building. There shall be a switch on each floor as the containment pipe runs up through the building, and at the end of each pitched horizontal run. Switch shall be redundant sealed against vapors and fluids, be lever float operated and magnetically actuated. Factory mounted wiring enclosure shall be cast aluminum, NEMA 4.

15. Riser Leak Collection Drum: Provide a 55 gallon UN1A1/Y1.8/300 rated, closed head steel drum. Drum is painted black with white heads. Include with the drum a leak sensor. Sensor shall be top mounted and extend to bottom of drum for immediate alarming. Sensor shall be redundant sealed against vapors and fluids, be float operated and magnetically actuated. Factory mounted wiring enclosure shall be cast aluminum, NEMA 4, and watertight. Sensor shall interface directly with the pump control cabinet.

## **2.10 DUPLEX FUEL-OIL PACKAGED TRANSFER PUMP SETS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Preferred Utilities Manufacturing Corporation.
2. Alyan Pump Company.
3. BFS Industries.
4. Hydronic Modules Corporation.
5. Smith-Koch, Inc.
6. Webster Fuel Pumps & Valves; a division of Capital City Tool, Inc.
7. Viking Pumps.
8. IMO Pumps.
9. Or approved equal.

- B. Description: Comply with HI M109.

1. Listed and labeled for fuel-oil service by an NRTL.
2. Type: Positive-displacement, rotary type.
3. Impeller: Steel gear with crescent.
4. Housing: Cast-iron foot mounted.
5. Bearings: Bronze, self-lubricating.
6. Shaft: Polished steel.
7. Seals: Mechanical.
8. Base: Steel.
9. Pressure Relief: Built in.
10. Discharge Check Valve: Built in.
11. Containment Basin: 2-inch high steel containment basin with plugged drain connections, sized to capture potential leaks from piping and components.

- C. Automatic Fuel Oil Transfer System:

1. Application



- a. Provide and install a factory- assembled "Packaged" Automatic Fuel Oil Transfer and Monitoring System to ensure a reliable supply of fuel oil to the emergency generators included in this project. System to be factory fabricated/ tested and certified as a complete unit. Field assembled units are not acceptable. All wiring and piping shall be covered by labels of nationally recognized Trade Unions.
  - b. The system shall include automatic pump set lead/lag, storage tank and day tank level monitoring, leak monitoring, LCD operator display, manual back-up stations, time and date stamped alarm and event summary, and the system shall include the capability to simultaneously communicate to a Data Acquisition System (DAS), Building Automation System (BAS) or Building Management System (BMS) via Modbus protocol, and dial out to an alphanumeric pager system via field installable plug-in option modules in the future. The control system shall be a microprocessor-based design with field expandable plug-in Input/Output modules.
  - c. The Automatic Fuel Oil Transfer Pump and Straining Set and monitoring system shall be rated at 86 GPH of Diesel oil against an operating pressure of 50 PSIG.
2. Pump System Piping and Mounting
- a. Provide a duplex pump and straining set that is factory assembled with components piped and mounted on a common baseplate. Pipe shall be schedule 40 ASTM A-53 Grade "A" with ANSI B16.3 Class 150 malleable iron threaded fittings. Baseplate shall include 3" steel side rails continuously welded for containment and to contain potential leaks shall extend beyond any fitting, valve, pump, strainer, or selector valve. Provide a ½" containment basin plugged drain connection.
3. Positive Displacement Pumps
- a. Provide and mount two (2) positive displacement internal gear pump, with cast iron housing and mechanical seal. The pump shall be capable of developing 25" Hg. Vacuum at 0 PSIG as factory tested, however, for normal operation, vacuum shall not exceed 15" Hg. Pump to have mounting foot. Pumps that have aluminum, brass, or bronze housings or rotors are not acceptable. Packing gland equipped pumps, close-coupled pumps, Carbonator shaft mounted pumps or centrifugal pumps are not acceptable.
4. Motors
- a. Provide and mount two (2) T. E. F. C., rigid base, standard NEMA frame motors. Motors sized to develop no less than 1/3 HP at 1750 RPM using 120 V, 1 Ph, 60 Hz electrical service. Motor shall have copper windings, a dynamically balanced rotor, ball bearings and a heavy gauge steel NEMA Frame.
5. Pump and Motor Assembly
- a. The pumps shall be connected to the piping in the set through stainless steel flexible metallic braided jackets, and the pump and motor assemblies shall be welded to the base plate. Pumps and motors shall be mounted on a structural steel channel and equipped with flexible coupling and full OSHA approved coupling



guard. Pumps and motors shall be mounted with bolts threaded into the steel channel for ease of maintenance. Mounting bolts shall not penetrate the secondary containment basin.

- b. Flexible coupling general: The pump shall be connected to the motor by an elastomeric jaw type flexible coupling that does not require lubrication. The coupling wear member shall be replaceable without disturbing the alignment of either the pump or motor. Sizing of the flexible coupling shall be based on motor horsepower and rpm. Materials of construction: The coupling body shall be sintered iron and cast iron. The elastomeric wear member shall be NBS Rubber.

D. Pump Set Control Cabinet, factory mounted to pump skid

1. Control Cabinet

- a. Provide a Fuel Oil Management Control Cabinet factory mounted on the fuel oil pump set. The Control Cabinet shall be completely pre-wired, factory programmed and tested to ensure job site reliability. The pump set and control cabinet shall be the product of one manufacturer for single source responsibility. Cabinet to be manufactured by nationally recognized trade union personnel and be approved by a nationally recognized independent testing laboratory, equal to UL-508A.
- b. Provide a factory assembled NEMA 4 rated control panel mounted operator interface control switches, indicators and displays. All PLC indicators, manual back-up control switches and indicators must be mounted on the factory installed subplate.
- c. Panel to include a NEMA 4 alarm light mounted on top of the panel. Alarm light shall be visible from all angles. Include an isolated 120V duplex receptacle with faceplate. Provide a sub plate mounted power isolation switch for the PLC

2. Control and Monitoring Hardware

- a. System shall be custom designed to accomplish the control strategy as outlined. The control strategy shall be microprocessor-based. The control strategy shall be factory configured and stored on an EEPROM, and shall be password protected from re-configuration by unauthorized / un-qualified personnel. The controller shall be designed so that it will "fail safe" in the event there is a microprocessor failure. RELAY LOGIC SHALL NOT BE ACCEPTABLE. Control hardware shall include combination magnetic motor starters with overload protection and circuit breakers. Provide safety interlocks to shutdown both pumps during any of the following conditions: day tank "leak detected, tank "high-high" level and main storage tank "vent". These interlocks must continue to ensure safe pump operation even if the controller has failed or is out of service and the pump set is operated in manual "hand" mode.

3. Main Tank Monitoring

- a. The control system shall include level sensor for tank mounting to display gallon capacity and level in inches at this panel.. Panel to provide a continuous display of tank content, in gallons of product within the day tank. The controller must be field expandable using plug-in input modules to monitor up to 2 storage tanks and



6 discriminating leak sensors. Provide all equipment capabilities specified in this paragraph even if a connecting level and leak sensors are not included in this project.

4. Operator Interface

- a. The control system shall include a 16 line x 40 character or greater LCD display for pump set status, storage tank level indication, alarm listing, and troubleshooting functions.
- b. LCD screen shall be backlit and have a contrast dial for screen adjustment.
- c. Provide a tactile feedback, numeric keypad for data entry.
- d. Provide dedicated pushbuttons for Alarm Silence and for the Home Page display and a "Hand-Off-Automatic" control switch for each fuel pump. In "Hand" position the pump shall be capable of manual operation in the event of a controller failure. The control system shall monitor the position of each "Hand-Off-Automatic" control switch. Should a switch be put into the "Off" position, the controller shall log the event with a Time/Date stamp and store within the controller memory.
- e. Provide an Elapsed Time Recorder (ETR) to measure running time for each pump.
- f. Provide a Fuel Oil Overview Display (Home Page) capable of simultaneous viewing of pump set status, header status and main storage tank status. The Fuel Oil Overview display shall include the following information:
  - 1) Lead Pump Selection – Auto/Manual
  - 2) Pump Status – Off/Run/Standby
  - 3) Main Tank Status – GALLONS with INCHES DISPLAY and High/Low/Leak Alarms
  - 4) Fire Valve Position
  - 5) Discrete alarms for each field mounted sensor, leak, pressure etc..
  - 6) Three Most Recent Alarms

5. Alarm and Event Logs

- a. The control system shall include a 200 Alarms, events and operator actions memory minimum. Provide an alarm display page for viewing the most recent 8 alarms/events with scrolling capability to view the complete 200 point alarm/event memory. Each event and alarm condition must be displayed with a distinct, descriptive, English language description and time and date stamp. New alarms shall trigger the common alarm output relay. Events shall be recorded, but shall not trigger an alarm. A dedicated Alarm Silence button shall silence the alarm output. The control system shall record and annunciate the following alarms: Pump Thermal Overload, Pump Loss of Flow, Pump Set Failure, Tank leak, Tank High- High level, Tank High level. Tank Low level and Tank Low- Low level. The control system shall record the following events: Pump Started, Pump Control Switch in "Off" position, and Pump Selected as Lead.

6. Fuel Pump Alternation and Lead-Lag Operation

- a. Provide automatic, microprocessor-based fuel oil transfer pump control based upon a call for oil. The lead fuel pump shall be energized upon a call for oil from the



lead oil tank and run continuously until the demand is removed. Upon the next call for fuel, the lead pump shall be automatically alternated. The lead pump shall automatically rotate every 1 to 168 hours or shall be manually selected by the operator. Upon detection of loss of flow or pressure or lead pump thermal overload the control system shall automatically energize the backup pump and de-energize the lead pump.

7. Pump Automatic Sequencing Flow Switch

- a. Provide a time delayed flow sensing switch on the discharge of the pump set to bring on the lag pump should the lead pump fail to maintain flow. Flow switch shall be vane operated to actuate a single double throw snap switch. Switch shall be factory wired to the control cabinet for alarm and backup pump operation. Switch shall be rated for 1450 psig. Provide a flow switch outlet isolation valve for maintaining the flow switch without draining the fuel system

8. Communications

- a. The pump set must include an optically isolated RS485 communications data highway. The RS485 protocol shall allow: Auto/Manual mode change, lead pump selection, sensing and silencing of alarms, change of any configuration parameter, change of timers, etc. Provide all equipment capabilities specified in this paragraph, even if a connecting BAS system is not included in this project. It must be possible to field upgrade the control system to "dial out" to an alphanumeric pager system via field installable plug-in option modules in the future.

9. Quality Assurance

- a. The Control Cabinet shall be manufactured and labeled in accordance with UL508A. Simply supplying UL recognized individual components is not sufficient. The assembled control cabinet, as a whole, must be inspected for proper wiring methods, fusing, etc., and must be labeled as conforming to UL508A. Inspection and labeling shall be supervised by UL or other OSHA approved Nationally Recognized Test Lab (NRTL). The system must be manufactured by a nationally recognized Trade Union (I.B.E.W. or similar trade union). Lack of an NRTL certified UL508A wiring methods inspection and label or lack of a Trade Union label will be grounds for rejection.

10. Factory Testing

- a. Pump Sets must be fully tested prior to shipment as follows: Testing shall include both a pressure and vacuum testing period. First, the complete pump set shall be pressure tested to rated pressure using an air pressure source. The test shall confirm that the pump set piping system can maintain rated pressure for 4 hours. Next, the complete pump set shall be brought to a vacuum greater than 25"Hg. The test shall confirm that the pump set piping system can maintain vacuum for 4 hours. Following a pressure and vacuum test the pump set shall be given a full operational test. The pump set shall be connected to a fuel oil supply and return. The pump set shall be operated normally. Motor amps shall be noted at no load



and full load for each motor. The motor amps shall be within 10% of rated motor amps. During the test the relief valve shall be set and tested. Operation of pump set instrumentation shall be tested. A copy of the test procedures shall be sent to the Commissioner and City of New York. The City of New York and or the Commissioner, at their discretion, shall observe this and all other tests. A certificate of factory testing, together with a copy of the wiring and arrangement diagrams shall be placed in the control cabinet prior to shipment.

## **2.11 SHOP BUILT DAY TANK**

- A. Provide one (1) 60 gallon, UL 142 labeled Day Tank constructed of reinforced 10 gauge steel with channel side supports, 1" drain, removable gasketed 6" square inspection plate, fuel level gauge, multi- stage level control probe, vent cap (shipped loose), and a 2" gasketed manual fill cap. Day Tank dimensions: 13" wide x 37" long x 33" high. Exterior shall be finished in a weather/ oil resistant textured gray enamel.
- B. Tank connections shall include: 2" NPT fuel inlet, required vent openings, manual fill, tank level sensor, 2" NPT engine supply, and 2" NPT engine return. All piped with reinforced, welded pipe adapters. Fuel fill, inlet and return must be supplied with factory installed drop tubes to prevent surging and foaming in the day tank.
- C. Day Tank Level Controller.
  - 1. Level Controls shall have four (4) float operated switches rated at 100 watts and factory installed in the day tank. Levels of control: emergency high-level alarm and total pump shutdown (90% capacity), pump off (80% capacity), pump on (50% capacity), and emergency low-level secondary pump on and annunciation (40% capacity). Unit shall be suitable for pressures to 150 psi, and shall be made entirely of non-ferrous material. Electrical connections shall be contained in a factory installed weatherproof junction box.
- D. The Rupture Basin Dimensions:
  - 1. 24" wide x 40" long x 30" high. Basin shall be welded heavy gauge steel structure sized a minimum of 200% capacity of tank capacity for outdoor applications. Exterior shall be finished in a weather/ oil resistant, textured gray enamel. Provide and factory install a rupture basin leak detector for alarming and fuel supply pump shut down. Electrical connections shall be contained in a weatherproof junction box.
- E. Day Tank Leak Sensor:
  - 1. Provide and factory install a rupture basin leak detector for alarming and fuel supply pump shut down. Electrical connections shall be contained in a factory installed weatherproof junction box.
- F. Factory Testing
  - 1. Tank to be factory tested to withstand 25 PSI per NYC Code, unless higher rating is noted on plans or schedules.



2. The hydrostatic pressure shall be maintained until all joints and connections have been visually inspected for leaks, but in no case for less than one-half hour. The tank shall not show any permanent deformation as a result of the test. The Rupture basin shall be hydrostatic tested prior to shipment. A copy of the test procedures shall be made available. The City of New York and/or the Commissioner, at their discretion, shall observe this and all other tests.

## **2.12 LIQUID-LEVEL GAGE SYSTEM**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Caldwell Systems Corporation.
  2. Clawson Tank Company.
  3. EBW, Inc.
  4. Highland Tank & Manufacturing Company, Inc.
  5. INCON, Inc.
  6. King Engineering Corp.
  7. Krueger Sentry Gauge.
  8. Pneumercator Inc.
  9. Preferred Utilities Manufacturing Corporation.
  10. Rochester Gauges, Inc.
  11. Tuthill Corporation; Tuthill Transfer Systems; Sotera Systems.
  12. Uehling Instrument Company.
  13. Venture Measurement Company, LLC.
  14. Or approved equal.
- B. Description: Calibrated, liquid-level gage system complying with UL 180 with floats or UL 1238 with probes or other sensors and remote annunciator panel.
- C. Annunciator Panel: With visual and audible, high-tank-level and low-tank-level alarms, fuel indicator with registration in gallons, and overfill alarm. Include gage volume range that covers fuel-oil storage capacity.
- D. Controls: Electrical, operating on 120-V ac.

## **2.13 FUEL OIL**

- A. Diesel Fuel Oil: ASTM D 975, Grade No. 2-D, general-purpose, high volatility.

## **2.14 SLEEVES**

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.





## **2.15 MECHANICAL SLEEVE SEALS**

- A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Advance Products & Systems, Inc.
    - b. Calpico Inc.
    - c. Metraflex Company (The).
    - d. Pipeline Seal and Insulator, Inc.
    - e. Or approved equal.
  2. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe and sleeve.
  3. Pressure Plates: Stainless steel.
  4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one nut and bolt for each sealing element.

## **2.16 ESCUTCHEONS**

- A. General Requirements for Escutcheons: Manufactured wall and ceiling escutcheons and floor plates, with ID to fit around pipe or tube and with OD that completely covers opening.
- B. One-Piece, Deep-Pattern Escutcheons: Deep-drawn brass with polished chrome-plated finish.
- C. One-Piece, Cast-Brass Escutcheons: With set screw.
1. Finish: Polished chrome-plated.
- D. Split-Casting, Cast-Brass Escutcheons: With concealed hinge and set screw.
1. Finish: Polished chrome-plated.
- E. One-Piece, Stamped-Steel Escutcheons: With set screw or spring clips and chrome-plated finish.
- F. Split-Plate, Stamped-Steel Escutcheons: With concealed hinge, set screw or spring clips, and chrome-plated finish.
- G. One-Piece, Floor-Plate Escutcheons: Cast-iron floor plate.
- H. Split-Casting, Floor-Plate Escutcheons: Cast brass with concealed hinge and set screw.

## **2.17 GROUT**

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.



1. Characteristics: Posthardening, volume adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psi, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

## **2.18 LABELING AND IDENTIFYING**

- A. Detectable Warning Tape: Acid- and alkali-resistant, PE film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored yellow.

## **2.19 SOURCE QUALITY CONTROL**

- A. Pressure test and inspect fuel-oil storage tanks, after fabrication and before shipment, according to ASME and the following:
  1. Horizontal, Containment-Dike, Steel ASTs: UL 142 and STI F911.
- B. Affix standards organization's code stamp.

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## **2.20 Fuel Oil Filtration System**

- A. The Fuel Oil Filtration system shall be supplied by one Original Equipment Manufacturer and shall be external to the fuel oil transfer system. The Fuel Oil Filtration System shall be rated at 180 GPH of No. 2 fuel oil.
- B. The filtration system shall be factory assembled with components piped and mounted inside a continuously welded steel enclosure.
- C. The enclosure shall be constructed of 14 gauge steel as minimum, continuously welded and constructed to NEMA 4 standards and have an integral 2" steel containment basin with plugged drain options. Article 2.20 Fuel Oil Filtration system.
  1. The basin shall be sized to contain (capture) potential leaks.
  2. Doors shall be fully casketed with a turned edge, full door length piano hinges, and a three point lockable latching mechanism for security.
  3. The enclosure interior shall be primed and finished in a white gloss, chemical resistant enamel.
  4. The enclosure exterior shall be primed and finished in durable, chemical resistant, textured gray enamel, suitable for industrial environments.
- D. Pipe shall be schedule 40 ASTM A-53 Grade "A" with ANSI B16.3 Class 150 malleable iron threaded fittings
- E. Pump and Motor Assembly: An internally mounted, TEFC motor and positive displacement pump with cast iron housing shall be provided. The pump shall be industrial grade and intended for continuous heavy-duty service.



- F. Primary Filter: Primary Oil strainer shall have cast iron body, threaded connection; size shall be suitable for the required flow and suitable for working pressures to 150 psi. Clamped cover and handle shall permit easy removal of the basket. Basket shall 100 mesh stainless steel.
- G. Secondary Filtration: Multi- purpose filter element shall provide both particulate and water removal. Filtration provided to 5 micron. No special tools required to replace the element.
- H. Filter Monitoring: Each filter stage shall have a differential pressure switch piped across them to indicate when the filter (s) require maintenance or replacement. Indication at the main filtration control cabinet to alert operators and sound horn. The differential pressure switch shall provide clear indication of strainer obstruction status with the use of a Tri-Colored Scale Plate with GREEN denoting Clean, YELLOW denoting Change and RED denoting dirty clogged strainer. This shall have one piece cast-iron body and shall be suitable for pressure to 200 psi.
- I. Control and Monitoring Hardware.
1. The control strategy shall be a microprocessor-based controller with color touch screen. The control strategy shall be factory configured and stored on an EEPROM, and shall be password protected from re-configuration by unauthorized personnel. The controller shall be designed so that it will "fail safe" in the event there is a microprocessor failure.
  2. Control hardware shall include a combination magnetic motor starter with overload protection and a circuit breaker. The control system shall provide common alarm dry contacts to be interfaced with the Building Maintenance System.
- J. Automatic Operation
1. In order to ensure automatic fuel maintenance for the facility the filtration system shall have an adjustable automatic start and run time set points. The operator shall be able to set the system to run at a certain time daily, weekly, or monthly.
  2. The Filtration system controller will send an output to the Fuel Oil Management PLC to open the supply and return valves for the selected tank and upon proof of valves "open" the Filtration cycle will begin.
- K. Provide a safety interlock to shut down the pump when an internal leak is detected.
- L. Operator Interface: All operator interface components shall be door mounted. As a minimum, the following indications, alarms, control switches and pushbuttons shall be provided:
1. Alarm Silence, Manual Reset, Lamp/Alarm Test Pushbuttons
  2. Pump "Hand-off-Auto" control switch
  3. "Pump On", indicator
  4. "Filter Saturated", "Filter Water Level High", "System Basin Leak Detected".
- M. Leak Detection Switch: Provide a factory mounted Containment Basin Leak Switch. Switch to be float type and designed to shut down the system and energize an audible and visual alarm should a leak be detected. The level sensor shall be a plasma welded stainless steel construction. Electrical connections shall be contained in a factory installed weatherproof junction box.
- N. Quality Assurance Inspection, Labeling and Testing
1. The Control Cabinet shall be manufactured and labeled in accordance with UL508A.
  2. Simply supplying UL recognized individual components is not sufficient and grounds for rejection. The assembled control cabinet as a whole, must be inspected for proper wiring



methods, fusing, etc., and must be labeled as conforming to UL508A. (CSA C22.2 #14 for use in Canada).

3. Inspection and labeling shall be supervised by UL or other OSHA approved Nationally Recognized Test Lab (NRTL).

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine roughing-in for fuel-oil piping system to verify actual locations of piping connections before equipment installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Close equipment shutoff valves before turning off fuel oil to premises or piping section.
- B. Comply with NFPA 30 and NFPA 31 requirements for prevention of accidental ignition.

#### **3.3 INDOOR PIPING INSTALLATION**

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- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- B. Arrange for pipe spaces, chases, slots, sleeves, and openings in building structure during progress of construction, to allow for mechanical installations.
- C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Install escutcheons for penetrations of walls, ceilings, and floors.

1. New Piping:



- a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
  - b. Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
  - c. Piping at Ceiling Penetrations in Finished Spaces: One-piece or split-casting, cast-brass type with polished chrome-plated finish.
  - d. Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished chrome-plated finish.
  - e. Piping in Equipment Rooms: One-piece, cast-brass type.
  - f. Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.
- I. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials.
- J. Verify final equipment locations for roughing-in.
- K. Comply with requirements for equipment specifications in Division 23 Sections for roughing-in requirements.
- L. Conceal pipe installations in walls, pipe spaces, or utility spaces; above ceilings; below grade or floors; and in floor channels unless indicated to be exposed to view.
- M. Prohibited Locations:
- 1. Do not install fuel-oil piping in or through circulating air ducts, clothes or trash chutes, chimneys or gas vents (flues), ventilating ducts, or dumbwaiter or elevator shafts.
  - 2. Do not install fuel-oil piping in solid walls or partitions.
- N. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings with level side down.
- O. Connect branch piping from top or side of horizontal piping.
- P. Install unions in pipes NPS 2 and smaller at final connection to each piece of equipment and elsewhere as indicated. Unions are not required on flanged devices.
- Q. Do not use fuel-oil piping as grounding electrode.
- R. Install basket strainer on inlet side of fuel-oil pump.

### **3.4 VALVE INSTALLATION**

- A. Install manual fuel-oil shutoff valves on branch connections to fuel-oil appliance.
- B. Install valves in accessible locations.
- C. Protect valves from physical damage.
- D. Install metal tag attached with metal chain indicating fuel-oil piping systems.

- E. Identify valves as specified in Division 23 Section "Identification for HVAC Piping and Equipment."
- F. Install pressure relief valves in distribution piping between the supply and return lines.
- G. Install one-piece, bronze ball valve with hose end connection at low points in fuel-oil piping.
- H. Install manual air vents at high points in fuel-oil piping.
- I. Install; flexible connectors at fuel oil piping connections to transfer pump piping and generator tank.

### 3.5 PIPING JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - ~~1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.~~
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
  - 1. Bevel plain ends of steel pipe.
  - 2. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter.
- F. Flanged Joints: Install gasket material, size, type, and thickness for service application. Install gasket concentrically positioned.
- G. Flared Joints: Comply with SAE J513. Tighten finger tight, then use wrench according to fitting manufacturer's written recommendations. Do not overtighten.

### 3.6 FUEL-OIL AST INSTALLATION

- A. Install tank bases and supports.



- B. Connect piping and vent fittings.
- C. Install ground connections.
- D. Install tank leak-detection and monitoring devices.
- E. Install steel ASTs according to STI R912.
- F. Install insulated and concrete-vaulted, steel ASTs according to STI R942.
- G. Fill storage tanks with fuel oil, after completion of all testing procedures.

### **3.7 HANGER AND SUPPORT INSTALLATION**

- A. Pipe hanger and support and equipment support materials and installation requirements are specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment."
- B. Install hangers for horizontal steel piping with the following maximum spacing and minimum rod sizes:
  - 1. NPS 1-1/4 and Smaller: Maximum span, 84 inches; minimum rod size, 3/8 inch.
  - 2. NPS 1-1/2: Maximum span, 108 inches; minimum rod size, 3/8 inch.
  - 3. NPS 2: Maximum span, 10 feet; minimum rod size, 3/8 inch.
- C. Install hangers for horizontal, drawn-temper copper tubing with the following maximum spacing and minimum rod sizes:
  - 1. NPS 3/4 and Smaller: Maximum span, 60 inches; minimum rod size, 3/8 inch.
  - 2. NPS 1: Maximum span, 72 inches; minimum rod size, 3/8 inch.
  - 3. NPS 1-1/4: Maximum span, 84 inches; minimum rod size, 3/8 inch.
  - 4. NPS 1-1/2 and NPS 2: Maximum span, 96 inches; minimum rod size, 3/8 inch.

### **3.8 FUEL-OIL PUMP INSTALLATION**

- A. Transfer Pumps:
  - 1. Install pumps with access space for periodic maintenance including removal of motors, impellers, and accessories.
  - 2. Set pumps on and anchor to concrete base.
- B. Install two-piece, full-port ball valves at suction and discharge of pumps.
- C. Install suction piping with minimum fittings and change of direction.
- D. Install vacuum and pressure gage, upstream and downstream respectively, at each pump to measure the differential pressure across the pump. Pressure gages are specified in Division 23 Section "Meters and Gages for HVAC Piping."



### **3.9 LIQUID-LEVEL GAGE SYSTEM INSTALLATION**

- A. Install liquid-level gage system. Locate panel inside building where indicated.

### **3.10 LEAK-DETECTION AND MONITORING SYSTEM INSTALLATION**

- A. Install leak-detection and monitoring system. Install alarm panel inside building where indicated.
  - 1. Single-Wall, Fuel-Oil Storage Tanks: Install probes as indicated.
  - 2. Double-Containment, Fuel-Oil Piping: Install leak-detection sensor probes in fuel-oil storage tank containment basin, fuel oil transfer pump containment basin, and at low points in piping.

### **3.11 CONNECTIONS**

- A. Install piping adjacent to equipment to allow service and maintenance.
  - B. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment having threaded pipe connection.
  - C. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment having flanged pipe connection.
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- D. Connect piping to equipment with ball valve and union. Install union between valve and equipment.
  - E. Install flexible piping connectors at final connection to equipment that must be moved for maintenance access.

### **3.12 LABELING AND IDENTIFYING**

- A. Nameplates, pipe identification, and signs are specified in Division 23 Section "Identification for HVAC Piping and Equipment."
- B. Install detectable warning tape directly above fuel-oil piping, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs. Terminate tracer wire in an accessible area, and identify as "tracer wire" for future use with plastic-laminate sign.
  - 1. Piping: Over underground fuel-oil fill and vent piping.

### **3.13 FIELD PAINTING OF AST**

- A. Prepare and touch up damaged exterior surface of AST and supports as specified in "Shop Painting of AST" Article.





### **3.14 FIELD PAINTING OF ABOVEGROUND PIPING**

- A. Comply with requirements in Division 09 painting Sections for painting interior and exterior fuel-oil piping.
- B. Paint exposed, exterior metal piping, valves, and piping specialties, except components with factory-applied paint or protective coating.
  - 1. Alkyd System: MPI EXT 5.1D.
    - a. Prime Coat: Alkyd anticorrosive metal primer.
    - b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
    - c. Topcoat: Exterior alkyd enamel (gloss).
    - d. Color: Gray.
- C. Paint exposed, interior metal piping, valves, and piping specialties, except components with factory-applied paint or protective coating.
  - 1. Latex Over Alkyd Primer System: MPI INT 5.1Q.
    - a. Prime Coat: Alkyd anticorrosive metal primer.
    - b. Intermediate Coat: Interior latex matching topcoat.
    - c. Topcoat: Interior latex (gloss).
    - d. Color: Gray.
  - 2. Alkyd System: MPI INT 5.1E.
    - a. Prime Coat: Alkyd anticorrosive metal primer.
    - b. Intermediate Coat: Interior alkyd matching topcoat.
    - c. Topcoat: Interior alkyd (gloss).
    - d. Color: Gray.
- D. Damage and Touchup: Repair marred and damaged factory-applied finishes with materials and by procedures to match original factory finish.

### **3.15 CONCRETE BASES**

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
  - 1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
  - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
  - 3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
  - 4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.



5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Use 3000-psig, 28-day, compressive-strength concrete and reinforcement.

### 3.16 FIELD QUALITY CONTROL

#### A. Perform tests and inspections.

1. **Manufacturer's Field Service:** Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

#### B. Tests and Inspections:

1. **Tanks:** Minimum hydrostatic or compressed-air test pressures for fuel-oil storage tanks that have not been factory tested and do not bear the ASME code stamp or a listing mark:
  - a. **Single-Wall Tanks:** Minimum 3 psig and maximum 5 psig.
  - b. Where vertical height of fill and vent pipes is such that the static head imposed on the bottom of the tank is greater than 10 psig, hydrostatically test the tank and fill and vent pipes to a pressure equal to the static head thus imposed.
  - c. Maintain the test pressure for one hour.
2. **Piping:** ~~Minimum hydrostatic or pneumatic test pressures measured at highest point in system:~~
  - a. **Fuel-Oil Distribution Piping:** Minimum 150 psig for minimum 30 minutes.
  - b. **Fuel-Oil, Double-Containment Piping:**
    - 1) **Carrier Pipe:** Minimum 150 psig for minimum 30 minutes.
    - 2) **Containment Conduit:** Minimum 5 psig for minimum 60 minutes.
  - c. **Suction Piping:** Minimum 20-in. Hg for minimum 30 minutes.
  - d. Isolate storage tanks if test pressure in piping will cause pressure in storage tanks to exceed 10 psig.
3. **Inspect and test fuel-oil piping according to NFPA 31, "Tests of Piping" Paragraph.**
4. **Test liquid-level gage for accuracy by manually measuring fuel-oil levels at not less than four different depths while filling tank and checking against gage indication.**
5. **Test leak-detection and monitoring system for accuracy by manually operating sensors and checking against alarm panel indication.**
6. **Start fuel-oil transfer pumps to verify for proper operation of pump and check for leaks.**
7. **Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.**
8. **Bleed air from fuel-oil piping using manual air vents.**

#### C. Fuel-oil piping and equipment will be considered defective if it does not pass tests and inspections.



- D. Prepare test and inspection reports.

### **3.17 DEMONSTRATION**

- A. Engage a factory-authorized service representative to instruct City of New York's maintenance personnel to adjust, operate, and maintain liquid-level gage systems, leak-detection and monitoring systems and fuel-oil pumps.

### **3.18 INDOOR PIPING SCHEDULE**

- A. Aboveground fuel-oil piping shall be the following:
  - 1. NPS 2 and Smaller: Steel pipe, steel fittings, and welded joints.
  - 2. NPS 2-1/2 and Larger: Steel pipe, steel fittings, and welded or flanged joints.
- B. Rigid, double-containment piping, as specified in Part 2, where indicated on the drawings.

### **3.19 ABOVEGROUND MANUAL FUEL-OIL SHUTOFF VALVE SCHEDULE**

- A. Distribution piping valves for pipe NPS 2 and smaller shall be the following:
  - 1. Two-piece, full-port, bronze ball valves with bronze trim.
- B. Distribution piping valves for pipe NPS 2-1/2 and larger shall be the following:
  - 1. Two-piece, full-port, bronze ball valves with bronze trim.
- C. Valves in branch piping for single appliance shall be the following:
  - 1. Two-piece, full-port, bronze ball valves with bronze trim.

**END OF SECTION 23 11 13**



## SECTION 23 22 13 - STEAM AND CONDENSATE HEATING 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 SUMMARY

- A. This Section includes the following for LP, MP and HP steam, condensate and pumped condensate piping:
1. Pipe and fittings.
  2. Strainers.
  3. Steam traps.
  4. Thermostatic air vents and vacuum breakers.
  5. Steam and condensate meters.

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#### 1.3 DEFINITIONS

- A. HP and MP Systems: High-pressure piping and medium pressure piping operating at more than 15 psig as required by ASME B31.1.
- B. LP Systems: Low-pressure piping operating at 15 psig or less as required by ASME B31.9.
- C. RTRF: Reinforced thermosetting resin (fiberglass) fittings.
- D. RTRP: Reinforced thermosetting resin (fiberglass) pipe.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressures and temperatures:
1. HP Steam Piping: 200 psig.
  2. MP Steam Piping: 200 psig.
  3. LP Steam Piping: 15 psig.
  4. Condensate Piping: As per respective steam service minimum working pressures.
  5. Makeup-Water Piping: 80 psig at 150 deg F.
  6. Blowdown-Drain Piping: Equal to pressure of the piping system to which it is attached.
  7. Air-Vent and Vacuum-Breaker Piping: Equal to pressure of the piping system to which it is attached.



8. Safety-Valve-Inlet and -Outlet Piping: Equal to pressure of the piping system to which it is attached.

## 1.5 SUBMITTALS

- A. Product Data: For each type of the following:
  1. Pressure-reducing and safety valve.
  2. Steam trap.
  3. Air vent and vacuum breaker.
  4. Flash tank.
  5. Meter.
  6. Pipe and fittings.
  7. Unions and flanges.
  8. Gaskets.
  9. Sleeves and packing.
- B. Shop Drawings: Detail, 1/4 inch equals 1 foot scale, flash tank assemblies and fabrication of pipe anchors, hangers, pipe, multiple pipes, alignment guides, and expansion joints and loops and their attachment to the building structure. Detail locations of anchors, alignment guides, and expansion joints and loops. Provide shop drawings for the following locations:
  1. Steam meter room layout.
  2. Mechanical equipment room layouts.
  3. Air handling equipment room layouts.
  4. Pipe shafts.
  5. Heating coils.
  6. Heat exchangers.
  7. Refrigeration units.
  8. All floor plan layouts.
- C. Qualification Data: For Installer.
- D. Welding certificates.
- E. Field quality-control test reports.
- F. Operation and Maintenance Data: For valves, safety valves, pressure-reducing valves, steam traps, air vents, vacuum breakers, and meters to include in emergency, operation, and maintenance manuals.
- G. Schedules: Submit a schedule of pipe materials, fittings, unions, and flanges, along with ratings, for each system.
- H. Submit stress calculations upon request, signed and stamped by a professional and licensed in the State of New York engineer.
- I. Submit calculations for anchors upon request, signed and stamped by a professional engineer licensed in the State of New York.



1.6 QUALITY ASSURANCE

- A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code - Steel."
- B. Pipe Welding: Qualify processes and operators according to the following:
  - 1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
  - 2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.
- C. ASME Compliance: Comply with ASME B31.1, "Power Piping" and ASME B31.9, "Building Services Piping" for materials, products, and installation. Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp flash tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.
- D. Codes and Standards: Provide steam and steam condensate piping and specialties conforming to the following:
  - 1. American Society of Mechanical Engineers (ASME):
    - a. B16.1: Cast iron threaded flanges and fittings.
    - b. B16.3: Malleable iron threaded fittings.
    - c. B16.4: Cast iron threaded fittings.
    - d. B16.5: Wrought steel flanges and flanged fittings.
    - e. B16.9: Factory-made wrought steel butt welding fittings.
    - f. B16.11: Forged steel fittings, socket welding and threaded.
    - g. B16.39: Malleable iron threaded pipe unions classes 150, 250, and 300.
    - h. B31: Code for pressure piping.
    - i. B31.1: Power piping.
    - j. Z49.1: Safety in welding and cutting.
  - 2. American Society for Testing and Materials (ASTM):
    - a. A53: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded Seamless.
    - b. A105/105M: Standard Specification for Forgings, Carbon Steel for Piping Components.
    - c. A106: Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service.
    - d. A126: Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
    - e. A193/193M: Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Services.
    - f. A194/194M: Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service.
    - g. A216/216M: Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding for High Temperature Service.
    - h. A234/234M: Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
    - i. A307: Standard Specification for Carbon Steel Bolts and Studs, 60,000 Tensile Strength.
    - j. B61: Standard Specification for Steam or Valve Bronze Castings.



3. American Welding Society, Inc. (AWS): Welding and safety procedure shall conform to the requirements of the AWS B2.1, "Welding Procedure and Performance Qualification," and ANSI Z491, "Safety in Welding and Cutting."

E. Qualification of Welders: Welders performing work under this Contract shall be certified and qualified in accordance with tests prescribed by the National Certified Welding Bureau (NCWB) or by other approved test procedures using methodology and procedures covered in the ASME Boiler and Pressure Vessel Code, Section IX, "Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators."

F. Qualifications of Radiographic Examiner: Personnel conducting radiographic examinations shall conform to the qualification requirements of the American Society for Nondestructive Testing, Inc. (ASNT) Publication SNT-TC-1A, "Recommended Practice for Personnel Qualifications and Certification."

G. Published specifications standards, tests, or recommended methods or trade, industry or governmental organizations apply to work in this section.

## **1.7 STORAGE AND PROTECTION**

A. Storage: Store piping on this project site so as to preclude the entrance of construction dirt and debris into the open ends of piping. Do not install piping fouled with construction dirt.

B. Storage of Fittings: Store fittings under cover, protected from construction dirt and rain.

## **PART 2 - PRODUCTS**

### **2.1 COPPER TUBE AND FITTINGS**

A. Drawn-Temper Copper Tubing: ASTM B 88, Type L.

B. Annealed-Temper Copper Tubing: ASTM B 88, Type K.

C. Wrought-Copper Fittings and Unions: ASME B16.22.

### **2.2 STEEL PIPE AND FITTINGS**

A. Steel Pipe: ASTM A 53/A 53M, black steel, plain ends, Type, Grade, and Schedule as indicated in Part 3 piping applications articles.

B. Cast-Iron Threaded Fittings: ASME B16.4; Classes 125, 150, and 300 as indicated in Part 3 piping applications articles.

C. Malleable-Iron Threaded Fittings: ASME B16.3; Classes 150 and 300 as indicated in Part 3 piping applications articles.

- D. Malleable-Iron Unions: ASME B16.39; Classes 150, 250, and 300 as indicated in Part 3 piping applications articles.
- E. Cast-Iron Threaded Flanges and Flanged Fittings: ASME B16.1, Classes 125 and 250 as indicated in Part 3 piping applications articles; raised ground face, and bolt holes spot faced.
- F. Wrought-Steel Fittings: ASTM A 234/A 234M, butt weld type, wall thickness to match adjoining pipe.
- G. Wrought-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
  - 1. Material Group: 1.1.
  - 2. End Connections: Butt welding.
  - 3. Facings: Raised face.
- H. Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, black steel of same Type, Grade, and Schedule as pipe in which installed.

### 2.3 JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
  - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
    - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
    - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
  - 2. ASME B16.20, metallic, spiral wound, asbestos free, 1/8 inch (32 mm) maximum thickness, for services above 250 deg F (121 deg C).
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
  - 1. Bolts: ASTM A193 Grade B7, chrome-molybdenum bolt stud, with full length threads.
  - 2. Nuts: ASTM A194 Grade 2, carbon steel, hexagon heavy series type.
- C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- D. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for joining copper with copper; or BA9-1, silver alloy for joining copper with bronze or steel.
- E. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.





- F. Welding Materials: Comply with Section II, Part C, of ASME Boiler and Pressure Vessel Code for welding materials appropriate for wall thickness and for chemical analysis of pipe being welded.

## 2.4 DIELECTRIC FITTINGS

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
- B. Insulating Material: Suitable for system fluid, pressure, and temperature.
- C. Dielectric Unions:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Capitol Manufacturing Company.
    - b. Central Plastics Company.
    - c. Hart Industries, International Inc.
    - d. Watts Water Technologies, Inc.
    - e. Zurn Plumbing Products Group.
    - f. Or approved equal.
  - 2. Factory-fabricated union assembly, for 250-psig minimum working pressure at 180 deg F.
- D. Dielectric Flanges:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Capitol Manufacturing Company.
    - b. Central Plastics Company.
    - c. Watts Water Technologies, Inc.
    - d. Or approved equal.
  - 2. Factory-fabricated companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
- E. Dielectric-Flange Kits:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Advance Products & Systems, Inc.
    - b. Calpico, Inc.
    - c. Central Plastics Company.
    - d. Pipeline Seal and Insulator, Inc.
    - e. Or approved equal.



2. Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
3. Separate companion flanges and steel bolts and nuts shall have 150- or 300-psig minimum working pressure as required to suit system pressures.

## 2.5 VALVES

- A. Gate, Globe, Check, Ball, and High Performance Butterfly Valves: Comply with requirements specified in Division 23 Section "General-Duty Valves for HVAC Piping."

## 2.6 STRAINERS

- A. Y-Pattern Strainers:
  1. Body: ASTM A 126, Class B cast iron, with bolted cover and bottom drain connection.
  2. End Connections: Threaded ends for strainers NPS 2 and smaller; flanged ends for strainers NPS 2-1/2 and larger.
  3. Strainer Screen: Stainless-steel, 20 mesh strainer, and perforated stainless-steel basket with 50 percent free area.
  4. Tapped blowoff plug.
  5. CWP Rating: 250-psig working steam pressure.

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## 2.7 STEAM TRAPS

- A. Steam trap ratings shall be based on the following:
  1. 300 percent of maximum load, except based on 400 percent for absorption chillers.
  2. Condensate at steam temperature.
  3. Pressure differential across trap at maximum capacity: 1 psig, unless noted otherwise:
    - a. Low Pressure Systems (5 psi and less): 1/4 psi.
    - b. Low Pressure Systems (15 psi maximum): 1 psi.
  4. Standards of Steam Heating Equipment Manufacturers Association.
  5. Minimum trap size: 3/4 inch.
- B. Thermostatic Traps:
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Armstrong International, Inc.
    - b. Barnes & Jones, Inc.
    - c. Dunham-Bush, Inc.
    - d. Hoffman Specialty; Division of ITT Industries.
    - e. Spirax Sarco, Inc.



- f. Sterling.
2. Body: Bronze angle-pattern body with integral union tailpiece and screw-in cap.
  3. Trap Type: Balanced-pressure.
  4. Bellows: Corrugated, stainless steel or monel.
  5. Head and Seat: Replaceable, hardened stainless steel or cast brass.
  6. Pressure Class: 125.
- C. Thermodynamic Traps:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Armstrong International, Inc.
    - b. Barnes & Jones, Inc.
    - c. Dunham-Bush, Inc.
    - d. Hoffman Specialty; Division of ITT Industries.
    - e. Spirax Sarco, Inc.
    - f. Or approved equal.
  2. Body: Stainless steel with screw-in cap.
  3. End Connections: Threaded.
  4. Disc and Seat: Stainless steel.
  5. Maximum Operating Pressure: 600 psig.
  6. Operation:
    - a. Disc, only moving part; tight shut off at no load condition.
    - b. Air and condensate discharged as soon as same reaches trap.
    - c. Not to be used for equipment utilizing control valves.
- D. Float and Thermostatic Traps:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Armstrong International, Inc.
    - b. Barnes & Jones, Inc.
    - c. Dunham-Bush, Inc.
    - d. Hoffman Specialty; Division of ITT Industries.
    - e. Spirax Sarco, Inc.
    - f. Sterling.
    - g. Or approved equal.
  2. Body and Bolted Cap: ASTM A 126, cast iron.
  3. End Connections: Threaded.
  4. Float Mechanism: Replaceable, stainless steel.
  5. Head and Seat: Hardened stainless steel.
  6. Trap Type: Balanced pressure.
  7. Thermostatic Bellows: Stainless steel or monel.



8. Thermostatic air vent capable of withstanding 45 deg F of superheat and resisting water hammer without sustaining damage.
  9. Vacuum Breaker: Thermostatic with phosphor bronze bellows, and stainless steel cage, valve, and seat.
  10. Maximum Operating Pressure: 125 psig.
- E. Inverted Bucket Traps:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Armstrong International, Inc.
    - b. Barnes & Jones, Inc.
    - c. Dunham-Bush, Inc.
    - d. Hoffman Specialty; Division of ITT Industries.
    - e. Spirax Sarco, Inc.
    - f. Sterling.
    - g. Or approved equal.
  2. Body and Cap: Cast iron.
  3. End Connections: Threaded.
  4. Head and Seat: Stainless steel.
  5. Valve Retainer, Lever, and Guide Pin Assembly: Stainless steel.
  6. Bucket: Brass or stainless steel.
  7. Strainer: Integral-stainless-steel-inlet-strainer-within-the-trap-body.
  8. Air Vent: Stainless-steel thermostatic vent.
  9. Pressure Rating: 250 psig.

## 2.8 THERMOSTATIC AIR VENTS AND VACUUM BREAKERS

- A. Thermostatic Air Vents:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Armstrong International, Inc.
    - b. Barnes & Jones, Inc.
    - c. Dunham-Bush, Inc.
    - d. Hoffman Specialty; Division of ITT Industries.
    - e. Spirax Sarco, Inc.
    - f. Sterling.
    - g. Or approved equal.
  2. Body: Cast iron, bronze or stainless steel.
  3. End Connections: Threaded.
  4. Float, Valve, and Seat: Stainless steel.
  5. Thermostatic Element: Phosphor bronze bellows in a stainless-steel cage.
  6. Pressure Rating: 300 psig.
  7. Maximum Temperature Rating: 350 deg F.



B. Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Armstrong International, Inc.
  - b. Dunham-Bush, Inc.
  - c. Hoffman Specialty; Division of ITT Industries.
  - d. Johnson Corporation (The).
  - e. Spirax Sarco, Inc.
  - f. Or approved equal.
2. Body: Bronze, or stainless steel.
3. End Connections: Threaded.
4. Sealing Ball, Retainer, Spring, and Screen: Stainless steel.
5. O-ring Seal: EPR.
6. Pressure Rating: 300 psig.
7. Maximum Temperature Rating: 350 deg F.

**2.9 STEAM METERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. EMCO Flow Systems; Division of Advanced Energy Company.
  2. ISTECH Corp.
  3. Preso Meters; a division of Racine Federated Inc.
  4. Spirax Sarco, Inc.
  5. Or approved equal.
- B. Meters shall have a microprocessor to display totalizer flow, flow rate, temperature, pressure, time, and date; alarms for high and low flow rate and temperature.
1. Computer shall have 4 to 20-mA or 2 to 10 volt output for temperature, pressure, and contact closure for flow increments.
  2. Independent timers to store four peak flow rates and total flow.
  3. Interface compatible with central workstation described in Division 23.
  4. Microprocessor Enclosure: NEMA 250, Type 4.
- C. Sensor: Vortex type with stainless-steel wetted parts and flange connections; and with a piezoelectric sensor removable and serviceable without shutting down the process. At least 10:1 turndown with plus or minus 1 percent accuracy over full-flow range.

**2.10 MISCELLANEOUS DEVICES**

- A. Drip-Pan Elbows:



1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Anvil International, Inc.
  - b. Keckley.
  - c. Kunkle Valve; a Tyco International Ltd. Company.
  - d. Or approved equal.
2. Body Material: Cast iron or welded steel.
3. End Connection: Threaded or flanged inlet.
4. Drain Tapping: Threaded.

### **PART 3 - EXECUTION**

#### **3.1 LP STEAM PIPING APPLICATIONS**

- A. LP Steam Piping, NPS 2 and Smaller: Schedule 80, Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.
- B. LP Steam Piping, NPS 2-1/2 and larger: Schedule 40, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, flanges, and flange fittings; and welded and flanged joints.
- C. ~~Condensate piping, NPS 2 and smaller, shall be the following:~~
  1. Schedule 80, Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.
- D. Condensate piping, NPS 2-1/2 and larger, shall be the following:
  1. Schedule 80, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, flanges, and flange fittings; and welded and flanged joints.

#### **3.2 ANCILLARY PIPING APPLICATIONS**

- A. Pumped Condensate Return Piping: Schedule 80, Grade B, steel pipe, Class 125 cast iron fittings; and threaded joints.
- B. Blowdown-Drain Piping: Same materials and joining methods as for piping specified for the service in which blowdown drain is installed.
- C. Air-Vent Piping:
  1. Inlet: Same as service where installed.
  2. Outlet: Type K annealed-temper copper tubing with soldered or flared joints.
- D. Vacuum-Breaker Piping: Outlet, same as service where installed.
- E. Instrument Piping: Standard weight, red brass pipe; cast bronze fittings and threaded joints.



### 3.3 VALVE APPLICATIONS

- A. Install shutoff duty valves at risers and branch connections to steam supply mains, at steam supply connections to equipment, and at the outlet of steam traps.
- B. Install safety valves on pressure-reducing stations and elsewhere as required by ASME Boiler and Pressure Vessel Code. Install safety-valve discharge piping, without valves, to nearest floor drain or as indicated on Drawings. Comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1, for installation requirements.

### 3.4 PIPING INSTALLATION

- A. Install piping approximately as indicated and modify to suit building conditions, to avoid interference with other trades, to maintain access and clearance and to maintain pitch. Where modifications are required provide necessary offsets, drains, vents, valves, and required pipe and fittings.
- B. Maintain maximum headroom and ceiling height; offset as necessary and coordinate with work of other trades.
- C. Install piping to allow for expansion and contracting of the piping systems. Provide offset and swing joint connections at tanks, coils, and other equipment to eliminate undue strain to the equipment connections.
- D. Install piping to permit valve servicing.
- E. Install piping free of sags and bends.
- F. Install standard manufactured fittings for changes in direction and branch connections.
- G. Install piping to allow application of insulation.
- H. Select system components with pressure rating equal to or greater than system operating pressure.
- I. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- J. Install drains, consisting of a tee fitting, NPS 3/4 full port-ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- K. Install steam supply piping at a minimum uniform grade of 0.2 percent downward in direction of steam flow.
- L. Install condensate return piping at a minimum uniform grade of 0.4 percent downward in direction of condensate flow.



- M. Reduce pipe sizes using eccentric reducer fitting installed with level side down for horizontal piping and concentric reducers for vertical piping.
  - N. Install branch connections to mains using tee fittings in main pipe, with the branch connected to top of main pipe.
    - 1. Equal to Main and to 2 Pipe Sizes Smaller: Use weld tees same weight as piping.
    - 2. Three or More Pipe Sizes Smaller Than Main:
      - a. Up to NPS 2 (DN 50): Use weld-o-lets, thread-o-lets, or threaded nip-o-lets.
      - b. NPS 2 1/2 (DN 65) and larger: Use weld-o-lets.
  - O. Install valves according to Division 23 Section "General-Duty Valves for HVAC Piping."
  - P. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated. Use dielectric unions where joining dissimilar materials.
  - Q. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.
  - R. Install strainers on supply side of control valves, pressure-reducing valves, traps, and elsewhere as indicated. Install NPS 3/4 nipple and full port ball valve in blowdown connection of strainers NPS 2 and larger. Match size of strainer blowoff connection for strainers smaller than NPS 2.
- 
- S. Install no piping in elevator machine rooms, electric rooms and closets, and telephone rooms and closets.
  - T. Install expansion loops, expansion joints, anchors, and pipe alignment guides as specified in Division 23 Section "Expansion Fittings and Loops for HVAC Piping."
  - U. Identify piping as specified in Division 23 Section "Identification for HVAC Piping and Equipment."
  - V. Install drip legs at low points and natural drainage points such as ends of mains, bottoms of risers, and ahead of pressure regulators, and control valves.
    - 1. On straight runs with no natural drainage points, install drip legs at intervals not exceeding 100 feet.
    - 2. Size drip legs same size as main. In steam mains NPS 6 and larger, drip leg size can be reduced, but to no less than NPS 4.
  - W. Steam Separator: Install steam trap in piping from drain connection and install piping from trap outlet to drain, or as directed.

### **3.5 STEAM-TRAP INSTALLATION**

- A. Install steam traps in accessible locations as close as possible to connected equipment.





- B. Install full-port ball valve, strainer, and union upstream from trap; install union, check valve, and full-port ball valve downstream from trap unless otherwise indicated.

### 3.6 HANGERS AND SUPPORTS

- A. Install hangers and supports according to Division 23 Section "Hangers and Supports for HVAC Piping and Equipment." Comply with requirements below for maximum spacing.
- B. Seismic restraints are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
- C. Install the following pipe attachments:
  - 1. Adjustable steel clevis hangers for individual horizontal piping less than 20 feet long.
  - 2. Adjustable roller hangers and spring hangers for individual horizontal piping 20 feet or longer.
  - 3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
  - 4. Spring hangers to support vertical runs.
- D. Install hangers with the following maximum spacing and minimum rod sizes:
  - 1. NPS 3/4: Maximum span, 9 feet; minimum rod size, 1/4 inch.
  - 2. NPS 1: Maximum span, 9 feet; minimum rod size, 1/4 inch.
  - 3. NPS 1-1/2: Maximum span, 12 feet; minimum rod size, 3/8 inch.
  - 4. NPS 2: Maximum span, 13 feet; minimum rod size, 3/8 inch.
  - 5. NPS 2-1/2: Maximum span, 14 feet; minimum rod size, 3/8 inch.
  - 6. NPS 3: Maximum span, 15 feet; minimum rod size, 3/8 inch.
- E. Install hangers for drawn-temper copper piping with the following maximum spacing and minimum rod sizes:
  - 1. NPS 3/4: Maximum span, 5 feet; minimum rod size, 1/4 inch.
  - 2. NPS 1: Maximum span, 6 feet; minimum rod size, 1/4 inch.
  - 3. NPS 1-1/2: Maximum span, 8 feet; minimum rod size, 3/8 inch.
  - 4. NPS 2: Maximum span, 8 feet; minimum rod size, 3/8 inch.

### 3.7 PIPE JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 23 Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.



- D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube ends. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
  - E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
  - F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
    - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
    - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
  - G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
  - H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
  - I. Swing Joints: Use 3 elbow type joints on steam and condensate return connections to equipment and piping systems.
- 

### **3.8 TERMINAL EQUIPMENT CONNECTIONS**

- A. Size for supply and return piping connections shall be the same as or larger than equipment connections.
- B. Install traps and control valves in accessible locations close to connected equipment.
- C. Install bypass piping with globe valve around control valve. If parallel control valves are installed, only one bypass is required.
- D. Install vacuum breakers downstream from control valve, close to coil inlet connection.
- E. Install a drip leg at coil outlet.

### **3.9 EQUIPMENT PIPING AND CONNECTIONS**

- A. Install steam, condensate return, drip and vent piping connections as noted and as recommended by the equipment manufacturer. Verify location, number, and size of connections
- B. Piping and Connections:
  - 1. Install a gate valve in each steam connection.



- 2. In each return connection install a globe valve at equipment, trap, strainer upstream of trap, check valve and gate valve a trap discharge and globe valve in trap by-pass.
  - 3. Exposed uninsulated steam, return and drip piping, including valves, strainers, and traps shall be chromium plated.
  - 4. Install single stage, self-contained pressure reducing valves in steam connections to equipment, as noted, with a strainer at inlet side. Exposed pressure reducing valves and strainer shall be chromium plated.
- C. Locate condensate return traps to preclude freezing.

**3.10 FIELD QUALITY CONTROL**

- A. Prepare steam and condensate piping according to ASME B31.1, "Power Piping" and ASME B31.9, "Building Services Piping," and as follows:

- 1. Leave joints, including welds, uninsulated and exposed for examination during test.
- 2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
- 3. Prior to cleaning, remove steam traps and provide temporary spool pieces.
- 4. Flush system with clean water. Clean strainers.
- 5. Blowdown system with steam after water cleaning, and before steam traps are installed.
- 6. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.

- B. Weld Tests: Perform the following tests on welded steam and condensate piping.

- 1. Retain the services of an independent testing agency for visual and radiographical examination of welds in conformance with ASME B31.
- 2. Visual Tests: All welds shall be visually inspected. Visual examination of weld joints shall be viewed before, during, and after fabrication, assembly and erection to verify conformance with Contractor's written qualified welding procedure.
- 3. Radiographic Tests: Radiographic examination for butt welded joints in steam piping shall be performed in accordance with Article 2 of Section V of the ASME Boiler and Pressure Vessel Code. The extent of radiographic examination shall be as per the following:

Steam Piping Pressure	Percentage Radiograph
90 psig and Under	Not required
91 psig to 150 psig	10% at Random

- 4. Defects: All defects in welds of base materials shall be removed. Repair all welds in accordance with Contractor's written qualified welding procedure. All repairs shall be done at no additional cost to the City of New York.
- C. Perform the following tests on steam and condensate piping:



1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
2. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength.
3. After hydrostatic test pressure has been applied for at least 2 hours, with system valves capped and pressure apparatus disconnected, and no change in test pressure, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.

D. Prepare written report of testing.

**END OF SECTION 23 22 13**



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**SECTION 23 31 13  
METAL DUCTS**

**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. Single-wall rectangular ducts and fittings.
  2. Flush flat seam rectangular ducts and fittings.
  3. Sheet metal materials.
  4. Sealants and gaskets.
  5. Hangers and supports.
  6. Seismic-restraint devices.
- 

B. Related Sections:

1. Division 23 Section "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
2. Division 23 Section "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.

**1.3 PERFORMANCE REQUIREMENTS**

- A. Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with the latest edition of SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" section of this specification.
- B. Structural Performance: Duct hangers and supports and seismic restraints shall withstand the effects of gravity and seismic loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and ASCE/SEI 7. SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."
1. Seismic Hazard Level A: Seismic force to weight ratio, 0.48.
- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.



#### 1.4 SUBMITTALS

A. Product Data: For each type of the following products:

1. Liners and adhesives.
2. Sealants and gaskets.
3. Seismic-restraint devices.
4. Other factory made items specified herein.

B. Shop Drawings:

1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
2. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
3. Elevation of top and bottom of ducts.
4. Dimensions of main duct runs from building grid lines.
5. Fittings.
6. Penetrations through fire-rated and other partitions.
7. Equipment installation based on equipment being used on Project, including curbs and bases.
8. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.

C. Submittal:

1. Factory- and shop-fabricated ducts and fittings 3/8"
2. Reinforcement and spacing.
3. Seam and joint construction.
4. Hangers and supports, including methods for duct and building attachment, seismic restraints, and vibration isolation.
5. Sheet metal thicknesses.
6. Joint and seam construction and sealing.
7. Reinforcement details and spacing.
8. Materials, fabrication, assembly, and spacing of hangers and supports.
9. Design Calculations: Calculations for selecting hangers and supports and seismic restraints.

D. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Duct installation in congested spaces, indicating coordination with general construction, building components, and other building services. Indicate proposed changes to duct layout.
2. Suspended ceiling components.
3. Structural members to which duct will be attached.
4. Size and location of initial access modules for acoustical tile.
5. Penetrations of smoke barriers and fire-rated construction.
6. Items penetrating finished ceiling including the following:
  - a. Lighting fixtures.



- b. Air outlets and inlets.
  - c. Speakers.
  - d. Sprinklers.
  - e. Access panels.
  - f. Perimeter moldings.
- E. Welding certificates.
- F. Field quality-control reports.

## **1.5 QUALITY ASSURANCE**

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
- 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 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-Up."
- 
- D. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6.4.4 - "HVAC System Construction and Insulation."
- E. All references to SMACNA are based on the 2005 Edition.

## **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 unless otherwise indicated.
- B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "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 2-2, "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 2, "Rectangular Duct 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 FLUSH FLAT SEAM 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, except use sheet metal 2 gauge numbers heavier than required for classification with normal standing seam construction.
- B. Transverse Joints: Fabricate joints in accordance with transverse joint detail shown on drawings. Provide all joints and seams, smooth, and alighted with no projections. In other aspects conform to SMACNA's "HVAC Duct Construction Standards" for applicable sealing requirements, duct-support intervals and other provisions.
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "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." Install ducts with longitudinal seams at top of ducts.
- 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 2, "Rectangular Duct 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."
- E. Reinforcing: Install vertical stays for interval reinforcement at transverse joints and at 2 foot intervals along run of duct, as follows:
  - 1. Ducts up to 60 inches wide: Provide 1 vertical stay at mid-point of duct.
  - 2. Ducts 61 inches to 90 inches wide: Provide 2 vertical stays at third points of duct.
  - 3. Ducts over 90 inches wide: Provide 3 vertical stays at quarter points of duct.
  - 4. Vertical Stays: 10 USSG galvanized steel, free of burrs and rough edges, with both ends bent and fastened to the top and bottom of ducts.

## 2.3 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. PVC-Coated, Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
1. Galvanized Coating Designation: G90.
  2. Minimum Thickness for Factory-Applied PVC Coating: 4 mils thick on sheet metal surface of ducts and fittings exposed to corrosive conditions, and minimum 1-mil thick on opposite surface.
  3. Coating Materials: For use on ducts listed and labeled by an NRTL for compliance with UL 181, Class 1.
- D. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.
- E. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304 or 316, as indicated in the "Duct Schedule" Article; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in the "Duct Schedule" Article.
- F. 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.
- ~~G. Lead Sheets: Comply with Federal Specification ZZ-L-301a, Grade C, 0.24-inch thick.~~
- H. Factory- or Shop-Applied Antimicrobial Coating:
1. Apply to the surface of sheet metal that will form the interior surface of the duct. An untreated clear coating shall be applied to the exterior surface.
  2. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
  3. Coating containing the antimicrobial compound shall have a hardness of 2H, minimum, when tested according to ASTM D 3363.
  4. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
  5. Shop-Applied Coating Color: Black.
  6. Antimicrobial coating on sheet metal is not required for duct containing liner treated with antimicrobial coating.
- I. 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.
- J. 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.



## 2.4 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. Two-Part Tape Sealing System:
1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
  2. Tape Width: 3 inches.
  3. Sealant: Modified styrene acrylic.
  4. Water resistant.
  5. Mold and mildew resistant.
  6. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
  7. Service: Indoor and outdoor.
  8. Service Temperature: Minus 40 to plus 200 deg F.
  9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.
  10. For indoor applications, use sealant that has a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Water-Based Joint and Seam Sealant:
1. Application Method: Brush on.
  2. Solids Content: Minimum 65 percent.
  3. Shore A Hardness: Minimum 20.
  4. Water resistant.
  5. Mold and mildew resistant.
  6. VOC: Maximum 75 g/L (less water).
  7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
  8. Service: Indoor or outdoor.
  9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
- D. Solvent-Based Joint and Seam Sealant:
1. Application Method: Brush on.
  2. Base: Synthetic rubber resin.
  3. Solvent: Toluene and heptane.
  4. Solids Content: Minimum 60 percent.
  5. Shore A Hardness: Minimum 60.
  6. Water resistant.
  7. Mold and mildew resistant.
  8. For indoor applications, use sealant that has a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  9. VOC: Maximum 395 g/L.
  10. Maximum Static-Pressure Class: 10-inch wg, positive or negative.
  11. Service: Indoor or outdoor.



12. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
- E. Flanged Joint Sealant: Comply with ASTM C 920.
1. General: Single-component, acid-curing, silicone, elastomeric.
  2. Type: S.
  3. Grade: NS.
  4. Class: 25.
  5. Use: O.
  6. For indoor applications, use sealant that has a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- F. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer, 1/8 inch thick of width to match angle connection.

## 2.5 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.
- B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
- ~~C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."~~
- D. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; to match duct materials.
- E. Trapeze and Riser Supports:
1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
  2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
  3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

## 2.6 SEISMIC-RESTRAINT DEVICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cooper B-Line, Inc.; a division of Cooper Industries.
  2. Ductmate Industries, Inc.
  3. Hilti Corp.
  4. Kinetics Noise Control.
  5. Loos & Co.; Cableware Division.
  6. Mason Industries.



7. TOLCO; a brand of NIBCO INC.
  8. Unistrut Corporation; Tyco International, Ltd.
  9. Or approved equal.
- B. General Requirements for Restraint Components: Rated strengths, features, and applications shall be as defined in reports.
1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.
- C. Channel Support System: Shop- or field-fabricated support assembly made of slotted steel channels rated in tension, compression, and torsion forces and with accessories for attachment to braced component at one end and to building structure at the other end. Include matching components and corrosion-resistant coating.
- D. Restraint Cables: ASTM A 603, galvanized steel cables with end connections made of cadmium-plated steel assemblies with brackets, swivel, and bolts designed for restraining cable service; and with an automatic-locking and clamping device or double-cable clips.
- E. Hanger Rod Stiffener: Reinforcing steel angle clamped to hanger rod.
- F. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

## **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.
- B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- C. Install ducts with fewest possible joints.
- D. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- E. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- F. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.



- G. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- H. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- I. 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.
- J. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Division 23 Section "Air Duct Accessories" for fire and smoke dampers.
- K. Ducts that traverse smoke zones shall be fabricated of sheet metal gauges conforming to NFPA 90A.
- L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "Duct Cleanliness for New Construction Guidelines."
- M. Duct Openings:
  - 1. Provide openings in ducts where required to accommodate thermometers, smoke detectors, control devices, sensors, and devices. Install same though airtight rubber grommets.
  - 2. Provide pilot-tube openings where required for testing of systems. Each opening shall be complete with a metal cap, with a spring device or screw to ensure against air leakage.
  - 3. At openings in insulated ducts, install insulation material inside metal ring.

### 3.2 INSTALLATION OF EXPOSED DUCTWORK

- 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. Use flush flat seam joints, except in mechanical rooms.
- E. Repair or replace damaged sections and finished work that does not comply with these requirements.



### 3.3 INSTALLATION OF DUCTS OUTDOORS

- A. Ducts shall be made completely watertight.
- B. Construct ducts as follows to assure water run-off.
  - 1. Arrange standing seams so as not to act as dams.
  - 2. Erect ducts with longitudinal seams at bottom of duct.
  - 3. Slope entire top of duct down towards side.
  - 4. Provide vertical struts within duct to bow tap panels of duct into convex shape.
  - 5. Erect ducts with mastic sealant within sheet metal joints.

### 3.4 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":
  - 1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
  - 2. Outdoor, Exhaust Ducts: Seal Class C.
  - 3. Conditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class C.
  - 4. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class B.
  - 5. Conditioned Space, Exhaust Ducts: Seal Class B.

### 3.5 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."
- B. Building Attachments: Concrete inserts or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
  - 1. Where practical, install concrete inserts before placing concrete.
  - 2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
  - 3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
  - 4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
  - 5. Do not use powder-actuated concrete fasteners for seismic restraints.
- C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports



within 24 inches of each elbow and within 48 inches of each branch intersection. Extend strap supports down both sides of ducts and turn under bottom at least 1 inch. Secure hanger to sides and bottom of ducts with sheet metal screws.

- D. Hangers Exposed to View: Threaded rod and angle or channel supports.
- E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.
- F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- G. Avoid penetrations of ducts. Provide airtight rubber grommets at unavoidable penetrations of hanger rods.

### **3.6 SEISMIC-RESTRAINT-DEVICE INSTALLATION**

- A. Install ducts with hangers and braces designed to support the duct and to restrain against seismic forces required by applicable building codes. Comply with SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."
  - 1. Space lateral supports a maximum of 40 feet o.c., and longitudinal supports a maximum of 80 feet o.c.
  - 2. Brace a change of direction longer than 12 feet.
- B. Select seismic-restraint devices with capacities adequate to carry present and future static and seismic loads.
- C. Install cables so they do not bend across edges of adjacent equipment or building structure.
- D. Install cable restraints on ducts that are suspended with vibration isolators.
- E. Install seismic-restraint devices.
- F. Attachment to Structure: If specific attachment is not indicated, anchor bracing and restraints to structure, to flanges of beams, to upper truss chords of bar joists, or to concrete members.
- G. Drilling for and Setting Anchors:
  - 1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcement or embedded items during drilling. Notify the Commissioner if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
  - 2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.





3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Set anchors to manufacturer's recommended torque, using a torque wrench.
5. Install zinc-coated steel anchors for interior applications and stainless-steel anchors for applications exposed to weather.

### 3.7 CONNECTIONS

- A. Make connections to equipment with flexible connectors complying with Division 23 Section "Air Duct Accessories."
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

### 3.8 PAINTING

- A. Paint interior of metal ducts that are visible through registers and grilles and that do not have duct liner. Apply one coat of flat, black, latex paint over a compatible galvanized-steel primer. Paint materials and application requirements are specified in Division 09 painting Sections.

### 3.9 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Leakage Tests:
  1. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Submit a test report for each test.
  2. Test the following systems:
    - a. Ducts with a Pressure Class Higher Than 3-Inch wg: Test representative duct sections, selected by the Commissioner from sections installed, totaling no less than 25 percent of total installed duct area for each designated pressure class.
    - b. Supply Ducts with a Pressure Class of 3-Inch wg or Higher: Test representative duct sections, selected by the Commissioner from sections installed, totaling no less than 100 percent of total installed duct area for each designated pressure class.
    - c. Return Ducts with a Pressure Class of 3-Inch wg or Higher: Test representative duct sections, selected by the Commissioner from sections installed, totaling no less than 100 percent of total installed duct area for each designated pressure class.
    - d. Exhaust Ducts with a Pressure Class of 2-Inch wg or Higher: Test representative duct sections, selected by the Commissioner from sections installed, totaling no less than 100 percent of total installed duct area for each designated pressure class.
    - e. Outdoor Air Ducts with a Pressure Class of 2-Inch wg or Higher: Test representative duct sections, selected by Commissioner from sections installed,



totaling no less than 100 percent of total installed duct area for each designated pressure class.

3. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
4. Test for leaks before applying external insulation.
5. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If static-pressure classes are not indicated, test system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure.
6. Give seven days' advance notice for testing.

C. Duct System Cleanliness Tests:

1. Visually inspect duct system to ensure that no visible contaminants are present.
2. Test sections of metal duct system, chosen randomly by City of New York, for cleanliness according to "Vacuum Test" in NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems."
  - a. Acceptable Cleanliness Level: Net weight of debris collected on the filter media shall not exceed 0.75 mg/100 sq. cm.

D. Duct system will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

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### 3.10 DUCT CLEANING

A. Clean new duct system before testing, adjusting, and balancing.

B. Use service openings for entry and inspection.

1. Create new openings and install access panels appropriate for duct static-pressure class if required for cleaning access. Provide insulated panels for insulated or lined duct. Patch insulation and liner as recommended by duct liner manufacturer. Comply with Division 23 Section "Air Duct Accessories" for access panels and doors.
2. Disconnect and reconnect flexible ducts as needed for cleaning and inspection.
3. Remove and reinstall ceiling to gain access during the cleaning process.

C. Particulate Collection and Odor Control:

1. When venting vacuuming system inside the building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron-size (or larger) particles.
2. When venting vacuuming system to outdoors, use filter to collect debris removed from HVAC system; and locate exhaust downwind and away from air intakes and other points of entry into building.

D. Clean the following components by removing surface contaminants and deposits:

1. Air outlets and inlets (registers, grilles, and diffusers).



2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
4. Coils and related components.
5. Return-air ducts, dampers, actuators, and turning vanes except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.
7. Dedicated exhaust and ventilation components and makeup air systems.

E. Mechanical Cleaning Methodology:

1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet. Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.
5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
6. Provide drainage and cleanup for wash-down procedures.
7. Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents according to manufacturer's written instructions after removal of surface deposits and debris.

**3.11 START UP**

- A. Air Balance: Comply with requirements in Division 23 Section "Testing, Adjusting, and Balancing for HVAC."

**3.12 DUCT SCHEDULE**

- A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:
1. Outdoor, Exposed to Weather Ducts: Type 304, stainless steel sheet, watertight.
- B. Supply Ducts:
1. Constant-Volume Air System:
    - a. Pressure Class: Positive 2-inch wg.
    - b. Minimum SMACNA Seal Class: A.



- c. SMACNA Leakage Class for Rectangular: 6 12.
- d. SMACNA Leakage Class for Round and Flat Oval: 6.

C. Return Ducts:

1. Constant-Volume System:

- a. Pressure Class: Positive or negative 2-inch wg.
- b. Minimum SMACNA Seal Class: A.
- c. SMACNA Leakage Class for Rectangular: 12.
- d. SMACNA Leakage Class for Round and Flat Oval: 12.

D. Exhaust Ducts:

1. Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:

- a. Pressure Class: Negative 2-inch wg.
- b. Minimum SMACNA Seal Class: A if negative pressure, and A if positive pressure.
- c. SMACNA Leakage Class for Rectangular: 12.
- d. SMACNA Leakage Class for Round and Flat Oval: 6.

E. Outdoor-Air (Not Filtered, Heated, or Cooled) Ducts:

~~1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units~~

- a. Pressure Class: Positive or negative 2-inch wg.
- b. Minimum SMACNA Seal Class: A.
- c. SMACNA Leakage Class for Rectangular: 12.
- d. SMACNA Leakage Class for Round and Flat Oval: 6.

F. Intermediate Reinforcement:

- 1. Galvanized-Steel Ducts: Galvanized steel.
- 2. PVC-Coated Ducts:
  - a. Exposed to Airstream: Match duct material.
  - b. Not Exposed to Airstream: Galvanized.
- 3. Stainless-Steel Ducts:
  - a. Exposed to Airstream: Match duct material.
  - b. Not Exposed to Airstream: Match duct material.
- 4. Aluminum Ducts: Aluminum.

G. Elbow Configuration:



1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
  - a. Velocity 1500 fpm:
    - 1) Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio.
    - 2) Radius Type RE 3 with minimum 0.5 radius-to-diameter ratio and two vanes.
    - 3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
2. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "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 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

H. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
  - a. Rectangular Main to Rectangular Branch: 45-degree entry.
  - b. Rectangular Main to Round Branch: Spin in.

**END OF SECTION 23 31 13**



**SECTION 23 33 00  
AIR DUCT 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 SUMMARY**

- A. Section Includes:
1. Backdraft and pressure relief dampers.
  2. Manual volume dampers.
  3. Control dampers.
  4. Combination fire and smoke dampers.
  5. Flange connectors.
  6. Turning vanes.
  7. Duct-mounted access doors.
  8. Flexible connectors.
  9. Duct security bars.
  10. Duct accessory hardware.
  11. Louvers.
  12. Duct silencers/Sound attenuators.

**1.3 SUBMITTALS**

- A. Product Data: For each type of product indicated.
1. For all accessories specified, include construction details, dimensions, materials, finishes, bearings and compliance with applicable codes.
  2. Performance: Show compliance with pressure drops or specific requirements noted.
  3. Provide manufacturer's installation instructions.
  4. For duct silencers/sound attenuators, include pressure drop and dynamic insertion loss data. Include breakout noise calculations for high transmission loss casings.
- B. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.
1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions, weights, loads, and required clearances; and method of field assembly into duct systems and other construction. Include the following:



- a. Special fittings.
  - b. Manual volume damper installations.
  - c. Control damper installations.
  - d. Fire-damper, smoke-damper, combination fire- and smoke-damper, ceiling, and corridor damper installations, including sleeves; and duct-mounted access doors and remote damper operators.
  - e. Duct security bars.
  - f. Wiring Diagrams: For power, signal, and control wiring.
2. Duct silencers/sound attenuators:
- a. Connection details, manufacturer's installation instructions and installation requirements to maintain integrity of sound isolation.
  - b. Test reports indicating dynamic insertion loss and noise generation values of silencers/attenuators.
- C. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which ceiling-mounted access panels and access doors required for access to duct accessories are shown and coordinated with each other, using input from Installers of the items involved.
- D. Source quality-control reports.
- E. Operation and Maintenance Data: For air duct accessories to include in operation and maintenance manuals.

#### **1.4 QUALITY ASSURANCE**

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- B. Comply with AMCA 500-D testing for damper rating.
- C. Demonstrate resetting of fire dampers to the City of New York's representatives.
- D. Fire and smoke dampers shall be approved by the New York City Board of Standards and Appeals.

#### **1.5 EXTRA MATERIALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  1. Fusible Links: Furnish quantity equal to 10 percent of amount installed.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. 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: G60.
  - 2. Exposed-Surface Finish: Mill phosphatized.
- C. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304, and having a No. 2 finish for concealed ducts and finish for exposed ducts.
- D. Aluminum Sheets: Comply with ASTM B 209, Alloy 3003, Temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.
- E. Extruded Aluminum: Comply with ASTM B 221, Alloy 6063, Temper T6.
- F. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized-sheet-metal-ducts; compatible-materials-for-aluminum-and-stainless-steel-ducts.
- 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.

### 2.2 BACKDRAFT AND PRESSURE RELIEF DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Duro Dyne Inc.
  - 2. Greenheck Fan Corporation.
  - 3. Ruskin Company.
  - 4. Vent Products Company, Inc.
  - 5. Or approved equal.
- B. Description: Gravity balanced.
- C. Maximum Air Velocity: 2000 fpm.
- D. Maximum System Pressure: 2-inch wg.
- E. Frame: 0.063-inch- thick extruded aluminum, with welded corners and mounting flange.
- F. Blades: Multiple single-piece blades, center-pivoted, maximum 6-inch width, 0.025-inch-thick, roll-formed aluminum with sealed edges.



- G. Blade Action: Parallel.
- H. Blade Seals: Neoprene, mechanically locked.
- I. Blade Axles:
  - 1. Material: Aluminum.
  - 2. Diameter: 0.20 inch.
- J. Tie Bars and Brackets: Aluminum
- K. Return Spring: Adjustable tension.
- L. Bearings: Steel ball.
- M. Accessories:
  - 1. Adjustment device to permit setting for varying differential static pressure.
  - 2. Counterweights and spring-assist kits for vertical airflow installations.
  - 3. Electric actuators.
  - 4. Chain pulls.
  - 5. Screen Mounting: Front mounted in sleeve.
    - a. Sleeve Thickness: 20-gage minimum.
    - b. Sleeve Length: 6 inches minimum.
  - 6. Screen Mounting: Rear mounted.
  - 7. Screen Material: Aluminum.
  - 8. Screen Type: Bird.
  - 9. 90-degree stops.

### 2.3 **MANUAL VOLUME DAMPERS**

- A. Standard, Steel, Manual Volume Dampers:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Air Balance Inc.; a division of Mestek, Inc.
    - b. American Warming and Ventilating; a division of Mestek, Inc.
    - c. McGill AirFlow LLC.
    - d. Ruskin Company.
    - e. Vent Products Company, Inc.
    - f. Pottorf.
    - g. Or approved equal.
  - 2. Standard leakage rating, with linkage outside airstream.
  - 3. Suitable for horizontal or vertical applications.
  - 4. Frames:



- a. Hat-shaped, galvanized-steel channels, 0.064-inch minimum thickness.
  - b. Mitered and welded corners.
  - c. Flanges for attaching to walls and flangeless frames for installing in ducts.
5. Blades:
- a. Single blade up to 6 inches blade width; multiple blades for width over 6 inches.
  - b. Opposed-blade design for multiple blades dampers.
  - c. Round or oval ducts: butterfly type.
  - d. Stiffen damper blades for stability.
  - e. Galvanized-steel, 0.064 inch thick.
6. Blade Axles: Galvanized steel.
7. Bearings:
- a. Molded synthetic.
  - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
8. Tie Bars and Brackets: Galvanized steel.
- B. Standard, Aluminum, Manual Volume Dampers:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

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    - a. McGill AirFlow LLC.
    - b. Ruskin Company.
    - c. Vent Products Company, Inc.
    - d. Pottorf.
    - e. Or approved equal.
  2. Standard leakage rating, outside airstream.
  3. Suitable for horizontal or vertical applications.
  4. Frames: Hat-shaped, 0.10-inch- thick, aluminum sheet channels; frames with flanges for attaching to walls and flangeless frames for installing in ducts.
  5. Blades:
    - a. Single blade up to 6 inches blade width; multiple blades for width over 6 inches.
    - b. Opposed-blade design for multiple blades dampers.
    - c. Stiffen damper blades for stability.
    - d. Roll-Formed Aluminum Blades: 0.10-inch- thick aluminum sheet.
    - e. Extruded-Aluminum Blades: 0.050-inch- thick extruded aluminum.
  6. Blade Axles: Galvanized steel.
  7. Bearings:
    - a. Molded synthetic.
    - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.



8. Tie Bars and Brackets: Aluminum.
- C. Low-Leakage, Steel, Manual Volume Dampers:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Air Balance Inc.; a division of Mestek, Inc.
    - b. American Warming and Ventilating; a division of Mestek, Inc.
    - c. McGill AirFlow LLC.
    - d. Ruskin Company.
    - e. Vent Products Company, Inc.
    - f. Or approved equal.
  2. Low-leakage rating, with linkage outside airstream, and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.
  3. Suitable for horizontal or vertical applications.
  4. Frames:
    - a. Hat shaped.
    - b. Galvanized-steel channels, 0.064 inch thick.
    - c. Mitered and welded corners.
    - d. Flanges for attaching to walls and flangeless frames for installing in ducts.
  5. Blades:
    - a. Single blade up to 6 inches blade width; multiple blades for width over 6 inches.
    - b. Opposed-blade design for multiple blades dampers.
    - c. Stiffen damper blades for stability.
    - d. Galvanized, roll-formed steel, 0.064 inch thick.
  6. Blade Axles: Galvanized steel.
  7. Bearings:
    - a. Molded synthetic.
    - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
  8. Blade Seals: Neoprene.
  9. Jamb Seals: Cambered aluminum.
  10. Tie Bars and Brackets: Aluminum.
  11. Accessories:
    - a. Include locking device to hold dampers in a fixed position without vibration.
- D. Low-Leakage, Aluminum, Manual Volume Dampers:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



- a. Air Balance Inc.; a division of Mestek, Inc.
  - b. American Warming and Ventilating; a division of Mestek, Inc.
  - c. McGill AirFlow LLC.
  - d. Ruskin Company.
  - e. Vent Products Company, Inc.
  - f. Or approved equal.
2. Low-leakage rating, with linkage outside airstream, and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.
  3. Suitable for horizontal or vertical applications.
  4. Frames: Hat-shaped, 0.10-inch- thick, aluminum sheet channels; frames with flanges for attaching to walls and flangeless frames for installing in ducts.
  5. Blades:
    - a. Single blade up to 6 inches blade width; multiple blades for width over 6 inches.
    - b. Opposed-blade design for multiple blades dampers.
    - c. Roll-Formed Aluminum Blades: 0.10-inch- thick aluminum sheet.
    - d. Extruded-Aluminum Blades: 0.050-inch- thick extruded aluminum.
  6. Blade Axles: Galvanized steel.
  7. Bearings:
    - a. Molded synthetic.
    - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper-blades and bearings at both ends of operating shaft.
  8. Blade Seals: Neoprene.
  9. Jamb Seals: Cambered aluminum.
  10. Tie Bars and Brackets: Aluminum.
  11. Accessories:
    - a. Include locking device to hold dampers in a fixed position without vibration.
- E. Jackshaft:
1. Size: 1-inch diameter.
  2. Material: Galvanized-steel pipe rotating within pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.
  3. Length and Number of Mountings: As required to connect linkage of each damper in multiple-damper assembly.
- F. Damper Hardware:
1. Zinc-plated, die-cast core with quadrant and lever handle made of 3/32-inch- thick zinc-plated steel, and a lockscrew.
  2. Include center hole to suit damper operating-rod size.
  3. Include elevated platform to clear insulation for insulated duct mounting.



## 2.4 CONTROL DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Duro Dyne Inc.
  - 2. McGill AirFlow LLC.
  - 3. Ruskin Company.
  - 4. Vent Products Company, Inc.
  - 5. Young Regulator Company.
  - 6. Or approved equal.
- B. Low-leakage rating, with linkage outside airstream, and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.
- C. Frames:
  - 1. Hat shaped.
  - 2. Galvanized-steel channels, 0.064 inch thick.
  - 3. Mitered and welded corners.
- D. Blades:
  - 1. Multiple blades with maximum blade width of 8 inches.
  - 2. Opposed-blade design.
  - 3. Stainless steel.
  - 4. 0.064 inch thick.
  - 5. Blade Edging: Closed-cell neoprene edging.
  - 6. Blade Edging: Inflatable seal blade edging, or replaceable rubber seals.
- E. Blade Axles: 1/2-inch- diameter; stainless steel; blade-linkage hardware of zinc-plated steel and brass; ends sealed against blade bearings.
  - 1. Operating Temperature Range: From minus 40 to plus 200 deg F.
- F. Bearings:
  - 1. Molded synthetic.
  - 2. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
  - 3. Thrust bearings at each end of every blade.

## 2.5 COMBINATION FIRE AND SMOKE DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Pottorf.
  - 2. Ruskin Company.
  - 3. Or approved equal.



- B. Type: Static and dynamic; rated and labeled according to UL 555 and UL 555S by an NRTL.
- C. Closing rating in ducts up to 4-inch wg static pressure class and minimum 4000-fpm velocity.
- D. Fire Rating: 3 hours.
- E. Frame: Curtain type with blades outside airstream; fabricated with roll-formed, 0.034-inch-thick galvanized steel; with mitered and interlocking corners.
- F. Heat-Responsive Device: Replaceable, 165 deg F rated, fusible links.
- G. Heat-Responsive Device: Electric resettable link and switch package, factory installed, rated. Conform to NFPA 90A and NFPA 92A for fire and smoke dampers.
- H. Smoke Detector: Integral, factory wired for single-point connection.
- I. Blades: Roll-formed, horizontal, interlocking, 0.034-inch- thick, galvanized sheet steel. In place of interlocking blades, use full-length, 0.034-inch- thick, galvanized-steel blade connectors.
- J. Leakage: Minimum UL Class II metal to metal, non-degradable, seals rated to 850°F.
- K. Rated pressure and velocity to exceed design airflow conditions.
- ~~L. Mounting Sleeve: Factory-installed, 0.052-inch- thick, galvanized sheet steel; length to suit wall or floor application with factory-furnished silicone caulking Operator located exterior of sleeve.~~
- M. Master control panel for use in dynamic smoke-management systems.
- N. Damper Motors: two-position action.
- O. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."
  - 1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
  - 2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections.
  - 3. Permanent-Split-Capacitor or Shaded-Pole Motors: With oil-immersed and sealed gear trains.
  - 4. Spring-Return Motors: Equip with an integral spiral-spring mechanism where indicated. Enclose entire spring mechanism in a removable housing designed for service or adjustments. Size for running torque rating of 150 in. x lbf and breakaway torque rating of 150 in. x lbf.
  - 5. Outdoor Motors and Motors in Outdoor-Air Intakes: Equip with O-ring gaskets designed to make motors weatherproof. Equip motors with internal heaters to permit normal operation at minus 40 deg F.



6. Nonspring-Return Motors: For dampers larger than 25 sq. ft., size motor for running torque rating of 150 in. x lbf and breakaway torque rating of 300 in. x lbf.
7. Electrical Connection: 115 V, single phase, 60 Hz.

P. Accessories:

1. Auxiliary switches for fan control.
2. Test and reset switches, damper mounted.

## 2.6 CORRIDOR DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ruskin Company.
2. Nailor
3. Lloyd Industries
4. Or approved equal.

B. General Requirements: Label combination fire and smoke dampers according to UL 555 for 1-1/2-hour rating by an NRTL.

C. Heat-Responsive Device: Replaceable, 165 deg F rated, fusible links.

D. Heat-Responsive Device: Electric resettable link and switch package, factory installed, rated.

E. Frame: Curtain type with blades outside airstream; fabricated with roll-formed, 0.034-inch-thick galvanized steel; with mitered and interlocking corners.

F. Blades: Roll-formed, horizontal, interlocking, 0.034-inch-thick, galvanized sheet steel. In place of interlocking blades, use full-length, 0.034-inch-thick, galvanized-steel blade connectors.

G. Mounting Sleeve: Factory-installed, 0.052-inch-thick, galvanized sheet steel; length to suit wall or floor application.

H. Damper Motors: two-position action.

I. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections.
3. Permanent-Split-Capacitor or Shaded-Pole Motors: With oil-immersed and sealed gear trains.
4. Spring-Return Motors: Equip with an integral spiral-spring mechanism where indicated. Enclose entire spring mechanism in a removable housing designed for service or



adjustments. Size for running torque rating of 150 in. x lbf and breakaway torque rating of 150 in. x lbf.

5. Outdoor Motors and Motors in Outdoor-Air Intakes: Equip with O-ring gaskets designed to make motors weatherproof. Equip motors with internal heaters to permit normal operation at minus 40 deg F.
6. Nonspring-Return Motors: For dampers larger than 25 sq. ft., size motor for running torque rating of 150 in. x lbf and breakaway torque rating of 300 in. x lbf.
7. Electrical Connection: 115 V, single phase, 60 Hz.

## **2.7 FLANGE CONNECTORS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Ductmate Industries, Inc.
  2. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
  3. Or approved equal.
- B. Description: roll-formed, factory-fabricated, slide-on transverse flange connectors, gaskets, and components.
- C. Material: Galvanized steel or aluminum to match duct material.
- D. ~~Gage and Shape: Match connecting ductwork.~~

## **2.8 DUCTWORK LAGGING:**

- A. Acoustic Insulation: 2 inch (50 mm) thick, 3 to 5 lb/cu ft (50 to 80 kg/cu m) density, glass fiber or mineral wool insulation.
- B. Covering: with surface weight not less than 4 lb/sq ft (20 kg/sq m).

## **2.9 TURNING VANES**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Ductmate Industries, Inc.
  2. Duro Dyne Inc.
  3. METALAIRE, Inc.
  4. Or approved equal.
- B. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized steel, aluminum or stainless steel sheet, to match duct material; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.





1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.
- C. Manufactured Turning Vanes for Nonmetal Ducts: Fabricate curved blades of resin-bonded fiberglass with acrylic polymer coating; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
- D. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 2-3, "Vaness and Vane Runners," and 2-4, "Vane Support in Elbows."
- E. Vane Construction: Double wall.

## **2.10 DUCT-MOUNTED ACCESS DOORS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. American Warming and Ventilating; a division of Mestek, Inc.
  2. Ductmate Industries, Inc.
  3. McGill AirFlow LLC.
  4. Pottorff; a division of PCI Industries, Inc.
  5. Ventfabrics, Inc.
  6. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
  7. Or approved equal.
- B. Duct-Mounted Access Doors: Fabricate access panels according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 2-10, "Duct Access Doors and Panels," and 2-11, "Access Panels - Round Duct."
  1. Door:
    - a. Double wall, rectangular.
    - b. Sheet metal, to match duct material, with insulation fill and thickness as indicated for duct pressure class.
    - c. Vision panel.
    - d. Hinges and Latches: 2-by-2-inch butt or piano hinge and cam latches.
    - e. Fabricate doors airtight and suitable for duct pressure class.
    - f. Size: Not less than 16 inches by 14 inches. Ducts less than 16 inches in height, install with one dimension 16 inches and other dimension 2 inches less than duct width. Install larger sized doors where required for access.
  2. Frame: Same material as door, with bend-over tabs and foam gaskets.
  3. Number of Hinges and Locks:
    - a. Access Doors Less Than 12 Inches Square: No hinges and two sash locks.
    - b. Access Doors up to 18 Inches Square: Two hinges and two sash locks.
    - c. Access Doors up to 24 by 48 Inches: Three hinges and two compression latches with outside and inside handles.



- d. Access Doors Larger Than 24 by 48 Inches: Four hinges and two compression latches with outside and inside handles.

## **2.11 DUCT ACCESS PANEL ASSEMBLIES**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - 1. Ductmate Industries, Inc.
    - 2. Flame Gard, Inc.
    - 3. 3M.
    - 4. Or approved equal.
  - B. Labeled according to UL 1978 by an NRTL.
  - C. Panel and Frame: Minimum thickness 0.0528-inch carbon steel.
  - D. Fasteners: Carbon steel. Panel fasteners shall not penetrate duct wall.
  - E. Gasket: Comply with NFPA 96; grease-tight, high-temperature ceramic fiber, rated for minimum 2000 deg F.
  - F. Minimum Pressure Rating: 10-inch wg, positive or negative.
- 

## **2.12 FLEXIBLE CONNECTORS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Ductmate Industries, Inc.
  - 2. Duro Dyne Inc.
  - 3. Ventfabrics, Inc.
  - 4. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
  - 5. Or approved equal.
- B. Materials: Flame-retardant or noncombustible fabrics.
- C. Coatings and Adhesives: Comply with UL 181, Class 1.
- D. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches wide attached to 2 strips of 2-3/4-inch- wide, 0.028-inch- thick, galvanized sheet steel or 0.032-inch- thick aluminum sheets. Provide metal compatible with connected ducts.
- E. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.
  - 1. Minimum Weight: 30 oz./sq. yd..
  - 2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
  - 3. Service Temperature: Minus 40 to plus 200 deg F.

- F. Outdoor System, Flexible Connector Fabric: Glass fabric double coated with weatherproof, synthetic rubber resistant to UV rays and ozone.
1. Minimum Weight: 30 oz./sq. yd..
  2. Tensile Strength: 530 lbf/inch in the warp and 440 lbf/inch in the filling.
  3. Service Temperature: Minus 50 to plus 250 deg F.
- G. Thrust Limits: Combination coil spring and elastomeric insert with spring and insert in compression, and with a load stop. Include rod and angle-iron brackets for attaching to fan discharge and duct.
1. Frame: Steel, fabricated for connection to threaded rods and to allow for a maximum of 30 degrees of angular rod misalignment without binding or reducing isolation efficiency.
  2. Outdoor Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
  3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
  4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
  5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
  6. Elastomeric Element: Molded, oil-resistant rubber or neoprene.
  7. Coil Spring: Factory set and field adjustable for a maximum of 1/4-inch movement at start and stop.

## 2.13 FLEXIBLE DUCTS

- A. Flexible Duct Connectors:
1. Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action in sizes 3 through 18 inches, to suit duct size.
  2. Non-Clamp Connectors: Adhesive.

## 2.14 LOUVERS

- A. Connect to louvers furnished under General Construction work.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Airolite Co.
  2. Arrow United Industries.
  3. Carnes Co.
  4. Ruskin Co.
  5. Or approved equal.
- C. Tested in accordance with AMCA Standard 500 and provided with AMCA Certified Rating Seal.



- D. Material: Extruded aluminum; comply with ASTM B 221 (ASTM B 221M), Alloy 6063 T 5, with anodized finish.
- E. Frame: Minimum 0.071 inch (1.8 mm) thick extruded aluminum, with welded corners and mounting flange. Mounting arrangement shall be suitable for installation in particular building construction.
- F. Blades: 4 inch (100 mm) deep stationary blades, minimum 0.071 inch (1.8 mm) thick extruded aluminum, welded to frame for a complete welded assembly.
  - 1. Set at 30° angle, with 50 percent free area.
  - 2. Stormproof, double drainage type blade configuration.
  - 3. Performance: Water penetration shall be not more than 0.01 oz/sq ft at 950 ft/min.
- G. Screen: Aluminum wire, 0.5 inch (12.5 mm) mesh in a removable frame.
  - 1. Bolted to exterior face of louver.
  - 2. Secured on interior of louver with 2 inch space.
- H. Blank-off panels: Provide for unused portion of louvers.
  - 1. Double wall construction. Inner and outer casing: 0.032 inch (0.8 mm) thick aluminum.
  - 2. Internal insulation: 2 inch (50 mm) thick glass fiber, per SMACNA Duct Construction Standards.

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## **2.15 DUCT ACCESSORY HARDWARE**

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.
- B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

## **2.16 SOUND ATTENUATORS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. McGill AirFlow LLC.
  - 2. Semco.
  - 3. Vibro-Acoustics.
  - 4. Or approved equal.
- B. Description:
  - 1. Outer casings of rectangular silencers shall be made of 22 gauge type #G-90 lock-former galvanized steel.



2. Interior partitions for rectangular silencers shall be not less than 26 gauge type #G90 galvanized lock-former quality perforated steel.
3. Filler material shall be inorganic glass fiber of a proper density to obtain the specified acoustic performance and be packed under not less than 5% compression to eliminate voids due to vibration and settling. Material shall be inert, vermin and moisture proof.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.
- C. Install backdraft dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.
- D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts and as indicated.
  1. Install volume dampers at the following locations:
    - a. At all splits, except grease exhaust ducts.
    - b. In ducts serving single supply, return and exhaust outlets.
    - c. In open return ducts above ceiling.
    - d. In ducts connecting to a common plenum.
    - e. Where indicated on drawings and in details.
    - f. Where required for balancing.
  2. Install remote damper operators for volume dampers above ceilings which are non-accessible or without access panels.
  3. Install steel volume dampers in steel ducts.
  4. Install aluminum volume dampers in aluminum ducts.
  5. Do not install volume dampers in grease ducts.
- E. Set dampers to fully open position before testing, adjusting, and balancing.
- F. Install test holes at fan inlets and outlets and elsewhere as indicated and in ductwork where required for testing and adjusting.
- G. Install fire and smoke dampers according to UL listing in ducts and openings in the following:



1. Shaft walls.
2. Floors and ceilings.
3. Fire walls.
4. Fire resistance partitions.
5. Fire rated ceilings.
6. Exit corridor walls.
7. Elsewhere as indicated on drawings.

H. Duct Silencers/Sound Attenuators:

1. Install duct silencers, acoustic housing and acoustical louvers in accordance with manufacturer's instructions.
2. Support duct silencers rigidly to ductwork.
3. Attach ductwork to acoustical louvers with flexible duct connectors.
4. Lag ductwork, where indicated, by wrapping with insulation and covering. Apply covering to be airtight. Do not attach overing rigidly to ductwork.

I. 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 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 from turning vanes.
9. Upstream or downstream from duct silencers.
10. Control devices requiring inspection, including smoke detection heads.
11. At fan bearings enclosed in ducts.
12. Inlet side of each single width centrifugal fan.
13. At inlet and outlet sides of each in-line centrifugal and axial fan.
14. At duct humidifiers.

J. Install access doors with swing against duct static pressure.

K. Access Door Sizes:

1. One-Hand or Inspection Access: 8 by 5 inches.
2. Two-Hand Access: 12 by 6 inches.
3. Head and Hand Access: 18 by 12 inches.
4. Head and Shoulders Access: 21 by 14 inches.
5. Body Access: 25 by 14 inches.
6. Body plus Ladder Access: 25 by 17 inches.



- L. Label access doors according to Division 23 Section "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.
- M. Install flexible connectors at duct connections to equipment, at building expansion joints, at connections between ducts of dissimilar metals and at penetrations of mechanical equipment room walls.
  - 1. Install flexible connections with 2 inches slack in fabric and minimum movement of 1 inch.
- N. For fans developing static pressures of 5-inch wg and more, cover flexible connectors with loaded vinyl sheet held in place with metal straps.
- O. Connect terminal units to supply ducts directly with maximum 12-inch lengths of flexible duct. Do not use flexible ducts to change directions.
- P. Connect diffusers or light troffer boots to ducts directly with maximum 18-inch lengths of flexible duct clamped or strapped in place.
- Q. Connect flexible ducts to metal ducts with adhesive plus sheet metal screws. Attach to supply air duct with low entrance loss, bellmouth type connector at air inlet end.
- R. Install duct test holes where required for testing and balancing purposes.
- S. Install thrust limits at centerline of thrust, symmetrical on both sides of equipment. Attach thrust limits at centerline of thrust and adjust to a maximum of 1/4-inch movement during start and stop of fans.
- T. Install wire mesh screen grilles at return air ducts in hung ceilings and in other places where indicated. Bolt grilles to flanged connections or ducts at terminations.
- U. Install louvers in building construction at locations where indicated. Coordinate mounting details with particular building construction and/or window framing details. Install blank-off panels at unused portions of louvers; secured with bolts and/or screws.
- V. Install air blenders in accordance with the manufacturer's recommendations.

### **3.2 FIELD QUALITY CONTROL**

- A. Tests and Inspections:
  - 1. Operate dampers to verify full range of movement.
  - 2. Inspect locations of access doors and verify that purpose of access door can be performed.
  - 3. Operate fire, smoke, and combination fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
  - 4. Inspect turning vanes for proper and secure installation.
  - 5. Operate remote damper operators to verify full range of movement of operator and damper.



**3.3 MANUFACTURER'S FIELD SERVICES**

- A. Provide services of an NEBB testing agency to take noise measurements. Use meters meeting requirements of ASA 47 (ANSI S1.4).
- B. After start-up, and final corrections and balancing of systems, take octave band sound measurements over full audio frequency range in areas adjacent to mechanical equipment rooms, duct and pipe shafts, and other critical locations, as directed.
- C. Provide one-third octave band measurements of artificial sound sources in areas indicated as having critical requirements.
- D. Submit complete report of test results including sound curves.

**END OF SECTION 23 33 00**





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**SECTION 23 34 23  
HVAC POWER VENTILATORS**

**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. Centrifugal roof ventilators.
  2. In-line centrifugal fans.

**1.3 PERFORMANCE REQUIREMENTS**

- A. Project Altitude: Base fan-performance ratings on sea level.
- B. Operating Limits: Classify according to AMCA 99.

**1.4 SUBMITTALS**

- A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated and include the following:
1. Certified fan performance curves with system operating conditions indicated.
  2. Certified fan sound-power ratings.
  3. Motor ratings and electrical characteristics, plus motor and electrical accessories.
  4. Material thickness and finishes, including color charts.
  5. Dampers, including housings, linkages, and operators.
  6. Roof curbs.
  7. Fan speed controllers.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
1. Wiring Diagrams: Power, signal, and control wiring.
  2. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.



3. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, and base weights.
- C. Coordination Drawings: Reflected ceiling plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
  1. Roof framing and support members relative to duct penetrations.
  2. Ceiling suspension assembly members.
  3. Size and location of initial access modules for acoustical tile.
  4. Ceiling-mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
- D. System Effect calculations: Since all fans are tested in accordance with AMCA standards and data catalogued consists of fan capacity (CFM at external static pressure) while connected to straight inlet and discharge duct conditions, the vendor is responsible for calculating the "System Effect" pressure drop of inlet and discharge connections to the ducts shown on the drawings. This static pressure will be added to the external static pressure of the fan and the submitted fan, fan accessories and fan curve shall indicate the rpm, dfm, bhp, tip speed and other required capacity data to be corrected to account for the "System Effect" pressure drop and for a minimum 5% or higher belt drive losses based upon the size and number of V-belts required for the fan sheaves in the selection of the actual motor horse power to provide.
- E. Field quality-control test reports.
- F. Operation and Maintenance Data: For power ventilators to include in emergency, operation, and maintenance manuals.

## **1.5 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency and marked for intended use.
- B. Sound-Power Level Ratings: Comply with AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Factory test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Label fans with the AMCA-Certified Ratings Seal.
- C. AMCA Compliance: Establish flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests and ratings according to AMCA 210, "Laboratory methods of Testing Fans for Rating." Label fans with the AMCA Certified Ratings Seal..
- D. American Society for Testing Materials (ASTM): Standard E84, Surface Burning Characteristics of Building Materials.
- E. National Fire Protection Association (NFPA): Standard 255, Test Methods, Surface Burning Characteristics of Building Materials.
- F. NEMA Compliance: Motors and electrical accessories shall comply with NEMA standards.



- G. UL Standard: Power ventilators shall comply with UL 705.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver fans as factory-assembled unit, to the extent allowable by shipping limitations, with protective crating and covering.
- B. Disassemble and reassemble units, as required for moving to final location, according to manufacturer's written instructions.
- C. Lift and support units with manufacturer's designated lifting or supporting points.
- D. Protect motors, shafts, and bearings from weather and construction dust. Comply with manufacturer's wheel and motor rotation schedule for extended storage.

#### **1.7 COORDINATION**

- A. Coordinate size and location of structural-steel support members.
  - B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.
  - C. Coordinate installation of roof curbs, equipment supports, and roof penetrations.
- 

#### **1.8 EXTRA MATERIALS**

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Belts: One set for each belt-driven unit.

### **PART 2 - PRODUCTS**

#### **2.1 General**

- A. Units furnished shall be complete with all components assembled. All features considered standard by the manufacturer and which are required to complete the system, and to make it functional, shall be included without respect to specific detailing in these specifications.
- B. A specific configuration of the duct at each unit has been indicated on the drawings based on required discharge and intake requirements. If the configuration of the units furnished on the project differs from that indicated on the drawings (whether or not the units furnished are scheduled units, a listed manufacturer or an acceptable substitute), it shall be the Contractor's responsibility to modify duct, etc. as required to accommodate the actual configuration of units furnished on the project.



- C. Low leakage motorized backdraft dampers: The fan manufacturer shall provide ultra low leakage type motorized backdraft dampers as indicated on the plans. Frames shall not be less than 0.093 inch (2.3 mm) thick galvanized steel. Blades must not be over (8 inches 203 mm) wide not less than galvanized steel roll formed with edge seals. Bearing shall be Oiltite, ball bearing or nylon with ½" shafts. Side seals shall be stainless steel of the tight-seal spring type. Dampers and seals shall be suitable for temperature ranges of 40°F to 200°F. Dampers shall be minimum (ultra-low leakage) leakage type to conserve energy and the manufacturer shall submit leakage and flow characteristic data for all backdraft dampers with the fan manufacturer temperature control submitted. Maximum leakage shall be 0.07% at static pressure of 3 inches of WC.
- D. Preview safety disconnects shall be mounted on the fans at the fan motor with flexible conduit and shall conform to requirements of Division 26. Roof mounted fans with three phase motors shall have NEMA-3R disconnects pre-wired.
- E. Three phase motors 1 ½ hp and larger shall be TEFC premium plus high efficiency.
- F. Furnish and install curb mounted roof exhaust fans on roof curbs where indicated on the drawings.
  - 1. Openings in roof and supporting miscellaneous steel and structural framing as required for support of all roof mounted exhaust fans shall be by the Contractor.
  - 2. HVAC Contractor must furnish to the Contractor exact curb outside dimensions, exact roof opening sizes and dimensioned location of roof curbs on roof.
  - 3. Roof curbs for aluminum fans shall be minimum 12" tall, factory pre-fabricated all welded aluminum construction, factory insulated with built in cant, 1 ½" by 1 ½" wolmanized and fire treated wooded nailer strip, 1 1/2" wide by 1/8" thick neoprene full perimeter curb gasket. Roof curbs shall be furnished with damper trays for ease of mounting damper and duct connection. Roof curbs for galvanized steel fans shall be same as for aluminum curbs, except factory pre-fabricated all welded galvanized construction.
  - 4. Where fans are installed on sloping roofs, the fan manufacturer shall provide a roof curb that matches the roof slop or curvature to allow the fan to be installed level and shall be responsible for coordination with Architectural drawings for exact roof slop and for flashing and sealing details.
  - 5. Where fans are installed on standing seam metal sloping roofs, the standing seam metal roofing manufacturer shall provide the roof curb.
    - a. The standing seam metal roofing manufacturer shall provide a 12" high insulated, welded, galvanized, steel roof curb with 1 ½" by 1 ½" wolmanized and fire treated wooden nailer strip for all roof mounted outside air intake goods, roof mounted discharge hoods for ceiling exhaust fans, roof mounted exhaust fans to match slope and roofing material corrugations and standing seam configuration. Roofing manufacturer must coordinate with Architectural drawings for exact roof slope and for flashing sealing details.
    - b. Roofing manufacturer must coordinate with HVAC Contractor for exact curb outside dimensions, exact backdraft damper tray opening and dimensions, and exact roof opening size for fans furnished by the contractor.
    - c. Contractor must install roof curbs in manner as recommended by standing seam metal roofing manufacturer furnished on the project and as detailed by the Commissioner.



- G. Corrosion Resistant Construction: For fans so indicated or specified, entire fan shall be completely corrosion resistant, and shall be provided with a scroll drain, shaft seal and flanged inlet and outlets.
1. Shaft shall be made of stainless steel.
  2. Scroll and wheel shall be stainless steel.

## 2.2 CENTRIFUGAL ROOF VENTILATORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Aerovent; a Twin City Fan Company.
  2. Carnes Company HVAC.
  3. Greenheck.
  4. Hartzell Fan, Inc.
  5. Jenco Fan; Div. of Breidert Air Products.
  6. Loren Cook Company.
  7. Penn Ventilation.
  8. Or approved equal.
- B. Description: Direct- or belt-driven centrifugal fans consisting of housing, wheel, fan shaft, bearings, motor and disconnect switch, drive assembly, curb base, and accessories.
- C. Housing: Removable, extruded-aluminum, rectangular top, galvanized steel, square, one-piece, aluminum-base-with-venturi-inlet-cone.
- 
1. Upblast Units: Provide spun-aluminum discharge baffle to direct discharge air upward, with rain and snow drains and grease collector.
  2. Hinged Subbase: Galvanized-steel hinged arrangement permitting service and maintenance.
- D. Fan Wheels: Aluminum hub and wheel with backward-inclined blades.
- E. Belt-Driven Drive Assembly: Resiliently mounted to housing, with the following features:
1. Fan Shaft: Turned, ground, and polished steel; keyed to wheel hub.
  2. Shaft Bearings: Permanently lubricated, permanently sealed, self-aligning ball bearings.
  3. Fan and motor isolated from exhaust airstream.
  4. Pulleys: Cast-iron, adjustable-pitch motor pulley.
    - a. Fan pulley: Fixed pitch diameter.
    - b. Motor pulley: Variable pitch diameter for use with motors up to 5 hp; Fixed pitch diameter for larger motors and for fans with solid state speed controllers. Select pulley so pitch adjustment is at the middle of adjustment range at fan design conditions.
  5. Belts: Oil resistant, non-sparking, non-static, notch grip construction; matched sets for multiple belt drives.
- F. Accessories:
1. Disconnect Switch: Nonfusible type, with thermal-overload protection mounted outside fan housing, factory wired through an internal aluminum conduit.



2. Bird Screens: Removable, 1/2-inch mesh, aluminum or brass wire.
  3. Dampers: Counterbalanced, rattle free, parallel-blade, backdraft dampers mounted in curb base; factory set to close when fan stops.
  4. Motorized Dampers: Parallel-blade dampers mounted in curb base with electric actuator; wired to close when fan stops.
- G. Roof Curbs: Galvanized steel; mitered and welded corners; 1-1/2-inch- thick, rigid, fiberglass insulation adhered to inside walls, damper tray and 1-1/2-inch wood nailer and neoprene curb sealing gasket. Size as required to suit roof opening and fan base.
1. Configuration: Self-flashing without a cant strip, with mounting flange.
  2. Overall Height: 9-1/2 inches.
  3. Sound Curb: Curb with sound-absorbing insulation matrix.
  4. Pitch Mounting: Manufacture curb for roof slope.
  5. Metal Liner: Galvanized steel.
  6. Mounting Pedestal: Galvanized steel with removable access panel.
  7. Vented Curb: Unlined with louvered vents in vertical sides.

### 2.3 IN-LINE CENTRIFUGAL FANS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Carnes Company HVAC.
  2. Greenheck.
  3. Hartzell Fan, Inc.
  4. Jenco Fan; Div. of Breidert Air Products.
  5. Loren Cook Company.
  6. Penn Ventilation.
  7. Or approved equal.
- B. Description: In-line, direct belt-driven centrifugal fans consisting of housing, wheel, outlet guide vanes, fan shaft, bearings, motor and disconnect switch, drive assembly, mounting brackets, and accessories.
- C. Round Housing: Split, spun aluminum with aluminum straightening vanes, inlet and outlet flanges, and support bracket adaptable to floor, side wall, or ceiling mounting.
- D. Rectangular and Square Housing: steel with factory applied baked enamel paint on exterior, internally insulated with 1 inch, 3 lb. PCE density coated fiberglass insulation secured with welded insulation speed clips. Insulation shall comply with ASTM E84 and NFPA 255 for maximum ratings of flamespread 25 and smoke developed 50. Housing shall have mounting brackets at each corner.
- E. Direct-Driven Units: Motor mounted in airstream, factory wired to disconnect switch located on outside of fan housing with wheel, inlet cone, and motor on swing-out service door.
- F. Belt-Driven Units: Motor mounted on adjustable base, with adjustable motor sheaves, enclosure around belts within fan housing, and lubricating tubes from fan bearings extended to outside of fan housing.



- G. Fan Wheels: Aluminum, airfoil blades welded to aluminum hub.
- H. Accessories:
  - 1. Volume-Control Damper: Manually operated with quadrant lock, located in fan outlet.
  - 2. Companion Flanges: For inlet and outlet duct connections.
  - 3. Fan Guards: 1/2- by 1-inch mesh of galvanized steel in removable frame. Provide guard for inlet or outlet for units not connected to ductwork.
  - 4. Motor and Drive Cover (Belt Guard): Epoxy-coated steel.
- I. Vibration Isolators:
  - 1. Type: Elastomeric Hangers.
  - 2. Static Deflection: 1 inch (25mm).
- J. Spark Arrestance Class: A.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Install power ventilators level and plumb.
- B. Vibration- and seismic-control devices are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."

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  - 1. Secure vibration and seismic controls to concrete bases using anchor bolts cast in concrete base.
- C. Install floor-mounting units on concrete bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.
- D. Install floor-mounting units on concrete bases designed to withstand, without damage to equipment, the seismic force required by code. Concrete, reinforcement, and formwork requirements are specified in Division 03.
- E. Secure roof-mounting fans to roof curbs with cadmium-plated hardware. Refer to Division 07 for installation of roof curbs.
  - 1. Contractor shall coordinate all required roof openings with the roof structural plans, existing roof structure and shall provide a roof opening shop drawing with the required roof openings dimensioned and sized for the Roofing Contractor to frame out and provide roof openings. Refer to structural plans for required roof opening framing.
  - 2. Roof curbs shall be furnished and located by the Contractor for the roofing subcontractor to install.
  - 3. Secure unit curb cap to roof curb with stainless steel or cadmium-plated screws a maximum of 12" on center minimum four per side.
  - 4. All roof-mounted equipment must be properly secured to the building structure required seismic criteria.





- F. Support suspended units from structure using threaded steel rods. Vibration-control devices are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
- G. Install units with clearances for service and maintenance.
- H. Label units according to requirements specified in Division 23 Section "Identification for HVAC Piping and Equipment."

### 3.2 CONNECTIONS

- A. Duct installation and connection requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors. Flexible connectors are specified in Division 23 Section "Air Duct Accessories."
- B. Install ducts adjacent to power ventilators to allow service and maintenance.
- C. Ground equipment according to Division 26.
- D. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

### 3.3 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
  - 1. Verify that shipping, blocking, and bracing are removed.
  - 2. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
  - 3. Verify that cleaning and adjusting are complete.
  - 4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts, and install belt guards.
  - 5. Adjust belt tension.
  - 6. Adjust damper linkages for proper damper operation.
  - 7. Verify lubrication for bearings and other moving parts.
  - 8. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
  - 9. Disable automatic temperature-control operators, energize motor and adjust fan to indicated rpm, and measure and record motor voltage and amperage.
  - 10. Shut unit down and reconnect automatic temperature-control operators.
  - 11. Remove and replace malfunctioning units and retest as specified above.
- B. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.



**3.4 ADJUSTING**

- A. Adjust damper linkages for proper damper operation.
- B. Adjust belt tension and align motor belt drive sheaves with fan sheaves.
- C. Refer to Division 23 Section "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing procedures.
- D. Replace fan and motor pulleys as required to achieve design airflow.
- E. Lubricate bearings.

**END OF SECTION 23 34 23**



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**SECTION 23 51 00**  
**BREECHINGS, CHIMNEYS, AND STACKS**

**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. Field-fabricated metal breechings and chimneys.
- B. Related Sections include the following:
1. Division 23 for induced-draft and mechanical fans and for motorized and barometric dampers.
- 

**1.3 DEFINITIONS**

- A. Breeching: Vent connector.
- B. Chimney: Primarily vertical shaft enclosing at least one vent for conduction flue gases outdoors.
- C. Smoke Pipe: Round, single wall vent connector.
- D. Vent: That portion of a venting system designed to convey the gases directly outdoors from a vent connector or from an appliance when a vent connector is not used.
- E. Vent Connector: That part of a venting system that conducts the flue gases from the flue collar of an appliance to a chimney or vent, and may include a draft control device.

**1.4 SUBMITTALS**

- A. Product Data: For the following:
1. Field-fabricated metal breechings and chimneys.
  2. Guy wires and connectors.
- B. Shop Drawings: For vents, breechings, chimneys, and stacks. Include plans, elevations, sections, details, and attachments to other work.



1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, methods of field assembly, components, hangers and seismic restraints, and location and size of each field connection.
  2. For installed products indicated to comply with design loads, include calculations required for selecting seismic restraints and structural analysis data signed and sealed by the qualified professional engineer licensed in the State of New York responsible for their preparation.
- C. Welding certificates.
- D. Manufacturer Seismic Qualification Certification: Submit certification that factory-fabricated breeching, chimneys, and stacks; accessories; and components will withstand seismic forces defined in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment." Include the following:
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
  2. Dimensioned Outline Drawings of Breeching, Chimneys, and Stacks: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of anchorage devices on which the certification is based and their installation requirements.
- E. Warranty: Special warranty specified in this Section.

## **1.5 QUALITY ASSURANCE**

- A. Source Limitations: Obtain listed system components through one source from a single manufacturer.
- B. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," for hangers and supports and AWS D9.1/D9.1M, "Sheet Metal Welding Code," for shop and field welding of joints and seams in vents, breechings, and stacks.
- C. Certified Sizing Calculations: Manufacturer shall certify venting system sizing calculations.
- D. Welder Qualification Test Record (Satisfactory Performance) for each field or shop welder. Form similar to AWS D 9.1 – 90, Appendix F.
- E. NFPA 21, "Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances."
- F. Manufacturer shall have a Material Equipment Approval (MEA) number from the Bureau of Standards and Appeals (BS&A) for the City of New York.



## 1.6 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07.

## 1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of venting system that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, structural failures caused by expansion and contraction.
  - 1. Warranty Period: 15 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 FIELD-FABRICATED METAL BREECHINGS AND CHIMNEYS

- A. Fabricate engine exhaust from ASTM A 53/A53M, type E (electric-resistance welded), Grade B, or ASTM A 106, Type S, Grade B, , Schedule 80 pipe.
- B. Piping:
  - 1. 12" and larger will be Standard Weight A 53 Gr B ERW Pipe, Black Steel.
  - 2. 10" and smaller will be Schedule 80 A 53 Gr B ERW Pipe, Black Steel.
- C. 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#.
- D. 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.
- E. Joints:
  - 1. 2 ½" and larger can be welded or flanged at the contractor's option.
  - 2. 2" and smaller will be screwed.

F. Branch Connections:

1. Where applicable branch connections to steel pipe will be made with tees, wolets, tolets, solets, or ½ couplings.

G. Bolts and Nuts:

1. ASTM A307 Grade B7 bolts, Grade 2H Nuts

H. Gaskets:

1. To be Suitable for 1200°F

**2.2 GUYING AND BRACING MATERIALS**

A. Cable: Four galvanized, stranded wires of the following thickness:

1. Minimum Size: 1/4 inch in diameter.
2. For ID Sizes 4 to 15 Inches: 5/16 inch.

B. Pipe: Three galvanized steel, NPS 1-1/4.

C. Angle Iron: Three galvanized steel, 2 by 2 by 0.25 inch.

**2.3 EXPANSION JOINTS**

A. Expansion joints shall be factory fabricated from TYPE 321 stainless steel bellows with carbon steel flanges.

B. Minimum design pressure and temperature shall be 15 psig and 1000 deg F.

C. Joints shall be equal to Hyspan Series 2500.

**2.4 CLEANOUT DOORS**

A. Cleanout doors shall be located at changes in direction and as indicated on drawings so the entire breeching can be cleaned without dismantling.

B. Thickness of door shall not be less than the breeching.

C. Door size shall be 20 inches by 14 inches or the same size as the breeching if a tee is used.

D. Cleanout door assembly shall be gas tight with 1/16-inch thick non-asbestos gasket and planed faces.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 APPLICATION**

- A. Field-Fabricated Metal Breechings and Chimneys: Steel pipe for use with engine exhaust.

**3.3 INSTALLATION OF FIELD-FABRICATED BREECHINGS AND CHIMNEYS**

- A. Suspend breechings and chimneys independent of their appliance connections.
- B. Install, support, and restrain according to seismic requirements.
- C. Align breechings at connections, with smooth internal surface and a maximum 1/8-inch misalignment tolerance.

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- D. Slope breechings down in direction of appliance, with condensate drain connection at lowest point piped to nearest drain.
- E. Lap joints in direction of flow.
- F. Support breechings and chimneys from building structure with bolts, concrete inserts, steel expansion anchors, welded studs, C-clamps, or beam clamps according to manufacturer's written instructions.
- G. Connections for gas sampling and smoke density indicators shall be provided.

**3.4 CLEANING**

- A. After completing system installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finishes.
- B. Clean breechings internally, during and after installation, to remove dust and debris. Clean external surfaces to remove welding slag and mill film. Grind welds smooth and apply touchup finish to match factory or shop finish.
- C. Provide temporary closures at ends of breechings, chimneys, and stacks that are not completed or connected to equipment.





**3.5 CORROSION PROTECTION**

- A. Provide metal exposed to weather with one base coat and one finish coat of rust resistant paint.
- B. Protection of metal exposed to weather shall be as specified under Division 09.
- C. Metal exposed to weather shall be painted as specified in another section of the work.
- D. Outdoor stack and components shall be weatherproof and corrosion resistant.

**END OF SECTION 23 51 00**



SECTION 23 82 39  
UNIT HEATERS

**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. Electric infrared heaters.

**1.3 DEFINITIONS**

- A. BAS: Building automation system.  
B. CWP: Cold working pressure.
- 

**1.4 SUBMITTALS**

- A. Product Data: Include rated capacities, dimensions, materials, operating characteristics, furnished specialties, and accessories for each product indicated.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
1. Plans, elevations, sections, and details.
  2. Location and size of each field connection.
  3. Details of attachments to structure and to supported equipment.
  4. Equipment schedules to include rated capacities, operating characteristics, furnished specialties, and accessories.
  5. Location and arrangement of piping valves and specialties.
  6. Location and arrangement of integral controls.
  7. Wiring Diagrams: Power, signal, and control wiring.
- C. Coordination Drawings: Floor plans, reflected ceiling plans, and other details, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
1. Structural members to which unit heaters will be attached.



2. Method of attaching hangers to building structure.
- D. Samples for Initial Selection: Finish colors for units with factory-applied color finishes.
- E. Samples for Verification: Finish colors for each type of cabinet unit heater and wall and ceiling heaters indicated with factory-applied color finishes.
- F. Manufacturer Seismic Qualification Certification: Submit certification that cabinet unit heaters, accessories, and components will withstand seismic forces defined in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment." Include the following:
  1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
  2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- G. Field quality-control test reports.

## 1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency and marked for intended use.
- B. ASHRAE Compliance: Applicable requirements in the latest edition of ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- C. ASHRAE/IESNA 90.1 Latest Edition Compliance: Applicable requirements in the latest edition of ASHRAE/IESNA 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."

## PART 2 - PRODUCTS

### 2.1 PROPELLER UNIT HEATERS – ELECTRIC TYPE

- A. Manufacturers:
  1. Berko Electric Heating ; a division of Marley Engineered Products
  2. Chromalox, Inc; a division of Emerson Electric Company
  3. Modine Manufacturing Company
  4. Q Mark Electric Heating; a division of Marley Engineered Products
  5. Sterling Heating Products
  6. Trane.



7. Or approved equal.
- B. Description: An assembly including casing, heating coil, fan, and motor in horizontal discharge configuration with adjustable discharge louvers.
- C. Comply with UL 2021.
- D. Comply with UL 823.
- E. Cabinet: Removable panels for maintenance access to controls.
- F. Cabinet Finish: Manufacturer's standard baked enamel applied to factory-assembled and -tested propeller unit heater before shipping.
- G. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in the latest edition of ASHRAE 62.1.
- H. Discharge Louver: Adjustable fin diffuser for horizontal units and conical diffuser for vertical units.
- I. General Coil Requirements: Test and rate hot-water propeller unit heater coils according to ASHRAE 33.
- J. Electric-Resistance Heating Elements: Nickel-chromium heating wire, free from expansion noise and 60-Hz hum, embedded in magnesium oxide refractory and sealed in steel or corrosion-resistant metallic sheath with fins no closer than 0.16 inch. Element ends shall be enclosed in terminal box. Fin surface temperature shall not exceed 550 deg F at any point during normal operation. Provide stages of electric control as required.
1. Circuit Protection: One-time fuses in terminal box for overcurrent protection and limit controls for high-temperature protection of heaters.
  2. Wiring Terminations: Stainless-steel or corrosion-resistant material.
  3. Provide air flow switch in ductwork to prove airflow before unit can be activated.
- K. Fan: Propeller type with aluminum wheel directly mounted on motor shaft in the fan venturi. Provide fan guard.
- L. Fan Motors: Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."
1. Motor Type: Permanently lubricated.
- M. Control Devices:
1. Unit-mounted, fan-on switch.
  2. Wall-mounting two stage thermostat.
- N. Capacities and Characteristics
1. As scheduled on drawings:

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine areas to receive unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for piping and electrical connections to verify actual locations before unit heater installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Install wall boxes in finished wall assembly; seal and weatherproof. Joint-sealant materials and applications are specified in Division 07 Section "Joint Sealants."
- B. Install cabinet unit heaters to comply with NFPA 90A. Coordinate to assure correct size openings for recessed units.
- C. Install propeller unit heaters level and plumb. Mount as high as possible to maintain maximum headroom.
- D. Suspend propeller unit heaters from structure with all-thread hanger rods and spring hangers. Hanger rods and attachments to structure are specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment." Vibration hangers are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
- E. Install wall-mounting thermostats and switch controls in electrical outlet boxes at heights to match lighting controls. Verify location of thermostats and other exposed control sensors with Drawings and room details before installation.
- F. After construction, including painting is completed, clean exposed surfaces of units. Vacuum clean coils and inside of cabinets prior to running the equipment.
- G. Touch-ups marred or scratched surfaces of factory finished cabinets, using finish materials furnished by the manufacturer.

### **3.3 CONNECTIONS**

- A. Comply with safety requirements in UL 1995.
- B. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- C. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."



### **3.4 FIELD QUALITY CONTROL**

- A. **Manufacturer's Field Service:** Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
  - 1. **Operational Test:** After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
  - 2. Operate electric heating elements through each stage to verify proper operation and electrical connections.
  - 3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.

### **3.5 ADJUSTING**

- A. Adjust initial temperature set points.
  - B. **Occupancy Adjustments:** When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.
- 

### **3.6 DEMONSTRATION**

- A. Engage a factory-authorized service representative to instruct Owner's maintenance personnel to adjust, operate, and maintain cabinet unit heaters. Refer to DDC General Conditions "Demonstration and Training."

**END OF SECTION 23 82 39**



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**SECTION 26 05 00  
COMMON WORK RESULTS FOR ELECTRICAL**

**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 covers and applies to all work specified in Division 26.
- B. Work Included: Materials, equipment, fabrication, installation and tests for fully operational and safe systems, including all necessary materials, appurtenances and features whether specified or shown on drawings or not, in conformity with applicable codes for the following:

1. Electrical work specified in all sections within Division 26 of these specifications, including, but not limited to:

- 
- a. Short circuit analysis and protective device coordination study.
  - b. Primary underground service ducts from the point of connection to the Public Service Enterprise Group (PSEG) to the transformer vault, building main switchboard.
  - c. Equipment for Public Service Enterprise Group (PSEG) facilities shall be furnished and installed in accordance with the requirements of the Public Service Enterprise Group (PSEG). Transformers, primary cable, and utilization equipment will be furnished and installed by the Public Service Enterprise Group (PSEG).
  - d. Lighting and power distribution facilities, including busways, main switchboard with metering, transformers, distribution boards, panelboards with feeders, motor control centers, branch circuit wiring, connections to outlets, and wiring devices.
  - e. Lighting fixtures and lamps.
  - f. Motor and other power-consuming equipment connections from motor control centers or distribution apparatus to equipment.
  - g. Control, alarm and interlock wiring for mechanical equipment, where indicated.
  - h. Electrical grounding system.
  - i. Emergency power and lighting system, including engine-generator set complete with oil system and power transfer capability.
  - j. Vibration and seismic controls for electrical systems.
  - k. Life safety system including ADA requirements.
  - l. Water leak detection.
  - m. Excavation, backfilling and compacting for the Electrical Work.
  - n. Cutting and patching for the Electrical Work.
  - o. Adjustment and testing of the Electrical Work.





- p. Examine the drawings and specifications of other Divisions and provide electrical service for all equipment, devices and controls noted therein, unless work specifically is not included.
- q. Lighting control system.

### 1.3 DESCRIPTION OF BID DOCUMENTS

#### A. Drawings:

- 1. Electrical layouts are generally diagrammatic and, although size and location of equipment is drawn to scale wherever possible, Contractor shall make use of all data in Contract Documents and verify this information at building site.
- 2. Locations of items on the drawings may be distorted for purposes of clearness and legibility. Actual locations of architectural and mechanical items are shown on architectural and mechanical drawings.
- 3. Contractor shall adjust locations of light fixtures in mechanical rooms to compensate for changes in duct routing, to provide reasonably uniform lighting in work areas.
- 4. Outlets shall be located in accordance with architectural design, and specific locations may be determined by the Commissioner at jobsite prior to installation.
- 5. Outlets located on architectural plans by dimension shall be held. Additional outlets may be shown on electrical plans and shall be installed as close as practical to the location shown.
- 6. Manufacturers' drawings and instructions shall be followed in all cases where the makers of devices and equipment furnish directions, where details are not shown on the drawings, or where described in the specifications.
- 7. Work installed in a manner contrary to that shown in the contract documents shall be removed and reinstalled when so directed by the Commissioner. Discrepancies and questionable points shall be immediately reported to the Commissioner for clarification.
- 8. The City of New York and the Commissioner reserve the right to make reasonable changes in outlet locations in each area prior to roughing-in at no additional cost to the City of New York.

- B. If any part of specifications or drawings appears unclear or contradictory, apply to Commissioner for his interpretation and decision as early as possible. Do not proceed with such work without the City of New York's decision.

### 1.4 JOB CONDITIONS

- A. Examine all drawings and specifications in a manner to be fully cognizant of all work required under this Division.
- B. Adjoining work of other Divisions shall be examined for interferences and conditions affecting this Division.
- C. Examine site related work and surfaces before starting work of any Section.
  - 1. Report to the Commissioner, in writing, conditions which will prevent proper provision of this work.
  - 2. Beginning work of any Section without reporting unsuitable conditions to the Commissioner constitutes acceptance of conditions by Contractor.



3. Perform any required removal, repair or replacement of this work caused by unsuitable conditions at no additional cost to the City of New York.

D. Connections to existing work:

1. The intent of the work is shown on the drawings and described herein, and no consideration will be granted by reason of lack of familiarity on the part of the contractor with actual physical conditions, requirements, and practices at the site.
2. Install new work and connect to existing work with minimum interference to existing facilities.
3. Temporary shutdowns of existing services: At times not to interfere with normal operation of existing facilities and only with written approval of the City of New York at no additional charges.
4. Maintain continuous operation of existing facilities as required with necessary temporary connections between new and existing work. Do not interrupt alarm and emergency systems.
5. Connect new work to existing work in neat and acceptable manner. Restore existing disturbed work to original condition including maintenance of wiring continuity as required.

E. Removal and Relocation of Existing Work:

1. Disconnect, remove or relocate electrical material, equipment and other work noted and required by removal or changes in existing construction.
2. Provide new material and equipment required for relocated equipment.
3. Disconnect load and supply end of conductors feeding existing equipment.
4. Remove conductors from existing raceways to be rewired.
5. Tape both ends of abandoned conductors. Cap outlets and abandoned raceways.
6. Cut and cap abandoned floor raceways flush with concrete floor or behind walls and ceilings.
7. Dispose of removed raceways and wire.
8. Dispose of removed electrical equipment as directed.

- F. If asbestos insulation is found when working in existing areas, immediately stop work and notify the Commissioner. Do not restart work until advised in writing by the Commissioner that it is safe to do so following abatement, encapsulation, etc.

## 1.5 DEFINITIONS

- A. "Wiring": Raceway, fittings, wire, boxes and related items.
- B. "Concealed": Embedded in masonry or other construction, installed in furred spaces, within double partitions or hung ceilings, in trenches, in crawl spaces or in enclosures.
- C. "Exposed": Not installed underground or "concealed" as defined above.
- D. "Motor Controllers": Manual or magnetic starters (with or without switches), individual pushbuttons, or hand-off-automatic (HOA) switches controlling the operation of motors.
- E. "Control Devices": Automatic sensing and switching devices such as thermostats, pressure, float, electro-pneumatic switches and electrodes controlling operation of equipment.

**1.6 UTILITY CONNECTIONS**

- A. Finalize electrical service arrangements including verification of locations and details with the Public Service Enterprise Group (PSEG).
- B. In addition to the requirements shown on the drawings and stated herein, the work shall comply with the following:
  - 1. Construction Standards and Service Requirements of the respective utilities including any supplementary drawings issued by the utilities.
  - 2. Be subjected to inspection approval of these utilities.
- C. Electrical service facilities shall consist of furnishing and installing concrete encased conduits and secondary service including utility meter in accordance with the arrangement, details, and locations shown on the drawings and described herein and as required by the Public Service Enterprise Group (PSEG).

**1.7 ELECTRICAL SYSTEM CHARACTERISTICS**

- A. Service: 208 volts, 3 phase, 4 wire with ground conductor.
- B. High intensity discharge and fluorescent lighting: 120 volts.
- C. Motors ½ horsepower and above: 208 volts, 3 phase.
- D. Fractional horsepower motors less than ½ horsepower: 120 volts single phase.
- E. Incandescent lighting and general receptacles will be supplied at 120 volts.

**1.8 MOUNTING HEIGHTS**

- A. Mounting heights of devices and equipment shown on the architectural drawings shall govern, but in the absence of such indications, the following centerline heights above the finished floor shall be maintained.
  - 1. Wall switches 3 feet - 6 inches (or as directed by architect).
  - 2. Wall lights (interior) 7 feet - 0 inches (or as directed by the Commissioner).
  - 3. Pendant or chain hung fixture 10 feet - 0 inches (or as directed by the Commissioner).
  - 4. Convenience receptacles 1 foot - 3 inches except in Toilets and over cabinets or -counters where devices shall be mounted at 4 feet - 0



- inches (9 inches above counter).
5. Fire alarm stations 4 feet - 0 inches.
  6. Telephone and communication outlets 1 foot - 3 inches.
  7. Clock outlets 1 foot - 6 inches below finished ceiling.
  8. Panelboard cabinets Shall be installed with the top 6 feet - 6 inches above the floor for cabinets more than 2 feet - 6 inches high and 6 feet - 0 inches for cabinets less than 2 feet - 6 inches high.
  9. Motor controllers 5 feet-0 inches.

#### 1.9 SUBMITTALS

~~A. Submit shop drawings, product data, samples and certificates of compliance required by contract documents.~~

1. See Submittals paragraph in DDC General Conditions.

B. Submit no later than 30 days after signing of Contract:

1. Complete schedule of submittals for equipment and layout shop drawings.
2. Submittals schedule shall be in such sequence as to cause no delay in work or in work of any other division.

C. Corrections or comments made on the shop drawings during review do not relieve the Contractor from compliance with requirements of the drawings and specifications. Shop drawing checking by the Commissioner is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The Contractor is responsible for:

1. Confirming and correlating all quantities and dimensions.
2. Fabrication processes and techniques of construction.
3. Work with all other trades.
4. Work in a safe and satisfactory manner.
5. Equipment that can be installed in the available space with all code clearances, prior to ordering any equipment.

D. Quantity of Submittals Required:



1. Layout Shop Drawings:
  - a. Submit one reproducible transparency and one print.
  - b. Upon review, transparency will be annotated and returned. Print will be retained by the Commissioner.
  - c. Copies of this transparency will serve as record copies for the Commissioner.
  - d. Additional prints will not be reviewed nor returned.
2. Product data (brochures):
  - a. Submit six copies of product data.
  - b. Five copies will be returned.
  - c. If comments are required, comment sheet(s) will be returned with each copy.
  - d. One copy will be retained by the Commissioner.
3. Samples:
  - a. Submit as directed by the Commissioner and as required in each specification section.

E. Submittal Format:

1. Number each submittal in consecutive order.
2. Submit minimum one binder for each specific section. Different specification sections shall not be combined within same binder.
3. In each submittal include complete index with the following information:
  - a. Project title and number.
  - b. Submittal number.
  - c. Referenced specification DIVISION, Section, Title, paragraph and page number or drawing reference as applicable and flap each applicable item.
  - d. Date of submission.
  - e. Referenced addendum or change order number as applicable.
  - f. Names of Contractor, supplier and manufacturer.
  - g. Description of item.
  - h. Stamp with Contractor's initials or signed certifying:
    - 1) Review of submittal.
    - 2) Verification of products, field measurements and field construction criteria.
    - 3) Coordination of shop drawing and/or information in submittal with requirements of work of this Division and other divisions of Contract Documents.
4. Nomenclature, legend, symbols and abbreviations on submitted material shall be same as used in contract documents.

F. Resubmission Requirements:

1. Make any corrections or change in submittals required. Resubmit only items required for



resubmittal for review until no exceptions are taken or a resubmission is not required.

2. Shop Drawings and Product Data:

- a. Revise initial drawings or data, and resubmit as specified for initial submittal.
- b. Indicate any changes which have been made other than those requested.
- c. Provide written response of all previous comments with the resubmittals.

3. Samples: Submit new samples as required for initial submittal.

4. Clearly identify resubmittal by original submittal date, number and revision number and indicate all changes from previous submittal.

G. Layout Shop Drawings Required:

1. Prepare and submit following coordinated layout shop drawings on 1/4" scale:

- a. Mechanical equipment rooms containing motor control center and/or transformers.
- b. All electrical rooms and closets with equipment dimensions.
- c. Areas requiring deviations from design documents. Such deviations shall be clearly identified.

2. Layout drawings not varying from design documents shall not be submitted and will not be reviewed.

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H. Operating Instructions, Maintenance Manuals and Parts Lists.

1. Before requesting acceptance of work submit one set for review by the Commissioner.
2. After review, furnish five printed and bound sets.
3. Include:

- a. Manufacturer's name, model number, service manual, spare-parts list, and descriptive literature for all components, cross referenced and numbered on Reference Drawings.
- b. Maintenance instructions.
- c. Listing of possible breakdown and repairs.
- d. Instruction for starting, operation and programming.
- e. Detailed and simplified one line and wiring diagrams.
- f. Field test report.
- g. Name, address and phone number of contractors, equipment suppliers and service agencies.
- h. Assemble manufacturer's equipment manuals in chronological order following the specification alpha-numeric system in heavy duty three-ring binders clearly titled on the spine and front cover.



## 1.10 COORDINATION

- A. Coordinate arrangement, mounting, and support of electrical equipment:
  - 1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
  - 2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
  - 3. To allow right of way for piping and conduit installed at required slope.
  - 4. So that connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.
- B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.
- C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed.
- D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping/Smoke seals."

## PART 2 - PRODUCTS

### 2.1 SLEEVES FOR RACEWAYS AND CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel.
  - 1. Minimum Metal Thickness:
    - a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
    - b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

### 2.2 SLEEVE SEALS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



- a. Advance Products & Systems, Inc.
  - b. Calpico, Inc.
  - c. Metraflex Co.
  - d. Pipeline Seal and Insulator, Inc.
  - e. Or approved equal.
2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
  3. Pressure Plates: Stainless steel. Include two for each sealing element.
  4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

### **2.3 GROUT**

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

## **PART 3 - EXECUTION**

### **3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION**

- 
- A. Comply with NECA 1.
  - B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
  - C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
  - D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
  - E. Right of Way: Give to piping systems installed at a required slope.
  - F. Layout and installation of electrical work shall be coordinated with the overall construction schedule and work schedules of various trades, to prevent delay in completion of the Project.
    1. Complete drawings and specifications for the entire project will be available at the Project site.
    2. It shall be obligatory to thoroughly check these drawings before organizing the electrical work schedule, or installing material and equipment.





- G. Dimensions and information regarding accurate locations of equipment, and structural limitations and finish shall be coordinated and verified with other Division of Work. Be prepared to promptly furnish dimensions and information regarding electrical Work to other trades and cooperate with them.
- H. The drawings do not show off-sets, bends, and special fittings, or junction or pull boxes necessary to meet job conditions. These items shall be provided as required at no additional cost to the City of New York.
- I. Accessibility and Clearance:
  - 1. Electrical equipment, outlets, junction and pull boxes shall be installed in accessible locations, avoiding obstructions, preserving headroom, and keeping openings and passageways clear.
  - 2. Minor adjustments in the locations of equipment shall be made where necessary, providing such adjustments do not adversely affect functioning of the equipment.
- J. Scaffolds and staging for installation of electrical work shall be provided under the work of this Division.

### 3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
  - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants."



- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Firestopping/Smoke-seals."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

### **3.3 SLEEVE-SEAL INSTALLATION**

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

### **3.4 FIRESTOPPING**

- A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Firestopping/Smoke-seals."

### **3.5 WEATHERPROOF EQUIPMENT**

- A. Electrical devices or equipment located in damp, semi-exposed areas shall be weather-resistant. Enclosure shall comply with NEMA Type 3R requirements.
- B. Surface mounted outlet boxes shall be cast metal with threaded hubs. Pull or junction boxes shall be cast metal with bolted and gasketed covers.
- C. Outlet box covers shall be of a suitable weatherproof type with gaskets, packing glands, weatherproof doors, or other required means to prevent entry of moisture.
- D. Lighting fixtures shall be installed with suitable gasket, and UL labeled for location.



**3.6 HOUSEKEEPING PADS AND FOUNDATIONS**

- A. Concrete work required for housekeeping pads and foundations will be provided by General Construction Work. Comply with the requirement for concrete base specified in Division 03 section.
  - 1. Use 3000-psi 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Concrete Work"
  - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
  - 3. Install epoxy-coated anchor bolts for anchoring equipment to the concrete base.
  - 4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 5. Bolt equipment to channel-iron sills embedded in concrete bases. Install sills level and grout flush with floor or base.
  - 6. Refinish damaged or scratched surfaces.
  - 7. Provide 24 inch wide insulating mat in front of operable electrical equipment and in front and rear of free standing ones.
  - 8. Tighten all bolted connections prior to energizing.
  - 9. Provide fuse cabinet with specified number of fuses of each type.
  - 10. Provide special tools as required for routing maintenance and inspection.
  
- B. Furnish required dimensional drawings and specify locations. Minimum height of housekeeping pads shall be 4 inches and shall extend out 6 inches from the footprint of the equipment.
  
- C. Furnish anchor bolts and sleeves, and verify accuracy of installation.
  
- D. Provide for:
  - 1. Switchboards, generator and floor mounted ATS.
  - 2. Generator and pumps.
  - 3. All other floor mounted equipment.

**END OF SECTION 26 05 00**

**SECTION 26 05 19**  
**LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES**

**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. Building wires and cables rated 600 V and less.
  2. Connectors, splices, and terminations rated 600 V and less.
  3. Sleeves and sleeve seals for cables.
- B. Related Sections include the following:
1. Division 26 Section "Hangers and Supports for Electrical Systems."
  2. Division 26 Section "Identification for Electrical Systems."
  3. Division 7 Section "Joint Sealants."
  4. Division 7 Section "Firestopping/Smoke seals."

**1.3 DEFINITIONS**

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.
- B. NBR: Acrylonitrile-butadiene rubber.

**1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For testing agency.
- C. Field quality-control test reports.

**1.5 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing



Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency and marked for intended use.
- C. Comply with NFPA 70.

## 1.6 COORDINATION

- A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

## PART 2 - PRODUCTS

### 2.1 CONDUCTORS AND CABLES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Alcad Stabiloy (Aluminum Conductor); Alcan Products Corporation; Alcan Cable Division.
  2. American Insulated Wire Corp.; a Leviton Company.
  3. Carol.
  4. General Cable Corporation.
  5. Pirelli Group.
  6. Okonite Company, The.
  7. Rome Wire Company.
  8. Southwire Wire and Cable Company.
  9. Southwest Wire and Cable.
  10. Triangle copper conductors: Comply with NEMA WC70.
  11. Or approved equal.
- B. Copper Conductors: Comply with NEMA WC 70.
- C. Conductor Insulation: Comply with NEMA WC 70 for Types THW, THHN-THWN, XHHW, UF, USE and SO.
- D. Multiconductor Cable: Comply with NEMA WC 70 for armored cable, Type AC; metal-clad cable, Type MC; mineral-insulated, metal-sheathed cable, Type MI; nonmetallic-sheathed cable, Type NM; Type SO and Type USE with ground wire.



## 2.2 CONNECTORS AND SPLICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. AFC Cable Systems, Inc.
  2. Hubbell Power Systems, Inc.
  3. O-Z/Gedney; EGS Electrical Group LLC.
  4. 3M; Electrical Products Division.
  5. Tyco Electronics Corp.
  6. Or approved equal.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.
- C. Connectors
1. Subject to compliance with requirements of this Section, provide connectors of the following types:
    - a. Solderless, uninsulated, high conductivity, corrosion resistant, compression connectors conforming to UL 467 and IEEE 837;
    - b. Insulated, indenter type compression butt connectors;
    - c. Insulated, integral self-locking flexible shell, expandable spring connectors;
    - d. Uninsulated, indenter type compression pigtail connectors;
    - e. Welded type connectors.
- 
- D. Terminals
1. Subject to compliance with requirements of this Section, provide terminals of the following types:
    - a. Solderless, uninsulated, high conductivity, corrosion resistant, compression terminals conforming to UL 467 and IEEE 837;
    - b. Insulated, compression terminals;
    - c. Solderless, high conductivity, corrosion resistant, hex screw type, bolted terminals;
    - d. Welded type terminals.
- E. Shrinkable Tubing
1. Subject to compliance with requirements of this Section, provide shrinkable tubing of the following types:
    - a. Either irradiated modified polyvinyl chloride or irradiated modified polyolefin heat shrinkable tubing;
    - b. Cold shrinkable tubing
- F. Tapes and Sealers
1. Vinyl Tapes
    - a. Flame-retardant, cold and weather-resistant, 3/4 inch or 1 1/2 inches wide, as required, and conforming to UL 510 and ASTM D 3005.
      - 1) For interior, dry locations, provide 7 mils, conforming to ASTM D 3005 (Type I.
      - 2) For exterior or damp and wet locations, provide 8.5 mils, conforming to ASTM D 3005 (type II).
  2. Rubber Tapes



- a. Ethylene-propylene, rubber-based, 30-mil splicing tape, rated for 130 degrees C operation; 3/4 inch and wider (1, 1 1/2, 2 inches) as shown on the Drawings or approved by the Commissioner, conforming to ASTM D 1373 and Federal Specification HH-I-553 (Grade A).
  3. Insulating Putty
    - a. Rubber-based, 125-mil elastic filler putty; 1 1/2 inches wide.
  4. Silicone Rubber Tapes
    - a. Inorganic silicone rubber, 12-mil, 130 degrees C rated, anti-tracking, selffusing tape; 1 inch wide.
  5. Sealer
    - a. Liquid applied, fast-drying sealant.
- G. Resin Filled Splices
1. Epoxy Molded Type
    - a. Two-piece, snap-together molded bodies, sized for wire or cable, with two-art low viscosity polyurethane insulating and sealing compound, rated for 600 volts, using crimp-type wire connector.
  2. Re-Enterable Type
    - a. Transparent, molded bodies clamped with stainless steel strain-relief bar and shield continuity connectors, sized for wire or cable, with loosely woven polyester spacer web and jelly-like urethane formulation for permanent re-entry capability.
- H. Arcproofing Materials
1. Fire resistant tapes.
  2. Glass cloth binding tapes.

### 2.3 SLEEVES FOR CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.
- D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping/Smoke seals."

### 2.4 SLEEVE SEALS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Advance Products & Systems, Inc.
  2. Calpico, Inc.
  3. Metraflex Co.



4. Pipeline Seal and Insulator, Inc.
  5. Or approved equal.
- B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.
1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
  2. Pressure Plates: Stainless steel. Include two for each sealing element.
  3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

### **PART 3 - EXECUTION**

#### **3.1 CONDUCTOR MATERIAL APPLICATIONS**

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- C. Minimum size No. 12 AWG up to 100 feet at 120V; lengths exceeding 100 feet, use No. 10. For 277V, over 220 feet, use No. 10 minimum.

#### **3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS**

- A. Service Entrance: USE-2 or as required by LIPA.
- B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-THWN, single conductors in raceway.
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- E. Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway..
- F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW, single conductors in raceway.



- H. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- I. Class 2 Control Circuits: Type THHN-THWN, in raceway.

### 3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 26 Section "Hangers and Supports for Electrical Systems."
- F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."
- G. Not more than three lighting or convenience outlet circuits in one conduit unless otherwise indicated.
- H. Pull no thermoplastic wires at temperatures lower than 32°F.
- I. Individual raceways for two pole ungrounded circuits.

### 3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Terminations, splices and taps:
  - 1. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation rating than unspliced conductor.
  - 2. Copper conductors No. 10 and smaller: Compression type or twist-on spring loaded connectors and clear nylon insulated covering.
  - 3. Copper conductors No. 8 and larger: Mechanical bolted pressure or hydraulic compression type using manufacturers recommended tooling.
  - 4. Cable lugs and connectors: Compression type of same metal as conductor to match cables with marking indicating size and type.
  - 5. For copper lug connection to bus bars provide anti-seize compound.
  - 6. Aluminum conductors:



- a. Hydraulic compression AL-CU type with factory pre-filled joint compound, meeting UL 486 requirements and also meeting 500 cycle heating and current tests. Two bolt type for No. 4 and larger cables.
  - b. Joint compound non-flowing in minus 60°F to 500°F temperature range with zinc particles, Thomas & Betts No. 21059 or equal.
  - c. Bus bar connections: Tin plated lugs and compression type washers ("Belleville").
  - d. Use oxide inhibitor in each splice and tap.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

### 3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping/Smoke-seals."
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls. Comply with requirements in Division 26 Section "Common Work Results Electrical".
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Rectangular Sleeve Minimum Metal Thickness:
  1. ~~For sleeve rectangle perimeter less than 50 inches and no side greater than 16 inches,~~ thickness shall be 0.052 inch.
  2. For sleeve rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches, thickness shall be 0.138 inch.
- E. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- F. Cut sleeves to length for mounting flush with both wall surfaces.
- G. Extend sleeves installed in floors 2 inches above finished floor level.
- H. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
- I. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
- J. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."
- K. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Firestopping/Smoke-seals."



- L. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work. Obtain written approval from contractor for actual materials being used and methods of installation.
- M. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- N. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between cable and sleeve for installing mechanical sleeve seals.

### **3.6 SLEEVE-SEAL INSTALLATION**

- A. Install to seal underground exterior-wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

### **3.7 FIRESTOPPING**

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Firestopping/Smoke seals."

### **3.8 FIELD QUALITY CONTROL**

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Perform tests and inspections and prepare test reports.
- C. Tests and Inspections:
  - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors, and conductors feeding equipment on emergency circuits for compliance with requirements.
    - a. At minimum, the test for insulation resistance (Megger) L-G and L-L shall be performed by at 1000 VDC for a minimum of 1 minute with a measurement at 30 seconds and 1 minute. Investigate and report any values below 50 megohms and a ratio of 1min/30sec measurement of less than 1.25.
  - 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.



3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Perform scans when the facility is operational and at highest peak of electrical load as possible. Remove box and equipment covers so splices are accessible to portable scanner.
    - a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
    - b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
    - c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
  
  - D. Test Reports: Prepare a written report to record the following:
    1. Test procedures used.
    2. Test results that comply with requirements.
    3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
  
  - E. Remove and replace malfunctioning units and retest as specified above.
- 

**END OF SECTION 26 05 19**



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**SECTION 26 05 26  
GROUNDING AND BONDING FOR ELECTRICAL 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 methods and materials for grounding systems and equipment plus the following special applications:
1. Underground distribution grounding.
  2. Common ground bonding with lightning protection system.

**1.3 SUBMITTALS**

- 
- A. Product Data: For each type of product indicated.
- B. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in Part 3 "Field Quality Control" Article, including the following:
1. Test wells.
  2. Ground rods.
  3. Grounding arrangements and connections for separately derived systems.
- C. Qualification Data: For testing agency and testing agency's field supervisor.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For grounding to include the following in emergency, operation, and maintenance manuals. In addition to items specified in DDC General Conditions, include the following:
1. Instructions for periodic testing and inspection of grounding features at test wells ground rings grounding connections for separately derived systems based on NFPA 70B.
    - a. Tests shall be to determine if ground resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if they do not.
    - b. Include recommended testing intervals.

## 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.
  - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association to supervise on-site testing specified in Part 3.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency and marked for intended use.
- C. Comply with UL 467 for grounding and bonding materials and equipment.

## PART 2 - PRODUCTS

### 2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code.
- B. Bare Copper Conductors:
  - 1. Solid Conductors: ASTM B 3.
  - 2. Stranded Conductors: ASTM B 8.
  - 3. Tinned conductor: ASTM B33.
  - 4. Bonding Cable: 28 kmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
  - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
  - 6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
  - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 4 inches in cross section, drilled and tapped with 3/8" coarse thread (2 rows at 2" [50 mm] centers), unless otherwise indicated; with insulators. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600V. Lexan or PVC, impulse tested at 5000V. Length as indicated on plans and required.

### 2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors to Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.



1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- D. Bus-bar Connectors: Mechanical type, cast silicon bronze solderless exothermic-type wire terminals and long-barrel two-bolt connection to ground bus-bar.

### **2.3 GROUNDING ELECTRODES**

- A. Ground Rods: Copper-clad steel, suitable for adding multiple sections, minimum 10 feet (3 M) long,  $\frac{3}{4}$  inch (19 mm) diameter.
- B. Chemical-Enhanced Grounding Electrodes: Copper tube, straight or L-shaped, charged with nonhazardous electrolytic chemical salts.
  1. Termination: Factory-attached No. 4/0 AWG bare conductor at least 48 inches long.
  2. Backfill Material: Electrode manufacturer's recommended material.

## **PART 3 - EXECUTION**

### **3.1 APPLICATIONS**

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- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare tinned copper conductor, No. 4/0 AWG minimum.
  1. Bury at least 24 inches below grade.
- C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
- D. Grounding Bus: Install in electrical and telephone/telecommunication equipment rooms, in rooms housing service equipment, and all other low-voltage equipment rooms and elsewhere as indicated.
  1. Install bus on insulated spacers 1 inch, minimum, from wall 6 inches above finished floor, unless otherwise indicated.
  2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, down to specified height above floor, and connect to horizontal bus.
- E. Conductor Terminations and Connections:





1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

### **3.2 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS**

- A. Comply with IEEE C2 grounding requirements.
- B. Grounding Manholes and Handholes: Install a driven ground rod through manhole or handhole floor, close to wall, and set rod depth so 4 inches will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches above to 6 inches below concrete. Seal floor opening with waterproof, nonshrink grout.
- C. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields as recommended in written instructions by manufacturer of splicing and termination kits.
- D. Pad-Mounted Transformers and Switches: Install two ground rods and ground ring around the pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Install tinned-copper conductor not less than No. 2 AWG for ground ring and for taps to equipment grounding terminals. Bury ground ring not less than 6 inches from the foundation.

### **3.3 EQUIPMENT GROUNDING**

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
  1. Feeders and branch circuits.
  2. Lighting circuits.
  3. Receptacle circuits.
  4. Single-phase motor and appliance branch circuits.
  5. Three-phase motor and appliance branch circuits.
  6. Flexible raceway runs.
  7. Armored and metal-clad cable runs.
  8. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchboard, or distribution panel to equipment grounding bar terminal on busway.



- C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
- D. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Electrically isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.
- E. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply circuit raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure, and install a separate insulated equipment grounding conductor. Electrically isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.
- F. Signal and Communication Equipment: In addition to grounding and bonding required by NFPA 70, provide a separate grounding system complying with requirements in TIA/ATIS J-STD-607-A.
  - 1. For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
  - 2. ~~Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-4-by-36-inch grounding bus.~~
  - 3. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

### 3.4 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.
- C. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.
  - 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
  - 2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.



- D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
  2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
  3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.
- E. Grounding and Bonding for Piping:
1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to street side ahead of the water meter main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
  2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
  3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.
- F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install tinned bonding jumper to bond across flexible duct connections to achieve continuity.
- G. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet apart.
- H. Ground Ring: Install a grounding conductor, electrically connected to each building structure ground rod and to each steel column, extending around the perimeter of the building.
1. Install tinned-copper conductor not less than No. 4/0 AWG for ground ring and for taps to building steel.
  2. Bury ground ring not less than 24 inches from building foundation.
  3. Where roof drip line varies from above locations, install conductor at roofing drip lines.
- I. Exothermic Connectors: Welds shall be made in accordance with kit recommendations. Damp materials shall not be used. Puffed up or connections that are not fully formed or where material is missing, shall be replaced.

### 3.5 LABELING

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems" Article for instruction signs. The label or its text shall be green.



- B. Install labels at the telecommunications bonding conductor and grounding equalizer and at the grounding electrode conductor where exposed.
  - 1. Label Text: "If this connector or cable is loose or if it must be removed for any reason, notify the facility manager."

### 3.6 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Perform the following tests and inspections and prepare test reports:
  - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
  - 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
  - 3. 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.~~
    - a. Measure ground resistance not less than two 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.
    - b. Perform tests by fall-of-potential method according to IEEE 81.
  - 4. Prepare dimensioned drawings locating each test well, 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.
- C. Grounding system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Report to the Commissioner, in a separate document, measured ground resistances that exceed the following values:
  - 1. Manhole Grounds: 10 ohms.



- F. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify the City of New York promptly and include recommendations to reduce ground resistance.

**END OF SECTION 26 05 26**



**SECTION 26 05 29  
HANGERS AND SUPPORTS FOR ELECTRICAL 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 the following:
1. Hangers and supports for electrical equipment and systems.
  2. Construction requirements for concrete bases.

**1.3 DEFINITIONS**

- 
- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

**1.4 PERFORMANCE REQUIREMENTS**

- A. Conform to Building Code of the City of New York.
- B. Contractor shall provide all required support, seismic bracing (based on structural assigned zone) and anchor bolts. Drawings signed by a registered and licensed in the State of New York structural engineer to be retained by the Contractor. Provide supports for multiple raceways, including comprehensive engineering analysis by a qualified professional and licensed in the State of New York, using performance requirements and design criteria indicated.
- C. Provide supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- D. Provide equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.



- E. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

## 1.5 SUBMITTALS

- A. Product Data: For the following:
  - 1. Steel slotted support systems.
  - 2. Nonmetallic slotted support systems.
  - 3. The drawings provided by the contractor shall be submitted in a shop drawing format for project Commissioner for review and comment.
- B. Shop Drawings: Signed and sealed by a qualified professional and licensed in the State of New York engineer. Show fabrication and installation details and include calculations for the following:
  - 1. Trapeze hangers. Include Product Data for components.
  - 2. Steel slotted channel systems. Include Product Data for components.
  - 3. Nonmetallic slotted channel systems. Include Product Data for components.
  - 4. Equipment supports.
- C. Welding certificates.

## 1.6 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

## 1.7 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section "Concrete Work".
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations.

## PART 2 - PRODUCTS

### 2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.



1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Allied Tube & Conduit.
    - b. Cooper B-Line, Inc.; a division of Cooper Industries.
    - c. ERICO International Corporation.
    - d. GS Metals Corp.
    - e. Thomas & Betts Corporation.
    - f. Unistrut; Tyco International, Ltd.
    - g. Wesanco, Inc.
    - h. Or approved equal.
  2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
  3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
  4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
  5. Channel Dimensions: Selected for applicable load criteria.
- B. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- diameter holes at a maximum of 8 inches o.c., in at least 1 surface.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Allied Tube & Conduit.
    - b. Cooper B-Line, Inc.; a division of Cooper Industries.
    - c. Fabco Plastics Wholesale Limited.
    - d. Seasafe, Inc.
    - e. Or approved equal.
  2. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
  3. Fitting and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.
  4. Rated Strength: Selected to suit applicable load criteria.
- C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- D. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.





- G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Hilti Inc.
      - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      - 3) MKT Fastening, LLC.
      - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
      - 5) Or approved equal.
  2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
      - 2) Empire Tool and Manufacturing Co., Inc.
      - 3) Hilti Inc.
      - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      - 5) MKT Fastening, LLC.
      - 6) Or approved equal.
  3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
  4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
  5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
  6. Toggle Bolts: All-steel springhead type.
  7. Hanger Rods: Threaded steel.

## **2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES**

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

**PART 3 - EXECUTION**

**3.1 APPLICATION**

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
  - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

**3.2 SUPPORT INSTALLATION**

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
  - 1. To Wood: Fasten with lag screws or through bolts.
  - 2. To New Concrete: Bolt to concrete inserts.
  - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
  - 4. To Existing Concrete: Expansion anchor fasteners.
  - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
  - 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.
  - 7. To Light Steel: Sheet metal screws.



8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
- D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

### **3.3 INSTALLATION OF FABRICATED METAL SUPPORTS**

- A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

### **3.4 CONCRETE BASES**

- A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "Concrete Work".
- C. Anchor equipment to concrete base.
  1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  2. Install anchor bolts to elevations required for proper attachment to supported equipment.
  3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

### **3.5 PAINTING**

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
  1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.



- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

**END OF SECTION 26 05 29**



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**SECTION 26 05 33  
RACEWAYS AND BOXES FOR ELECTRICAL 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 raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. Related Sections include the following:
1. Division 26 Section "Common Work Results for Electrical."

**1.3 DEFINITIONS**

- 
- A. EMT: Electrical metallic tubing.
- B. RGS: Rigid galvanized steel conduit
- C. RGSC: Plastic-coated Rigid Galvanized Steel Conduit
- D. FRE: Fiberglass Reinforced Epoxy
- E. PVC: Polyvinyl Chloride
- F. AC: Armored Cable
- G. MC: Metal-Clad Cable
- H. EPDM: Ethylene-propylene-diene terpolymer rubber.
- I. FMC: Flexible metal conduit.
- J. IMC: Intermediate metal conduit.
- K. LFMC: Liquidtight flexible metal conduit.
- L. LFNC: Liquidtight flexible nonmetallic conduit.
- M. NBR: Acrylonitrile-butadiene rubber.



- N. RNC: Rigid nonmetallic conduit.
- O. ID: Inner duct.

#### 1.4 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Custom enclosures and cabinets.
  - 2. For handholes and boxes for underground wiring, including the following:
    - a. Duct entry provisions, including locations and duct sizes.
    - b. Frame and cover design.
    - c. Grounding details.
    - d. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
    - e. Joint details.
- C. Samples for Initial Selection: For wireways and surface raceways with factory-applied texture and color finishes.
  - 1. Size: 3ft
- D. Samples for Verification: For each type of exposed finish required for wireways and surface raceways, prepared on Samples of size indicated below.
  - 1. Size: 3ft
- E. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
  - 1. Structural members in the paths of conduit groups with common supports.
  - 2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.
- F. Manufacturer Seismic Qualification Certification: Submit certification that enclosures and cabinets and their mounting provisions, including those for internal components, will withstand seismic forces. Include the following:
  - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    - a. The term "withstand" means "the cabinet or enclosure will remain in place without separation of any parts when subjected to the seismic forces specified and the unit will retain its enclosure characteristics, including its interior accessibility, after the seismic event."



2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- G. Source quality-control test reports.

### 1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency and marked for intended use.
- B. Comply with NFPA 70.

## PART 2 - PRODUCTS

### 2.1 METAL CONDUIT AND TUBING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. AFC Cable Systems, Inc.
  2. Alflex Inc.
  3. Allied Tube & Conduit; a Tyco International Ltd. Co.
  4. Anamet Electrical, Inc.; Anaconda Metal Hose.
  5. Electri-Flex Co.
  6. Manhattan/CDT/Cole-Flex.
  7. Maverick Tube Corporation.
  8. O-Z Gedney; a unit of General Signal.
  9. Wheatland Tube Company.
  10. Or approved equal.
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Aluminum Rigid Conduit: ANSI C80.5.
- D. IMC: ANSI C80.6.
- E. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.
  1. Comply with NEMA RN 1.
  2. Coating Thickness: 0.040 inch, minimum.
- F. EMT: ANSI C80.3.
- G. FMC: Zinc-coated steel.





- H. LFMC: Flexible steel conduit with PVC jacket.
- I. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
  - 1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
  - 2. Fittings for EMT: set-screw or compression type.
  - 3. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch, with overlapping sleeves protecting threaded joints.
- J. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

## 2.2 NONMETALLIC CONDUIT AND TUBING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. AFC Cable Systems, Inc.
  - 2. Anamet Electrical, Inc.; Anaconda Metal Hose.
  - 3. Arco Corporation.
  - 4. CANTEX Inc.
  - 5. CertainTeed Corp.; Pipe & Plastics Group.
  - 6. Condux International, Inc.
  - 7. ElecSYS, Inc.
  - 8. Electri-Flex Co.
  - 9. Lamson & Sessions; Carlon Electrical Products.
  - 10. Manhattan/CDT/Cole-Flex.
  - 11. RACO; a Hubbell Company.
  - 12. Thomas & Betts Corporation.
  - 13. Or approved equal.
- B. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.
- C. LFNC: UL 1660.
- D. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.
- E. Fittings for LFNC: UL 514B.

## 2.3 METAL WIREWAYS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Cooper B-Line, Inc.



2. Hoffman.
  3. Square D; Schneider Electric.
  4. Or approved equal.
- B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, unless otherwise indicated.
- C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Wireway Covers: Screw-cover type.
- E. Finish: Manufacturer's standard enamel finish.

## **2.4 SURFACE RACEWAYS**

- A. Surface Metal Raceways: Galvanized steel with snap-on covers. Manufacturer's standard enamel finish in color selected by the Commissioner.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Thomas & Betts Corporation.
    - b. ~~Walker Systems, Inc.; Wiremold Company (The).~~
    - c. Wiremold Company (The); Electrical Sales Division.
    - d. Or approved equal.
- B. Surface Nonmetallic Raceways: Two-piece construction, manufactured of rigid PVC with texture and color selected by the Commissioner from manufacturer's standard colors.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Butler Manufacturing Company; Walker Division.
    - b. Enduro Systems, Inc.; Composite Products Division.
    - c. Hubbell Incorporated; Wiring Device-Kellems Division.
    - d. Lamson & Sessions; Carlon Electrical Products.
    - e. Panduit Corp.
    - f. Walker Systems, Inc.; Wiremold Company (The).
    - g. Wiremold Company (The); Electrical Sales Division.
    - h. Or approved equal.

## **2.5 BOXES, ENCLOSURES, AND CABINETS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
  2. EGS/Appleton Electric.



3. Erickson Electrical Equipment Company.
  4. Hoffman.
  5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
  6. O-Z/Gedney; a unit of General Signal.
  7. RACO; a Hubbell Company.
  8. Robroy Industries, Inc.; Enclosure Division.
  9. Scott Fetzer Co.; Adalet Division.
  10. Spring City Electrical Manufacturing Company.
  11. Thomas & Betts Corporation.
  12. Walker Systems, Inc.; Wiremold Company (The).
  13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
  14. Or approved equal.
- B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum, Type FD, with gasketed cover.
- D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- E. Metal Floor Boxes: Cast or sheet metal, rectangular.
- F. Nonmetallic Floor Boxes: Nonadjustable, round.
- G. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- H. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, galvanized, cast iron with gasketed cover.
- I. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
  2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.
- J. Cabinets:
1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
  2. Hinged door in front cover with flush latch and concealed hinge.
  3. Key latch to match panelboards.
  4. Metal barriers to separate wiring of different systems and voltage.
  5. Accessory feet where required for freestanding equipment.

## **2.6 SOURCE QUALITY CONTROL FOR UNDERGROUND ENCLOSURES**

- A. Handhole and Pull-Box Prototype Test: Test prototypes of handholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
1. Tests of materials shall be performed by a independent testing agency.



2. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional and licensed in the State of New York engineer shall certify tests by manufacturer.
3. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

## **PART 3 - EXECUTION**

### **3.1 RACEWAY APPLICATION**

**A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:**

1. Exposed Conduit: Rigid Galvanized Steel Conduit
2. Concealed Conduit, Aboveground: Rigid Galvanized Steel conduit.
3. Underground Conduit: RNC, Type EPC-80-PVC, concrete encased.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 4X.
6. Application of Handholes and Boxes for Underground Wiring:
  - a. Handholes and Pull Boxes in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: Fiberglass enclosures with polymer-concrete frame and cover, SCTE 77, Tier 15 structural load rating.
  - b. Handholes and Pull Boxes in Sidewalk and Similar Applications with a Safety Factor for Nondeliberate Loading by Vehicles: Heavy-duty fiberglass units with polymer-concrete frame and cover, SCTE 77, Tier 8 structural load rating.
  - c. Handholes and Pull Boxes Subject to Light-Duty Pedestrian Traffic Only: Fiberglass-reinforced polyester resin, structurally tested according to SCTE 77 with 3000-lbf vertical loading.

**B. Comply with the following indoor applications, unless otherwise indicated:**

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage: Rigid Galvanized steel conduit. Includes raceways in the following locations:
  - a. Loading dock.
  - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
  - c. Mechanical rooms.
  - d. Electrical rooms
  - e. Baggage Handling areas
4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.



6. Damp or Wet Locations: Rigid steel conduit.
  7. Raceways for Optical Fiber or Communications Cable in Spaces Used for Environmental Air: Plenum-type, optical fiber/communications cable raceway.
  8. Raceways for Optical Fiber or Communications Cable Risers in Vertical Shafts: Riser-type, optical fiber/communications cable raceway.
  9. Raceways for Concealed General Purpose Distribution of Optical Fiber or Communications Cable: General-use, optical fiber/communications cable raceway.
  10. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.
- C. Minimum Raceway Size: 3/4-inch trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
  2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.
- E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
- F. Do not install aluminum conduits in contact with concrete.

### 3.2 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."
- E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.
- G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
- H. Raceways Embedded in Slabs:



1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
  2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
  3. Change from ENT to rigid steel conduit before rising above the floor.
- I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- J. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
- K. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
- L. Raceways for Optical Fiber and Communications Cable: Install raceways, metallic and nonmetallic, rigid inner duct and flexible, as follows:
1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
  2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.
  3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.
  4. Install 1/4" orange or blue inner duct system in raceways for all fiber optic cables.
- M. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
  2. Where otherwise required by NFPA 70.
- N. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F, and that has straight-run length that exceeds 25 feet.
1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:
    - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
    - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
    - c. Indoor Spaces: Connected with the Outdoors without Physical Separation: 125 deg F temperature change.



2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change.
  3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.
- O. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for recessed and semirecessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
1. Use LFMC in damp or wet locations subject to severe physical damage.
  2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.
- P. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.
- Q. Set metal floor boxes level and flush with finished floor surface.
- R. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

### 3.3 INSTALLATION OF UNDERGROUND CONDUIT

- A. Direct-Buried Conduit:
1. Excavate trench bottom to achieve firm and uniform support for conduit. Prepare trench bottom.
  2. Install backfill.
  3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction.
  4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
  5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
    - a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
    - b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.
  6. Warning Planks: Bury warning planks approximately 12 inches above direct-buried conduits, placing them 24 inches o.c. Align planks along the width and along the centerline of conduit.



### 3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

- A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.
- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.
- D. Install handholes and boxes with bottom below the frost line 4ft-6inch below grade.
- E. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in the enclosure.
- F. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

### 3.5 PROTECTION

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- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
  - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
  - 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

**END OF SECTION 26 05 33**





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**SECTION 26 05 43  
UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL 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].
- B. Division 26 Section "Common Work for Electrical."
- C. Division 26 Section "Grounding and Bonding for Electrical Systems."
- D. Division 26 Section "Identification for Electrical Systems."

**1.2 SUMMARY**

- A. This Section includes the following:

- 
- 1. Conduit, ducts, and duct accessories for concrete-encased duct banks.
  - 2. Handholes and boxes.
  - 3. Manholes.

**1.3 DEFINITION**

- A. RNC: Rigid nonmetallic conduit.

**1.4 SUBMITTALS**

- A. Product Data: For the following:

- 1. Duct-bank materials, including separators and miscellaneous components.
- 2. Ducts and conduits and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
- 3. Accessories for manholes, handholes, boxes.
- 4. Warning tape.
- 5. Warning planks.

- B. Shop Drawings for Precast or Factory-Fabricated Underground Utility Structures: Include plans, elevations, sections, details, attachments to other work, and accessories, including the following:

- 1. Duct entry provisions, including locations and duct sizes.



2. Reinforcement details.
  3. Frame and cover design and manhole frame support rings.
  4. Ladder or Step details.
  5. Grounding details.
  6. Dimensioned locations of cable rack inserts, pulling-in and lifting irons, and sumps.
  7. Joint details.
- C. Shop Drawings for Factory-Fabricated Handholes and Boxes Other Than Precast Concrete: Include dimensioned plans, sections, and elevations, and fabrication and installation details, including the following:
1. Duct entry provisions, including locations and duct sizes.
  2. Cover design.
  3. Grounding details.
  4. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
- D. Duct-Bank Coordination Drawings: Show duct profiles and coordination with other utilities and underground structures.
1. Include plans and sections, drawn to scale, and show bends and locations of expansion fittings.
- E. Product Certificates: For concrete and steel used in precast concrete manholes and handholes, as required by ASTM C 858.
- F. Qualification Data: For professional and licensed in the State of New York engineer and testing agency.
- G. Source quality-control test reports.
- H. Field quality-control test reports.

## **1.5 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- B. Comply with ANSI C2.
- C. Comply with NFPA 70.

## **1.6 PROJECT CONDITIONS**

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by the City of New York or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:



1. Notify the City of New York no fewer than two weeks in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without the City of New York's written permission.

## **1.7 COORDINATION**

- A. Coordinate layout and installation of ducts, manholes, handholes, and boxes with final arrangement of other utilities, site grading, and surface features as determined in the field.
- B. Coordinate elevations of ducts and duct-bank entrances into manholes, handholes, and boxes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations from those indicated as required to suit field conditions and to ensure that duct runs drain to manholes and handholes, and as approved by the Commissioner.

## **PART 2 - PRODUCTS**

### **2.1 CONDUIT**

- A. Rigid Steel Conduit: Galvanized. Comply with ANSI C80.1.
- B. RNC: NEMA TC 2, Type EPC-40-PVC, UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

### **2.2 NONMETALLIC DUCTS AND DUCT ACCESSORIES**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  1. ARNCO Corp.
  2. Beck Manufacturing.
  3. Cantex, Inc.
  4. CertainTeed Corp.; Pipe & Plastics Group.
  5. Condux International, Inc.
  6. ElecSys, Inc.
  7. Electri-Flex Company.
  8. IPEX Inc.
  9. Lamson & Sessions; Carlon Electrical Products.
  10. Manhattan/CDT; a division of Cable Design Technologies.
  11. Spiraduct/AFC Cable Systems, Inc.
  12. Or approved equal.
- B. Underground Plastic Utilities Duct: NEMA TC 6 & 8, Type EB-20-PVC, ASTM F 512, UL 651A, with matching fittings by the same manufacturer as the duct, complying with NEMA TC 9.



C. Duct Accessories:

1. Duct Separators: Factory-fabricated rigid PVC interlocking spacers, sized for type and sizes of ducts with which used, and selected to provide minimum duct spacings indicated while supporting ducts during concreting or backfilling.
2. Warning Tape: Underground-line warning tape specified in Division 26 Section "Identification for Electrical Systems."

**2.3 PRECAST CONCRETE HANDHOLES AND BOXES**

A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Carder Concrete Products.
2. Christy Concrete Products.
3. Elmhurst-Chicago Stone Co.
4. Oldcastle Precast Group.
5. Riverton Concrete Products; a division of Cretex Companies, Inc.
6. Utility Concrete Products, LLC.
7. Utility Vault Co.
8. Wausau Tile, Inc.
9. Or approved equal.

B. Comply with ASTM C 858 for design and manufacturing processes.

C. Description: Factory-fabricated, reinforced-concrete, monolithically poured walls and bottom unless open-bottom enclosures are indicated. Frame and cover shall form top of enclosure and shall have load rating consistent with that of handhole or box.

1. Frame and Cover: Weatherproof cast-iron frame, with cast-iron cover with recessed cover hook eyes and tamper-resistant, captive, cover-securing bolts.
2. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
3. Cover Legend: Molded lettering, "ELECTRIC", "TELEPHONE" or as required for each service.
4. Configuration: Units shall be designed for flush burial and have closed bottom, unless otherwise indicated.
5. Extensions and Slabs: Designed to mate with bottom of enclosure. Same material as enclosure.
6. Extension shall provide increased depth of 12 inches.
  - a. Slab: Same dimensions as bottom of enclosure, and arranged to provide closure.
  - b. Windows: Precast openings in walls, arranged to match dimensions and elevations of approaching ducts and duct banks plus an additional 12 inches vertically and horizontally to accommodate alignment variations.
  - c. Windows shall be located no less than 6 inches from interior surfaces of walls, floors, or frames and covers of handholes, but close enough to corners to facilitate racking of cables on walls.
  - d. Window opening shall have cast-in-place, welded wire fabric reinforcement for field cutting and bending to tie in to concrete envelopes of duct banks.



- e. Window openings shall be framed with at least two additional No. 4 steel reinforcing bars in concrete around each opening.
7. Handholes 12 inches wide by 24 inches long and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.

## 2.4 HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

- A. Description: Comply with SCTE 77.
  1. Color: Gray
  2. Configuration: Units shall be designed for flush burial and have closed bottom, unless otherwise indicated.
  3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
  4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
  5. Cover Legend: Molded lettering, "ELECTRIC.", "TELEPHONE." or as required for each service.
  6. Duct Entrance Provisions: Duct-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
  7. Handholes 12 inches wide by 24 inches long and larger shall have factory-installed inserts for cable racks and pulling-in irons.

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- B. Polymer Concrete Handholes and Boxes with Polymer Concrete Cover: Molded of sand and aggregate, bound together with a polymer resin, and reinforced with steel or fiberglass or a combination of the two.
  1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Armorcast Products Company.
    - b. Carson Industries LLC.
    - c. CDR Systems Corporation.
    - d. NewBasis.
    - e. Or approved equal.

## 2.5 PRECAST MANHOLES

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  1. Carder Concrete Products.
  2. Christy Concrete Products.
  3. Elmhurst-Chicago Stone Co.
  4. Oldcastle Precast Group.
  5. Riverton Concrete Products; a division of Cretex Companies, Inc.
  6. Utility Concrete Products, LLC.



7. Utility Vault Co.
  8. Wausau Tile, Inc.
  9. Or approved equal.
- B. Comply with ASTM C 858 with structural design loading as specified in Part 3 "Underground Enclosure Application" Article and with interlocking mating sections, complete with accessories, hardware, and features.
1. Windows: Precast openings in walls, arranged to match dimensions and elevations of approaching ducts and duct banks plus an additional 12 inches vertically and horizontally to accommodate alignment variations.
  2. Windows shall be located no less than 6 inches from interior surfaces of walls, floors, or roofs of manholes, but close enough to corners to facilitate racking of cables on walls.
    - a. Window opening shall have cast-in-place, welded wire fabric reinforcement for field cutting and bending to tie in to concrete envelopes of duct banks.
    - b. Window openings shall be framed with at least two additional No. 4 steel reinforcing bars in concrete around each opening.
- C. Concrete Knockout Panels: 1-1/2 to 2 inches thick, for future conduit entrance and sleeve for ground rod.
- D. Joint Sealant: Asphaltic-butyl material with adhesion, cohesion, flexibility, and durability properties necessary to withstand maximum hydrostatic pressures at the installation location with the ground-water level at grade.

## **2.6 SUPPORTS**

- A. Provide all necessary support for installation of new cables.

## **2.7 SOURCE QUALITY CONTROL**

- A. Test and inspect precast concrete utility structures according to ASTM C 1037.
- B. Nonconcrete Handhole and Pull-Box Prototype Test: Test prototypes of manholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
  1. Strength tests of complete boxes and covers shall be by either an independent testing agency or the manufacturer. A qualified registered licensed in the State of New York professional engineer shall certify tests by manufacturer.
  2. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012, and traceable to NIST standards.



## **PART 3 - EXECUTION**

### **3.1 EXISTING UNDERGROUND DUCTS**

- A. The existing underground duct network shall be used as the first option to install the new feeder. Confirm satisfactory condition of available raceway by use of cleaning brush and mandrel passage between manholes following the requirements given in paragraph 3.9. Should a duct run not have any available ducts which prove out acceptable for cable installation, refer to the Commissioner for direction.

### **3.2 NEW UNDERGROUND DUCT APPLICATION**

- A. Ducts for Electrical Cables Over 600 V: RNC, NEMA Type EPC-40 -PVC, in concrete-encased duct bank, unless otherwise indicated.
- B. Underground Ducts Crossing Paved Paths, Walks, Driveways and Roadways: RNC, NEMA Type EPC-40-PVC, encased in reinforced concrete.

### **3.3 UNDERGROUND ENCLOSURE APPLICATION**

- A. Manholes: Precast concrete.
  - 1. Units Located in Roadways and Other Deliberate Traffic Paths by Heavy or Medium Vehicles: ~~H-20 structural load rating according to AASHTO HB-17.~~
  - 2. Units Not Located in Deliberate Traffic Paths by Heavy or Medium Vehicles: H-10 load rating according to AASHTO HB 17.

### **3.4 DUCT INSTALLATION**

- A. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two manholes to drain in both directions.
- B. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches, both horizontally and vertically, at other locations, unless otherwise indicated.
- C. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.
- D. Duct Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inches on center for 5-inch ducts, and vary proportionately for other duct sizes.
  - 1. Begin change from regular spacing to end-bell spacing 10 feet from the end bell without reducing duct line slope and without forming a trap in the line.
  - 2. Grout end bells into structure walls from both sides to provide watertight entrances.





- E. Building Wall Penetrations: Make a transition from underground duct to PVC coated rigid steel conduit at least 10 feet outside the building wall without reducing duct line slope away from the building, and without forming a trap in the line. Use fittings manufactured for duct-to-conduit transition. Install conduit penetrations of building walls as specified in Division 26 Section "Common Work Results for Electrical."
- F. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig hydrostatic pressure.
- G. Pulling Cord: Install 100-lbf-test nylon cord in ducts, including spares.
- H. Concrete-Encased Ducts: Support ducts on duct separators.
  - 1. Separator Installation: Space separators close enough to prevent sagging and deforming of ducts, with not less than 4 spacers per 20 feet of duct. Secure separators to earth and to ducts to prevent floating during placement of concrete. Stagger separators approximately 6 inches between tiers. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
  - 2. Concreting Sequence: Pour each run of envelope between manholes or other terminations in one continuous operation.
  - 3. Start at one end and finish at the other, allowing for expansion and contraction of ducts as their temperature changes during and after the pour. Use expansion fittings installed according to manufacturer's written recommendations, or use other specific measures to prevent expansion-contraction damage.
    - a. If more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch reinforcing rod dowels extending 18 inches into concrete on both sides of joint near corners of envelope.
  - 4. Pouring Concrete: Spade concrete carefully during pours to prevent voids under and between conduits and at exterior surface of envelope. Do not allow a heavy mass of concrete to fall directly onto ducts. Use a plank to direct concrete down sides of bank assembly to trench bottom. Allow concrete to flow to center of bank and rise up in middle, uniformly filling all open spaces. Do not use power-driven agitating equipment unless specifically designed for duct-bank application.
  - 5. Reinforcement: Reinforce concrete-encased duct banks where they cross disturbed earth and where indicated. Arrange reinforcing rods and ties without forming conductive or magnetic loops around ducts or duct groups.
  - 6. Forms: Use walls of trench to form side walls of duct bank where soil is self-supporting and concrete envelope can be poured without soil inclusions; otherwise, use forms.
  - 7. Minimum Space between Ducts: 3 inches between ducts and exterior envelope wall, 2 inches between ducts for like services, and 4 inches between power and signal ducts.
  - 8. Depth: Install top of duct bank at least 24 inches below finished grade in areas not subject to deliberate traffic, and at least 30 inches below finished grade in deliberate traffic paths for vehicles, unless otherwise indicated.
  - 9. Stub-Ups: Use manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.



- a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
  - b. Stub-Ups to Equipment: For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of base. Install insulated grounding bushings on terminations at equipment.
  - c. For concrete encased stub-ups through building Mat Slab construction, terminate encasement at the interface with the bottom of the slab and continue conduits up to above finished floor elevation without encasement to allow for installation of slab reinforcement tie rebar across penetration through conduit assembly before slab concrete placement.
10. Warning Tape: Bury warning tape approximately 12 inches above all concrete-encased ducts and duct banks. Align tape parallel to and within 3 inches of the centerline of duct bank. Provide an additional warning tape for each 12-inch increment of duct-bank width over a nominal 18 inches. Space additional tapes 12 inches apart, horizontally.

### **3.5 INSTALLATION OF CONCRETE MANHOLES, HANDHOLES, AND BOXES**

#### **A. Precast Concrete Handhole and Manhole Installation:**

1. Comply with ASTM C 891, unless otherwise indicated.
2. Install units level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances.
3. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, ~~graded from 1-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.~~

#### **B. Elevations:**

1. Manhole Roof: Install with rooftop at least 24 inches below finished grade.
2. Manhole Frame: In paved areas and trafficways, set frames flush with finished grade. Set other manhole frames 1 inch above finished grade.
3. Handhole Covers: In paved areas and trafficways, set surface flush with finished grade. Set covers of other handholes 1 inch above finished grade.
4. Where indicated, cast handhole cover frame integrally with handhole structure.

#### **C. Manhole Access: Circular opening in manhole roof; sized to match cover size.**

1. Manholes with Fixed Ladders: Offset access opening from manhole centerlines to align with ladder.
2. Install chimney, constructed of precast concrete collars and rings to support frame and cover and to connect cover with manhole roof opening. Provide moisture-tight masonry joints and waterproof grouting for cast-iron frame to chimney.

#### **D. Hardware: Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors.**

#### **E. Fixed Manhole Ladders: Arrange to provide for safe entry with maximum clearance from cables and other items in manholes.**



- F. Field-Installed Bolting Anchors in Manholes and Concrete Handholes: Do not drill deeper than 3-7/8 inches for manholes and 2 inches for handholes, for anchor bolts installed in the field. Use a minimum of two anchors for each cable stanchion.
- G. Warning Sign: Install "Confined Space Hazard" warning sign on the inside surface of each manhole cover.

### **3.6 GROUNDING**

- A. Ground underground ducts and utility structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- B. Provide 4/0 bare copper counterpoise in concrete duct banks for all current carrying ducts.
- C. Extend ground cables into manholes and connect to ground rod.

### **3.7 FIELD QUALITY CONTROL**

- A. Perform the following tests and inspections and prepare test reports:
  - 1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.
  - 2. Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.
  - 3. Test manhole and handhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Division 26 Section "Grounding and Bonding for Electrical Systems."
- B. Correct deficiencies and retest as specified above to demonstrate compliance.
- C. Provide signed and sealed documents prepared by a Licensed in the State of New York Professional Structural Engineer showing design of precast underground manholes and handholes.

### **3.8 CLEANING**

- A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.
- B. Clean internal surfaces of manholes, including sump. Remove foreign material.

**END OF SECTION 26 05 43**



**SECTION 26 05 53  
IDENTIFICATION FOR ELECTRICAL 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 the following:
1. Identification for raceway and metal-clad cable.
  2. Identification for power conductors and communication and control cable.
  3. Underground-line warning tape.
  4. Warning labels and signs, including arc flash labeling.
  5. Instruction signs.
  6. Equipment identification labels.
  7. Miscellaneous identification products.
- 

**1.3 SUBMITTALS**

- A. Product Data: For each electrical identification product indicated.
- B. Identification Schedule: An index of nomenclature of electrical cables, equipment and system components used in identification signs and labels.
- C. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.

**1.4 QUALITY ASSURANCE**

- A. Comply with ANSI A13.1 and ANSI C2 and IEEE C2.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with NFPA 70E.
- E. Comply with ANSI Z535, arc flash labels.



- F. Comply with OSHA requirements for electrical labeling.
- G. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

## 1.5 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

## PART 2 - PRODUCTS

### 2.1 RACEWAY AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Colors for Raceways Carrying Circuits at 600 V or Less:
  - 1. Black letters on an orange field.
  - 2. Legend: Indicate voltage.
- C. Colors for Raceways Carrying Circuits at More Than 600 V:
  - 1. Black letters on an orange field.
  - 2. Legend: "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch- high letters on 20-inch centers.
- D. Self-Adhesive Vinyl Labels for raceways carrying circuits 600V or less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- E. Snap-Around Labels for raceways carrying circuits 600V or less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.



- F. Snap-Around, Color-Coding Bands for raceways carrying circuits 600V or less: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- G. Tape and Stencil for Raceways Carrying Circuits More Than 600 V: 4-inch- wide black stripes on 10-inch centers diagonally over orange background that extends full length of raceway or duct and is 12 inches wide. Stop stripes at legends.
- H. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.
- I. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
  - 1. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

## **2.2 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS**

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Colors for Raceways Carrying Circuits at 600 V and Less:
  - 1. ~~Black letters on an orange field.~~
  - 2. Legend: Indicate voltage .
- C. Colors for Raceways Carrying Circuits at More Than 600 V:
  - 1. Black letters on an orange field.
  - 2. Legend: "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch- high letters on 20-inch centers.
- D. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- E. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches wide; compounded for outdoor use.

## **2.3 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS**

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.



- C. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.
- D. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
  - 1. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.
- E. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- F. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

#### **2.4 CONDUCTOR IDENTIFICATION MATERIALS**

- A. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- C. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- D. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- E. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
  - 1. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

#### **2.5 FLOOR MARKING TAPE**

- A. 2-inch- wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

#### **2.6 UNDERGROUND-LINE WARNING TAPE**

- A. Tape:



1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical utility lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: **ELECTRIC LINE, HIGH VOLTAGE.**
3. Inscriptions for Orange-Colored Tapes: **TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.**

C. Tag: Type I:

1. Pigmented polyolefin, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Thickness: 4 mils.
3. Weight: 18.5 lb/1000 sq. ft..
4. 3-Inch Tensile According to ASTM D 882: 30 lbf, and 2500 psi.

D. Tag: Type II:

1. Multilayer laminate consisting of high-density polyethylene scrim coated with pigmented polyolefin, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Thickness: 12 mils.
3. Weight: 36.1 lb/1000 sq. ft..
4. 3-Inch Tensile According to ASTM D 882: 400 lbf, and 11,500 psi.

E. Tag: Type ID:

1. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Overall Thickness: 5 mils.
3. Foil Core Thickness: 0.35 mil.
4. Weight: 28 lb/1000 sq. ft..
5. 3-Inch Tensile According to ASTM D 882: 70 lbf, and 4600 psi.

F. Tag: Type IID:

1. Reinforced, detectable three-layer laminate, consisting of a printed pigmented woven scrim, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Overall Thickness: 8 mils.
3. Foil Core Thickness: 0.35 mil.
4. Weight: 34 lb/1000 sq. ft..





5. 3-Inch Tensile According to ASTM D 882: 300 lbf, and 12,500 psi.

## **2.7 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS**

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
- B. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- C. Aluminum Wraparound Marker Labels: Cut from 0.014-inch- thick aluminum sheet, with stamped, embossed, or scribed legend, and fitted with tabs and matching slots for permanently securing around wire or cable jacket or around groups of conductors.
- D. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking nylon tie fastener.
- E. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and polyester or nylon tie for attachment to conductor or cable.
  1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

## **2.8 WARNING LABELS AND SIGNS**

- A. Comply with NFPA 70, NFPA 70E and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
- C. Baked-Enamel Warning Signs:
  1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
  2. 1/4-inch grommets in corners for mounting.
  3. Nominal size, 7 by 10 inches.
- D. Metal-Backed, Butyrate Warning Signs:
  1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application.
  2. 1/4-inch grommets in corners for mounting.
  3. Nominal size, 10 by 14 inches.
- E. Warning label and sign shall include, but are not limited to, the following legends:
  1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."



2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

## 2.9 INSTRUCTION SIGNS

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. in. and 1/8 inch thick for larger sizes.
  1. Engraved legend with black letters on white face.
  2. Punched or drilled for mechanical fasteners.
  3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.
- B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.
- C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

## 2.10 EQUIPMENT IDENTIFICATION LABELS

- ~~A. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.~~
- B. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and ultraviolet-resistant seal for label.
- C. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
- D. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
- E. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

## 2.11 CABLE TIES

- A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.
  1. Minimum Width: 3/16 inch.
  2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  3. Temperature Range: Minus 40 to plus 185 deg F.
  4. Color: Black except where used for color-coding.



- B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  - 3. Temperature Range: Minus 40 to plus 185 deg F.
  - 4. Color: Black.
  
- C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.
  - 3. UL 94 Flame Rating: 94V-0.
  - 4. Temperature Range: Minus 50 to plus 284 deg F.
  - 5. Color: Black.

## 2.12 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Cable Ties: Fungus-inert, self-extinguishing, 1-piece, self-locking, Type 6/6 nylon cable ties.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength: 50 lb, minimum.
  - 3. Temperature Range: Minus 40 to plus 185 deg F.
  - 4. Color: Black, except where used for color-coding.
  
- B. Paint: Paint materials and application requirements are specified in Division 09 painting Sections.
  - 1. Exterior Concrete, Stucco, and Masonry (Other Than Concrete Unit Masonry):
    - a. Semigloss Acrylic-Enamel Finish: Two finish coat(s) over a primer.
      - 1) Primer: Exterior concrete and masonry primer.
      - 2) Finish Coats: Exterior semigloss acrylic enamel.
  
  - 2. Exterior Concrete Unit Masonry:
    - a. Semigloss Acrylic-Enamel Finish: Two finish coat(s) over a block filler.
      - 1) Block Filler: Concrete unit masonry block filler.
      - 2) Finish Coats: Exterior semigloss acrylic enamel.
  
  - 3. Exterior Ferrous Metal:
    - a. Semigloss Alkyd-Enamel Finish: Two finish coat(s) over a primer.
      - 1) Primer: Exterior ferrous-metal primer.
      - 2) Finish Coats: Exterior semigloss alkyd enamel.



4. Exterior Zinc-Coated Metal (except Raceways):
    - a. Semigloss Alkyd-Enamel Finish: Two finish coat(s) over a primer.
      - 1) Primer: Exterior zinc-coated metal primer.
      - 2) Finish Coats: Exterior semigloss alkyd enamel.
  5. Interior Concrete and Masonry (Other Than Concrete Unit Masonry):
    - a. Semigloss Alkyd-Enamel Finish: Two finish coat(s) over a primer.
      - 1) Primer: Interior concrete and masonry primer.
      - 2) Finish Coats: Interior semigloss alkyd enamel.
  6. Interior Concrete Unit Masonry:
    - a. Semigloss Acrylic-Enamel Finish: Two finish coat(s) over a block filler.
      - 1) Block Filler: Concrete unit masonry block filler.
      - 2) Finish Coats: Interior semigloss acrylic enamel.
  7. Interior Gypsum Board:
    - a. Semigloss Acrylic-Enamel Finish: Two finish coat(s) over a primer.
      - 1) Primer: Interior gypsum board primer.
      - 2) Finish Coats: Interior semigloss acrylic enamel.
  8. Interior Ferrous Metal:
    - a. Semigloss Acrylic-Enamel Finish: Two finish coat(s) over a primer.
      - 1) Primer: Interior ferrous-metal primer.
      - 2) Finish Coats: Interior semigloss acrylic enamel.
  9. Interior Zinc-Coated Metal (except Raceways):
    - a. Clean/pickle bare metal with white vinegar.
    - b. Semigloss Acrylic-Enamel Finish: Two finish coat(s) over a primer.
      - 1) Primer: Interior zinc-coated metal primer.
      - 2) Finish Coats: Interior semigloss acrylic enamel.
- C. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.



## PART 3 - EXECUTION

### 3.1 APPLICATION

- A. Raceways and Duct Banks More Than 600 V Concealed within Buildings: 4-inch- wide black stripes on 10-inch centers over orange background that extends full length of raceway or duct and is 12 inches wide. Stencil legend "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch- high black letters on 20-inch centers. Stop stripes at legends. Apply to the following finished surfaces:
1. Floor surface directly above conduits running beneath and within 12 inches of a floor that is in contact with earth or is framed above unexcavated space.
  2. Wall surfaces directly external to raceways concealed within wall.
  3. Accessible surfaces of concrete envelope around raceways in vertical shafts, exposed in the building, or concealed above suspended ceilings.
- B. Accessible Raceways and Metal-Clad Cables More Than 600 V: Identify with "DANGER-HIGH VOLTAGE" in black letters at least 2 inches high, with snap-around labels. Repeat legend at 10-foot maximum intervals.
- C. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A: Identify with orange snap-around label.
- D. Accessible Raceways and Cables of Auxiliary Systems: Identify the following systems with color-coded, snap-around, color-coding bands:
1. Fire Alarm System: Red.
  2. Fire-Suppression Supervisory and Control System: Red and yellow.
  3. Combined Fire Alarm and Security System: Red and blue.
  4. Security System: Blue and yellow.
  5. Mechanical and Electrical Supervisory System: Green and blue.
  6. Telecommunication System: Green and yellow.
  7. Control Wiring: Green and red.
- E. Power-Circuit Conductor Identification: For primary and secondary conductors No. 1/0 AWG and larger in vaults, pull and junction boxes, manholes, and handholes use metal tags. Identify source and circuit number of each set of conductors. For single conductor cables, identify phase in addition to the above.
- F. Branch-Circuit Conductor Identification: Where there are conductors for more than three branch circuits in same junction or pull box, use metal tags. Identify each ungrounded conductor according to source and circuit number.
- G. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source and circuit number.
- H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, signal, sound, intercommunications, voice, and data connections.



1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
  2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
  3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and Operation and Maintenance Manual.
- I. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- J. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply metal-backed, butyrate warning signs. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.
1. Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, but not limited to, the following:
    - a. Power transfer switches.
    - b. Controls with external control power connections.
  2. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment-in-finished-spaces.
- 
- K. Instruction Signs:
1. Operating Instructions: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
  2. Emergency Operating Instructions: Install instruction signs with white legend on a red background with minimum 3/8-inch- high letters for emergency instructions at equipment used for power transfer and load shedding.
- L. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:
    - a. Indoor and Outdoor Equipment: Screwed-on engraved white laminated plastic sheet with minimum 3/8 inch to 3/4 inch black lettering for normal systems and red laminated plastic sheet with lettering for energy systems.
    - b. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.



2. Equipment to Be Labeled:
  - a. Panelboards, electrical cabinets, and enclosures.
  - b. Access doors and panels for concealed electrical items.
  - c. Electrical switchgear and switchboards.
  - d. Transformers.
  - e. Electrical substations.
  - f. Emergency system boxes and enclosures.
  - g. Motor-control centers.
  - h. Disconnect switches.
  - i. Enclosed circuit breakers.
  - j. Motor starters.
  - k. Push-button stations.
  - l. Power transfer equipment.
  - m. Contactors.
  - n. Remote-controlled switches, dimmer modules, and control devices.
  - o. Battery inverter units.
  - p. Battery racks.
  - q. Power-generating units.
  - r. Voice and data cable terminal equipment.
  - s. Master clock and program equipment.
  - t. Intercommunication and call system master and staff stations.
  - u. Television/audio components, racks, and controls.
  - v. Fire-alarm control panel and annunciators.
  - w. Security and intrusion-detection control stations, control panels, terminal cabinets, and racks.
  - x. Monitoring and control equipment.
  - y. Uninterruptible power supply equipment.
  - z. Terminals, racks, and patch panels for voice and data communication and for signal and control functions.

### 3.2 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach nonadhesive signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- F. System Identification Color Banding for Raceways and Cables: Each color band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact,



side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

- G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.
- H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:
  - 1. Outdoors: UV-stabilized nylon.
  - 2. In Spaces Handling Environmental Air: Plenum rated.
- I. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.
- J. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

### 3.3 IDENTIFICATION SCHEDULE

- A. Concealed Raceways, Duct Banks, More Than 600 V, within Buildings: Tape and stencil 4-inch-wide black stripes on 10-inch centers over orange background that extends full length of raceway or duct and is 12 inches wide. Stencil legend "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch-high black letters on 20-inch centers. Stop stripes at legends. Apply to the following finished surfaces:
  - 1. Floor surface directly above conduits running beneath and within 12 inches of a floor that is in contact with earth or is framed above unexcavated space.
  - 2. Wall surfaces directly external to raceways concealed within wall.
  - 3. Accessible surfaces of concrete envelope around raceways in vertical shafts, exposed in the building, or concealed above suspended ceilings.
- B. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30A, and 120V to ground: Identify with self-adhesive vinyl tape applied in bands. Install labels at 10-foot maximum intervals.
- C. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:
  - 1. Emergency Power.
  - 2. Power.
  - 3. UPS.
- D. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.





1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder and branch-circuit conductors.
  - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if permitted
  - b. Colors for 208/120-V Circuits:
    - 1) Phase A: Black.
    - 2) Phase B: Red.
    - 3) Phase C: Blue.
  - c. Colors for 480/277-V Circuits:
    - 1) Phase A: Brown.
    - 2) Phase B: Orange.
    - 3) Phase C: Yellow.
  - d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- E. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.
- F. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 10 to 12 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.
- G. Painted Identification: Prepare surface and apply paint according to Division 09 painting Sections.
- H. Power-Circuit Conductor Identification, More than 600 V: For conductors in vaults, pull and junction boxes, manholes, and handholes, use nonmetallic plastic tag holder with adhesive-backed phase tags, and a separate tag with the circuit designation.
- I. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- J. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source.
- K. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
  1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
  2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.



3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
- L. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
  1. Limit use of underground-line warning tape to direct-buried cables.
  2. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- M. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
- N. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Metal-backed, butyrate warning signs.
  1. Comply with 29 CFR 1910.145.
  2. Identify system voltage with black letters on an orange background.
  3. Apply to exterior of door, cover, or other access.
  4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:
    - a. ~~Power-transfer switches.~~
    - b. Controls with external control power connections.
- O. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
- P. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- high letters for emergency instructions at equipment used for power transfer and load shedding.
- Q. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
  1. Labeling Instructions:
    - a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where two lines of text are required, use labels 2 inches high.
    - b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
    - c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.



- d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.
2. Equipment to Be Labeled:
- a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be engraved, laminated acrylic or melamine label.
  - b. Enclosures and electrical cabinets.
  - c. Access doors and panels for concealed electrical items.
  - d. Switchboards.
  - e. Emergency system boxes and enclosures.
  - f. Enclosed switches.
  - g. Enclosed circuit breakers.
  - h. Enclosed controllers.
  - i. Push-button stations.
  - j. Power transfer equipment.
  - k. Contactors.
  - l. Remote-controlled switches, dimmer modules, and control devices.
  - m. Power-generating units.
  - n. Monitoring and control equipment.

**END OF SECTION 26 05 53**



**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 SUMMARY**

- A. This Section includes computer-based, fault-current and overcurrent protective device coordination studies to be performed by the contractor. Protective devices shall be set based on results of the protective device coordination study. Settings and adjustments of the relays shall be provided by an independent qualified agency familiar with this work and the agency is to be retained by this contractor. The person performing this work to have a minimum of three years experience.

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**1.3 SUBMITTALS**

- A. Provide overcurrent protective device coordination study prior to submittal of electrical service and distribution equipment.
- B. Product Data: For computer software program to be used for studies.
- C. Product Certificates: For coordination-study and fault-current-study computer software programs, certifying compliance with IEEE 399.
- D. Qualification Data: For coordination-study specialist.
- E. Other Action Submittals: The following submittals shall be made after the approval process for system protective devices has been completed. Submittals shall be in digital form.
1. Coordination-study input data, including completed computer program input data sheets.
  2. Study and Equipment Evaluation Reports.
  3. Coordination-Study Report, including setting tables.
  4. Report indicating variances.
  5. Recommendations.



#### 1.4 QUALITY ASSURANCE

- A. Studies shall use computer programs that are distributed nationally and are in wide use. Software algorithms shall comply with requirements of standards and guides specified in this Section. Manual calculations are not acceptable.
- B. Coordination-Study Specialist Qualifications: An entity experienced in the application of computer software used for studies, having performed successful studies of similar magnitude on electrical distribution systems using similar devices.
  - 1. Professional engineer, licensed in the State of New York, shall be responsible for the study. All elements of the study shall be performed under the direct supervision and control of the Commissioner. The registered professional licensed in the State of New York electrical engineer shall have experience in performing power system studies.
- C. Comply with IEEE 242 for short-circuit currents and coordination time intervals.
- D. Comply with IEEE 399 for general study procedures.

### PART 2 - PRODUCTS

#### 2.1 COMPUTER SOFTWARE DEVELOPERS

- A. Computer Software Developers: Subject to compliance with requirements, provide products by one of the following:
  - 1. CGI CYME.
  - 2. EDSA Micro Corporation.
  - 3. ESA Inc.
  - 4. Operation Technology, Inc.
  - 5. SKM Systems Analysis, Inc.
  - 6. Or approved equal.

#### 2.2 COMPUTER SOFTWARE PROGRAM REQUIREMENTS

- A. Comply with IEEE 399.
- B. Analytical features of fault-current-study computer software program shall include "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.
- C. Computer software program shall be capable of plotting and diagramming time-current-characteristic curves as part of its output. Computer software program shall report device settings and ratings of all overcurrent protective devices and shall demonstrate selective coordination by computer-generated, time-current coordination plots.
  - 1. Required Features: Arcing faults per NFPA 70E.



2. Optional Features:
  - a. Simultaneous faults.
  - b. Explicit negative sequence.
  - c. Mutual coupling in zero sequence.

## **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. Devices to be coordinated are indicated on Drawings.
  1. Proceed with coordination study only after relevant equipment submittals have been assembled. Overcurrent protective devices that have not been submitted and approved prior to coordination study may not be used in study.

### **3.2 POWER SYSTEM DATA**

- A. Gather and tabulate the following input data to support coordination study:
  1. ~~Product Data for overcurrent protective devices specified in other Division 26 Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.~~
  2. Impedance of utility service entrance.
  3. Electrical Distribution System Diagram: In hard-copy and electronic-copy formats, showing the following:
    - a. Circuit-breaker and fuse-current ratings and types.
    - b. Generator kilovolt amperes, size, voltage, and source impedance.
    - c. Cables: Indicate conduit material, sizes of conductors, conductor material, insulation, and length. Use actual conductor impedances if known, otherwise use impedances based on IEEE 141.
    - d. Busway ampacity and impedance.
    - e. Motor horsepower and code letter designation according to NEMA MG 1.
  4. Data sheets to supplement electrical distribution system diagram, cross-referenced with tag numbers on diagram, showing the following:
    - a. Special load considerations, including starting inrush currents and frequent starting and stopping.
    - b. Motor full-load current, locked rotor current, service factor, starting time, type of start, and thermal-damage curve.
    - c. Generator thermal-damage curve.
    - d. Ratings, types, and settings of utility company's overcurrent protective devices.



- e. Special overcurrent protective device settings or types stipulated by utility company.
- f. Time-current-characteristic curves of devices indicated to be coordinated.
- g. Manufacturer, frame size, interrupting rating in amperes RMS symmetrical, ampere or current sensor rating, long-time adjustment range, short-time adjustment range, and instantaneous adjustment range for circuit breakers.
- h. Panelboards, switchboards, motor-control center ampacity, and interrupting rating in amperes RMS symmetrical.

### 3.3 FAULT-CURRENT STUDY

- A. Calculate the maximum available short-circuit current in amperes RMS symmetrical at circuit-breaker positions of the electrical power distribution system. The calculation shall be for a current immediately after initiation and for a three-phase bolted short circuit at each of the following:
  - 1. Switchgear and Switchboard bus.
  - 2. Motor-control center.
  - 3. Distribution panelboard.
  - 4. Branch circuit panelboard.
  - 5. Standby generators and automatic transfer switches.
  - 6. Variable frequency drives.
- B. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for 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. Calculations to verify interrupting ratings of overcurrent protective devices shall comply with IEEE 141 and IEEE 242.
  - 1. Low-Voltage Circuit Breakers: IEEE 1015 and IEEE C37.20.1.
  - 2. Low-Voltage Fuses: IEEE C37.46.
  - 3. C37.13.
  - 4. C37.41.
- E. Study Report:
  - 1. Show calculated X/R ratios and equipment interrupting rating (1/2-cycle) fault currents on electrical distribution system diagram.
- F. Equipment Evaluation Report:
  - 1. For 600-V overcurrent protective devices, ensure that interrupting ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.
  - 2. For devices and equipment rated for asymmetrical fault current, apply multiplication factors listed in the standards to 1/2-cycle symmetrical fault current.



3. 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 1/2-cycle symmetrical fault current.

### 3.4 COORDINATION STUDY

- A. Perform 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 1/2-cycle short-circuit currents.
  2. Calculate the maximum and minimum interrupting duty (5 cycles to 2 seconds) short-circuit currents.
- B. Comply with IEEE 141 and IEEE 242 recommendations for fault currents and time intervals.
- C. 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.
- D. 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. Circuit-breaker sensor rating; and long-time, short-time, and instantaneous settings.
    - c. Fuse-current rating and type.
    - d. 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. No damage, melting, and clearing curves for fuses.
    - d. Cable damage curves.
    - e. Maximum fault-current cutoff point.
- E. Completed data sheets for setting of overcurrent protective devices.

**END OF SECTION 26 05 73**





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**SECTION 26 24 13**  
**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 SUMMARY**

- A. Section Includes:

1. Distribution switchboards rated 600 V and less.
2. Instrumentation.
3. Control power.
4. Accessory components and features.
5. Identification.

- 
- B. Related Sections include the following:

1. Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."
2. Division 26 Section "Grounding and Bonding for Electrical Systems."
3. Division 26 Section "Identification for Electrical Systems."
4. Division 26 Section "Enclosed Switches and Circuit Breakers."

**1.3 SUBMITTALS**

- A. Product Data: For each type of switchboard, overcurrent protective device, transient voltage suppression device, ground-fault protector, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

- B. Shop Drawings: For each switchboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Detail short-circuit current rating of switchboards and overcurrent protective devices.
5. Include descriptive documentation of optional barriers specified for electrical insulation and isolation.



6. Detail utility company's metering provisions with indication of approval by utility company.
  7. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
  8. Include time-current coordination curves for each type and rating of overcurrent protective device included in switchboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.
  9. Include schematic and wiring diagrams for power, signal, and control wiring.
- C. Samples: Representative portion of mimic bus with specified material and finish, for color selection.
- D. Qualification Data: For qualified testing agency.
- E. Seismic Qualification Certificates: Submit certification that switchboards, overcurrent protective devices, accessories, and components will withstand seismic forces. Include the following:
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- F. Field Quality-Control Reports:
1. Test procedures used.
  2. Test results that comply with requirements.
  3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- G. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in DDC General Conditions, include the following:
1. Routine maintenance requirements for switchboards and all installed components.
  2. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
  3. Time-current coordination curves for each type and rating of overcurrent protective device included in switchboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.

#### **1.4 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

**ATTACHMENT 1 – BID INFORMATION  
PROJECT ID: SANDELEC5**

**DESCRIPTION AND LOCATION OF WORK:**

NYPD 100th Precinct Power Recovery and Upgrade  
9224 Rockaway Beach Blvd  
Rockaway Beach, NY 11693  
DDC PIN: 8502017PD0011C                      EPIN: 85018B0010

**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:**

**BIDS MUST BE CLOCKED IN PRIOR TO BID OPENING**

**PLACE TO SUBMIT:**

Department of Design and Construction, Contract Section  
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.  
Email PBQ(s) - CSB\_projectinquiries@ddc.nyc.gov

**BID OPENING:**

<b>PLACE OF BID OPENING:</b>	Department of Design and Construction Contract Section 30-30 Thomson Avenue - First Floor Long Island City, NY 11101
<b>DATE AND HOUR:</b>	

**LATE BIDS WILL NOT BE ACCEPTED**

**PRE-BID CONFERENCE:**

<b>PLACE</b>	
<b>DATE AND HOUR</b>	
<b>MANDATORY OR OPTIONAL</b>	

**BID SECURITY:**

Bid Security is required in the amount set forth below; provided, however, bid security is not required if the TOTAL BID PRICE set forth on the Bid Form is less than \$1,000,000.00.

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

**PERFORMANCE AND PAYMENT SECURITY:**

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

**AGENCY CONTACT PERSON:**

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

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Tax ID #:

APT E-  
PIN#:

85018B0010

Contract # 1 - Electrical Work

**SCHEDULE B - M/WBE Utilization Plan**

**Part I: M/WBE Participation Goals**

Part I to be completed by contracting agency

**Contract Overview**

APT E-Pin # 85018B0010 FMS Project ID# SANDELEC5  
 Project Title/Agency NYPD 100th Precinct Power Recovery and Upgrade  
 PIN # 8502017PD0011C  
 Bid/Proposal  
 Response Date: TO BE DETERMINED  
 Contracting Agency Department of Design and Construction  
 Agency Address 30-30 Thomson Avenue City Long Island City State NY Zip Code 11101  
 Contact Person Brandon A. Milliner Title MWBE Outreach & Compliance Analyst  
 Telephone # (718) 391-1416 Email millinebr@ddc.nyc.gov

**Project Description** (attach additional pages if necessary)

This Project consists of providing a new generator for the facility, in a room constructed above the garage level floor. New distribution boards and ATS's are being provided for separation and support of standby and life-safety loads in the facility. Additional receptacle loads on the ground floor level that were flooded during Sandy are being replaced and re-circuited. New lighting is being provided for the new garage layout. Additionally, since the generator is indoors, a new ductwork exhaust system is being put in place.

**M/WBE Participation Goals for Services**

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

Prime Contract Industry: Construction

Group	Percentage	
<u>Unspecified *</u>	<u>20</u>	<u>%</u>
or		
Black American	<u>Unspecified</u>	<u>%</u>
Hispanic American	<u>Unspecified</u>	<u>%</u>
Asian American	<u>Unspecified</u>	<u>%</u>
Women	<u>Unspecified</u>	<u>%</u>
<b>Total Participation Goals</b>	<b>20</b>	<b>%</b>

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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- B. Source Limitations: Obtain switchboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for switchboards including clearances between switchboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- E. Comply with NEMA PB 2.
- F. Comply with NFPA 70.
- G. Comply with UL 489 and UL 891.

#### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver switchboards in sections or lengths that can be moved past obstructions in delivery path.
- B. Remove loose packing and flammable materials from inside switchboards and install temporary electric heating (250 W per section) to prevent condensation.
- C. Handle and prepare switchboards for installation according to NECA 400.

#### **1.6 PROJECT CONDITIONS**

- A. Installation Pathway: Remove and replace access fencing, doors, lift-out panels, and structures to provide pathway for moving switchboards into place.
- B. Environmental Limitations:
  - 1. Do not deliver or install switchboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above switchboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
  - 2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
    - a. Ambient Temperature: Not exceeding 104 deg F.
    - b. Altitude: Not exceeding 3300 feet.
- C. Service Conditions: NEMA PB 2, usual service conditions, as follows:
  - 1. Ambient temperatures within limits specified.
  - 2. Altitude not exceeding 3300 feet.



**1.7 COORDINATION**

- A. Coordinate layout and installation of switchboards 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.
- B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

**1.8 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: 18 months from date of Substantial Completion.

**1.9 EXTRA MATERIALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Potential Transformer Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.
  - 2. Control-Power Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.
  - 3. Indicating Lights: Equal to 10 percent of quantity installed for each size and type, but no fewer than one of each size and type.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURED UNITS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
  - 3. Siemens Energy & Automation, Inc.
  - 4. Square D; a brand of Schneider Electric.
  - 5. Or approved equal.
- B. Front-Connected, Front-Accessible Switchboards:



1. Main and Branch Devices: Panel mounted.
  2. Sections front and rear aligned.
- C. Nominal System Voltage: 208Y/120 V.
- D. Main-Bus Continuous: As per drawings.
- E. Seismic Requirements: Fabricate and test switchboards according to IEEE 344 to withstand seismic forces required for the project area.
- F. Indoor Enclosures: Steel, NEMA 250, Type 1.
- G. Enclosure Finish for Indoor Units: Factory-applied finish in manufacturer's standard gray finish over a rust-inhibiting primer on treated metal surface.
- H. Barriers: Between adjacent switchboard sections.
- I. Insulation and isolation for main bus of main section and main and vertical buses of feeder sections.
- J. Bus Transition and Incoming Pull Sections: Matched and aligned with basic switchboard.
- K. Removable, Hinged Rear Doors and Compartment Covers: Secured by captive thumb screws, for access to rear interior of switchboard.
- 
- L. Hinged Front Panel door-within-a-door construction keyed alike with NYPD standard key.
- M. Pull Box on Top of Switchboard:
1. Adequate ventilation to maintain temperature in pull box within same limits as switchboard.
  2. Set back from front to clear circuit-breaker removal mechanism.
  3. Removable covers shall form top, front, and sides. Top covers at rear shall be easily removable for drilling and cutting.
  4. Bottom shall be insulating, fire-resistive material with separate holes for cable drops into switchboard.
  5. Cable supports shall be arranged to facilitate cabling and adequate to support cables indicated, including those for future installation.
- N. Buses and Connections: Three phase, four wire unless otherwise indicated.
1. Phase- and Neutral-Bus Material: Hard-drawn copper of 98 percent conductivity, silver-plated, with tin-plated aluminum or copper feeder circuit-breaker line connections.
  2. Load Terminals: Insulated, rigidly braced, runback bus extensions, of same material as through buses, equipped with mechanical connectors for outgoing circuit conductors. Provide load terminals for future circuit-breaker positions at full-ampere rating of circuit-breaker position.
  3. Ground Bus: Minimum-size required by UL 891, hard-drawn copper of 98 percent conductivity, equipped with compression connectors for feeder and branch-circuit ground



- conductors. For busway feeders, extend insulated equipment grounding cable to busway ground connection and support cable at intervals in vertical run.
4. Main Phase Buses and Equipment Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections. Provide for future extensions from both ends.
  5. Neutral Buses: 100 percent of the ampacity of phase buses unless otherwise indicated, equipped with compression connectors for outgoing circuit neutral cables. Brace bus extensions for busway feeder neutral bus.
  6. Isolation Barrier Access Provisions: Permit checking of bus-bolt tightness.
- O. Future Devices: Equip compartments with mounting brackets, supports, bus connections, and appurtenances at full rating of circuit-breaker compartment.
- P. Bus-Bar Insulation: Factory-applied, flame-retardant, tape wrapping of individual bus bars or flame-retardant, spray-applied insulation. Minimum insulation temperature rating of 105 deg C.
- Q. Accessories:
1. The following accessories shall be furnished with each switchboard.
    - a. One (1) quart of touchup paint.
    - b. One set of special wrenches, removable hand cranks, tools as required to maintain and disassemble parts of the switchgear for field maintenance.
    - c. Three (3) sets of spare circuit breakers for each type and size.

## 2.2 CONTROL POWER

- A. Control Circuits: 120-V ac, supplied through secondary disconnecting devices from control-power transformer.
- B. Control-Power Fuses: Primary and secondary fuses for current-limiting and overload protection of transformer and fuses for protection of control circuits.
- C. Control Wiring: Factory installed, with bundling, lacing, and protection included. Provide flexible conductors for No. 8 AWG and smaller, for conductors across hinges, and for conductors for interconnections between shipping units.

## 2.3 ACCESSORY COMPONENTS AND FEATURES

- A. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.
- B. Portable Test Set: For testing functions of solid-state trip devices without removing from switchboard. Include relay and meter test plugs suitable for testing switchboard meters and switchboard class relays.
- C. Spare-Fuse Cabinet: Suitably identified, wall-mounted, lockable, compartmented steel box or cabinet. Arrange for wall mounting.

## 2.4 IDENTIFICATION

- A. Mimic Bus: Entire single-line switchboard bus work, as depicted on factory record drawing, on an engraved laminated-plastic nameplate.
  - 1. Nameplate: At least 0.0625-inch- thick laminated plastic, located at eye level on front cover of the switchboard incoming service section.
- B. Coordinate mimic-bus segments with devices in switchboard sections to which they are applied. Produce a concise visual presentation of principal switchboard components and connections.
- C. Presentation Media: Painted graphics in color contrasting with background color to represent bus and components, complete with lettered designations.
- D. Service Equipment Label: NRTL labeled for use as service equipment for switchboards with one or more service disconnecting and overcurrent protective devices.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Receive, inspect, handle, and store switchboards according to NECA 400.
- B. Examine switchboards before installation. Reject switchboards that are moisture damaged or physically damaged.
- C. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Install switchboards and accessories according to NECA 400.
- B. Equipment Mounting: Install switchboards on concrete base. Comply with requirements for concrete base specified in Division 03 Section "Concrete Work." See Division 26 "Common Work Results for Electrical."
- C. Operating Instructions: Frame and mount the printed basic operating instructions for switchboards, including control and key interlocking sequences and emergency procedures. Fabricate frame of finished wood or metal and cover instructions with clear acrylic plastic. Mount on front of switchboards.
- D. Install filler plates in unused spaces of panel-mounted sections.



- E. Install overcurrent protective devices, transient voltage suppression devices, and instrumentation.
  - 1. Set field-adjustable switches and circuit-breaker trip ranges.
- F. Install spare-fuse cabinet.
- G. Comply with NECA 1.
- H. Refinish damaged or scratched surfaces and rub down boards with approved polish.
- I. Provide 24 inch wide insulating mat in front of boards and in rear of free standing ones.

### **3.3 IDENTIFICATION**

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- B. Switchboard Nameplates: Label each switchboard compartment with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- C. Device Nameplates: Label each disconnecting and overcurrent protective device and each meter and control device mounted in compartment doors with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

### **3.4 FIELD QUALITY CONTROL**

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Acceptance Testing Preparation:
  - 1. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit.
  - 2. Test continuity of each circuit.
- D. Tests and Inspections:
  - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.



2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  3. Perform the following infrared scan tests and inspections and prepare reports:
    - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switchboard. Remove front panels so joints and connections are accessible to portable scanner.
    - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switchboard 11 months after date of Substantial Completion.
    - c. Instruments and Equipment:
      - 1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
  4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Switchboard will be considered defective if it does not pass tests and inspections.
- F. 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.

---

### 3.5 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit-breaker trip ranges as indicated.

### 3.6 PROTECTION

- A. Temporary Heating: Apply temporary heat, to maintain temperature according to manufacturer's written instructions, until switchboard is ready to be energized and placed into service.

### 3.7 DEMONSTRATION

- A. 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, and to use and reprogram microprocessor-based trip, monitoring, and communication units.

END OF SECTION 26 24 13



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**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 SUMMARY**

- A. Section Includes:
1. Distribution panelboards.
  2. Lighting, receptacle and appliance branch-circuit panelboards.
- B. Related Sections Include the Following:
1. Division 26 Section "Enclosed Switchboards and Circuit Breakers."

---

**1.3 DEFINITIONS**

- A. SVR: Suppressed voltage rating.
- B. TVSS: Transient voltage surge suppressor.

**1.4 PERFORMANCE REQUIREMENTS**

- A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

**1.5 SUBMITTALS**

- A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each panelboard and related equipment.





1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
  2. Detail enclosure types and details for types other than NEMA 250, Type 1.
  3. Detail bus configuration, current, and voltage ratings.
  4. Short-circuit current rating of panelboards and overcurrent protective devices.
  5. Include evidence of NRTL listing for series rating of installed devices.
  6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
  7. Include wiring diagrams for power, signal, and control wiring.
  8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.
- C. Qualification Data: For qualified testing agency.
- D. Seismic Qualification Certificates: Submit certification that panelboards, overcurrent protective devices, accessories, and components will withstand seismic forces defined. Include the following:
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- E. Field Quality-Control Reports:
1. Test procedures used.
  2. Test results that comply with requirements.
  3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- F. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing.
- G. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in DDC General Conditions, include the following:
1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
  2. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.

## 1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.



1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.
- B. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- E. Comply with NEMA PB 1.
- F. Comply with NFPA 70.

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.
  - B. Handle and prepare panelboards for installation according to NEMA PB 1.
- 

#### **1.8 PROJECT CONDITIONS**

- A. Environmental Limitations:
  1. Do not deliver or install panelboards until spaces are enclosed and weathertight, all work in spaces is complete and dry, work above panelboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
  2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
    - a. Ambient Temperature: Not exceeding minus 22 deg F to plus 104 deg F.
    - b. Altitude: Not exceeding 6600 feet.
- B. Service Conditions: NEMA PB 1, usual service conditions, as follows:
  1. Ambient temperatures within limits specified.
  2. Altitude not exceeding 6600 feet.

#### **1.9 COORDINATION**

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment,



raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

- B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

#### **1.10 EXTRA MATERIALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Keys: Six spares for each type of panelboard cabinet lock.

### **PART 2 - PRODUCTS**

#### **2.1 GENERAL REQUIREMENTS FOR PANELBOARDS**

- A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces.
- B. Every panelboard shall be fully rated. All equipment shall be panelboard construction. Load center not permitted unless specifically indicated.
- C. Enclosures: Surface-mounted cabinets.
  - 1. Rated for environmental conditions at installed location.
    - a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
    - b. Outdoor Locations: NEMA 250, Type 3R.
  - 2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions.
  - 3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover so that no tool is required to open the hinged cover.
  - 4. Skirt for Surface-Mounted Panelboards: Same gage and finish as panelboard front with flanges for attachment to panelboard, wall, and ceiling or floor.
  - 5. Gutter Extension and Barrier: Same gage and finish as panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.
  - 6. Finishes:
    - a. Panels and Trim: galvanized steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
    - b. Back Boxes: Galvanized steel.



7. Directory Card: Inside panelboard door, mounted in metal frame with transparent protective cover.

D. Phase, Neutral, and Ground Buses:

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.

E. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Main and Neutral Lugs: Compression type.
3. Ground Lugs and Bus-Configured Terminators: Compression type.
4. Feed-Through Lugs: Compression type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
5. Subfeed (Double) Lugs: Compression type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

F. Molded-Case Circuit Breaker: UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 150A to 400A.
2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
3. Electronic trip-unit circuit breakers for circuit-breaker frame sizes 400 A and above shall have RMS sensing; field-replaceable rating plug; and with the following field-adjustable settings:
  - a. Instantaneous trip.
  - b. Long- and short-time pickup levels.
  - c. Long- and short-time time adjustments.
  - d. Ground-fault pickup level, time delay, and I<sup>2</sup>t response.
4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
5. 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.
6. GFCI Circuit Breakers: Single- and two-pole configurations with 30-mA trip sensitivity.
7. Survey existing electrical closets. Match existing panel manufacturer circuit breaker type where new circuit breakers are to be provided.



- G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- H. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

## **2.2 DISTRIBUTION PANELBOARDS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or approved equal:
  - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit
  - 2. Square D.; Schneider Electric Business Unit
  - 3. GE.
  - 4. Or approved equal.
- B. Panelboards: NEMA PB 1, power and feeder distribution type.
- C. Mains: As indicated in schedules or shown in Single Line Diagram.
- D. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.
- E. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

## **2.3 LIGHTING, RECEPTACLE AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or approved equal:
  - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit
  - 2. Square D.; Schneider Electric Business Unit
  - 3. GE.
  - 4. Or approved equal.
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: As indicated in Panel Schedules.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Doors: Concealed hinges; door-within-a-door construction secured with flush latch with tumbler lock; keyed alike to NYPD standard key.

## 2.4 ACCESSORY COMPONENTS AND FEATURES

- A. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.
- B. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.
- B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.
- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

---

### 3.2 INSTALLATION

- A. Install panelboards and accessories according to NEMA PB 1.1.
- B. Comply with mounting and anchoring requirements.
- C. Mount top of trim 90 inches above finished floor unless otherwise indicated.
- D. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- E. Install overcurrent protective devices and controllers not already factory installed.
  - 1. Set field-adjustable, circuit-breaker trip ranges.
- F. Install filler plates in unused spaces.
- G. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.
- H. Comply with NECA 1.



### **3.3 IDENTIFICATION**

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads after balancing panelboard loads; incorporate the City of New York's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

### **3.4 FIELD QUALITY CONTROL**

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Acceptance Testing Preparation:
  - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
  - 2. Test continuity of each circuit.
- D. Tests and Inspections:
  - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  - 3. Perform the following infrared scan tests and inspections and prepare reports:
    - a. Initial Infrared Scanning: Perform an infrared scan of each panelboard before Substantial Completion. Remove front panels so joints and connections are accessible to portable scanner.
    - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each panelboard 11 months after date of Substantial Completion.
    - c. Instruments and Equipment:



- 1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
- E. Panelboards will be considered defective if they do not pass tests and inspections.
- F. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

### **3.5 ADJUSTING**

- A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit-breaker trip ranges as specified in Division 26 Section "Enclosed Switches and Circuit Breakers."
- C. Load Balancing: measure load balancing and make circuit changes before Substantial Completion,
  1. Measure as directed during period of normal system loading.
  2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. ~~Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.~~
  3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
  4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

### **3.6 PROTECTION**

- A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

END OF SECTION 26 24 16





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**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 SUMMARY**

- A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI
2. Twist-locking receptacles.
3. Receptacles with integral surge suppression units.
4. Isolated-ground receptacles.
5. Snap switches and wall-box dimmers.
6. Solid-state fan speed controls.
7. Wall-switch and exterior occupancy sensors.
8. Communications outlets.
9. Pendant cord-connector devices.
10. Cord and plug sets.
11. Floor service outlets.
12. Poke-through assemblies.
13. Service poles.
14. Multioutlet assemblies.
15. Device plates.
16. Fan speed controls.
17. Occupancy sensors.
18. Wall box digital time switches.

- B. Related Sections include the following:

1. Division 26 Section "Common Work Results for Electrical."
2. Division 26 Section "Raceways and Boxes for Electrical Systems."
3. Division 26 Section "Identification for Electrical Systems."

**1.3 DEFINITIONS**

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.

- C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- D. RFI: Radio-frequency interference.
- E. TVSS: Transient voltage surge suppressor.
- F. UTP: Unshielded twisted pair.

#### **1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Samples: One for each type of device and wall plate specified, in each color specified.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: To include all manufacturers' packing label warnings and instruction manuals that include labeling conditions. Include wiring diagrams and set-up instructions.

#### **1.5 QUALITY ASSURANCE**

- A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency and marked for intended use.
- C. Comply with NFPA 70.

#### **1.6 COORDINATION**

- A. Receptacles for the City of New York-Furnished Equipment: Match plug configurations.
  - 1. Cord and Plug Sets: Match equipment requirements.

#### **1.7 EXTRA MATERIALS**

- A. Furnish extra materials described in subparagraphs below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Service/Power Poles: One for every 10, but no fewer than one.
  - 2. Floor Service Outlet Assemblies: One for every 10, but no fewer than one.



3. Poke-Through, Fire-Rated Closure Plugs: One for every five floor service outlets installed, but no fewer than two.
4. TVSS Receptacles: One for every 10 of each type installed, but no fewer than two of each type.
5. Every device not listed above, one of every type installed

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
  1. Cooper Wiring Devices; (Cooper).
  2. Hubbell Incorporated; (Hubbell).
  3. Leviton Mfg. Company Inc. (Leviton).
  4. Pass & Seymour/Legrand; (Pass & Seymour).
- B. Decora Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD1, NEMA WD6 configuration 5-20R and UL 498 Supplement SD.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Leviton; 16341 (single), 16352 (duplex).
    - b. Pass & Seymour; 26361 (single), 26352 (duplex).
    - c. Or approved equal.

### **2.2 STRAIGHT BLADE RECEPTACLES**

- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cooper; 5351 (single), 5352 (duplex).
    - b. Hubbell; HBL5351 (single), CR5352 (duplex).
    - c. Leviton; 5891 (single), 5352 (duplex).
    - d. Pass & Seymour; 5381 (single), 5352 (duplex).
    - e. Or approved equal.
- B. Isolated-Ground, Duplex Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
  1. Description: Straight blade; equipment grounding contacts shall be connected only to the green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation shall be integral to receptacle construction and not dependent on removable parts.



- C. Tamper-Resistant Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cooper; TR8300.
    - b. Hubbell; HBL8300SG.
    - c. Leviton; 8300-SGG.
    - d. Pass & Seymour; 63H.
    - e. Or approved equal.

### 2.3 GFCI RECEPTACLES

- A. General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cooper; GF20.
    - b. Pass & Seymour; 2084.
    - c. Leviton
    - d. Or approved equal.

### 2.4 TVSS RECEPTACLES

- A. General Description: Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 1449, with integral TVSS in line to ground, line to neutral, and neutral to ground.
  - 1. TVSS Components: Multiple metal-oxide varistors; with a nominal clamp-level rating of 400 volts and minimum single transient pulse energy dissipation of 240 J, according to IEEE C62.41.2 and IEEE C62.45.
  - 2. Active TVSS Indication: Visual and audible, with light visible in face of device to indicate device is "active" or "no longer in service."
- B. Duplex TVSS Convenience Receptacles:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cooper; 5362BLS.
    - b. Hubbell; HBL5362SA.
    - c. Leviton; 5380.
    - d. Or approved equal.
  - 2. Description: Straight blade, 125 V, 20 A; NEMA WD 6 configuration 5-20R.
- C. Isolated-Ground, Duplex Convenience Receptacles:



1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Cooper; IG5362BLS.
  - b. Hubbell; IG5362SA.
  - c. Leviton; 5380-IG.
  - d. Or approved equal.
  
2. Description: Straight blade, 125 V, 20 A; NEMA WD 6 configuration 5-20R. Equipment grounding contacts shall be connected only to the green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation shall be integral to receptacle construction and not dependent on removable parts.

## **2.5 HAZARDOUS (CLASSIFIED) LOCATION RECEPTACLES**

- A. Available Wiring Devices for Hazardous (Classified) Locations: Comply with NEMA FB 11 and UL 1010.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Crouse-Hinds.
    - b. Appleton Electric.
    - c. Killark.
    - d. Or-approved-equal.

## **2.6 TWIST-LOCKING RECEPTACLES**

- A. Single Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration L5-20R, and UL 498.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cooper; L5-20R.
    - b. Hubbell; HBL2310.
    - c. Leviton; 2310.
    - d. Pass & Seymour; L5-20R.
    - e. Or approved equal.
  
- B. Isolated-Ground, Single Convenience Receptacles, 125 V, 20 A:
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Hubbell; IG2310.
    - b. Leviton; 2310-IG.
    - c. Pass & Seymour
    - d. Or approved equal.
  
  2. Description: Comply with NEMA WD 1, NEMA WD 6 configuration L5-20R, and UL 498. Equipment grounding contacts shall be connected only to the green grounding screw terminal of the device and with inherent electrical isolation from mounting strap.

Isolation shall be integral to receptacle construction and not dependent on removable parts.

## 2.7 PENDANT CORD-CONNECTOR DEVICES

- A. Description: Matching, locking-type plug and receptacle body connector; NEMA WD 6 configurations L5-20P and L5-20R, heavy-duty grade.
1. Body: Nylon with screw-open cable-gripping jaws and provision for attaching external cable grip.
  2. External Cable Grip: Woven wire-mesh type made of high-strength galvanized-steel wire strand, matched to cable diameter, and with attachment provision designed for corresponding connector.

## 2.8 CORD AND PLUG SETS

- A. Description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.
1. Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and equipment-rating ampacity plus a minimum of 30 percent.
  2. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

## 2.9 SNAP SWITCHES

- A. Comply with NEMA WD 1 and UL 20.
- B. Switches, 120/277 V, 20 A:
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
    - b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
    - c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).
    - d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).
    - e. Or approved equal.
- C. Decora, Rocker Type:
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Leviton: 5621 (single pole), 5622 (two pole), 5623 (three way), 5624 (four way).
    - b. Pass & Seymour: 2621 (single pole), 2622 (two pole), 2623 (three way), 2624 (four way).
    - c. Cooper



d. Or approved equal.

D. Pilot Light Switches, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Cooper; 2221PL for 120 V and 277 V.
- b. Hubbell; HPL1221PL for 120 V and 277 V.
- c. Leviton; 1221-PLR for 120 V, 1221-7PLR for 277 V.
- d. Pass & Seymour; PS20AC1-PLR for 120 V.
- e. Or approved equal.

2. Description: Single pole, with neon-lighted handle, illuminated when switch is "ON."

E. Key-Operated Switches, 120/277 V, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Cooper; 2221L.
- b. Hubbell; HBL1221L.
- c. Leviton; 1221-2L.
- d. Pass & Seymour; PS20AC1-L.
- e. Or approved equal.

2. Description: Single pole, with factory-supplied key in lieu of switch handle.

~~F. Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors.~~

~~1. Products: Subject to compliance with requirements, provide one of the following:~~

- ~~a. Cooper; 1995.~~
- ~~b. Hubbell; HBL1557.~~
- ~~c. Leviton; 1257.~~
- ~~d. Pass & Seymour; 1251.~~
- ~~e. Or approved equal.~~

G. Key-Operated, Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors, with factory-supplied key in lieu of switch handle.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:

- a. Cooper; 1995L.
- b. Hubbell; HBL1557L.
- c. Leviton; 1257L.
- d. Pass & Seymour; 1251L.
- e. Or approved equal.



**2.10 WALL-BOX DIMMERS**

- A. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.
- B. Control: Continuously adjustable slider; with single-pole or three-way switching. Comply with UL 1472.
- C. Incandescent Lamp Dimmers: 120 V; control shall follow square-law dimming curve. On-off switch positions shall bypass dimmer module.
  - 1. 600 W; dimmers shall require no derating when ganged with other devices. Illuminated when "OFF."
- D. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 20 percent of full brightness.

**2.11 OCCUPANCY SENSORS**

- A. Wall-Switch Sensors:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cooper; 6111 for 120 V, 6117 for 277 V.
    - b. Hubbell; WS1277.
    - c. Leviton; ODS 10-ID.
    - d. Pass & Seymour; WS3000.
    - e. Watt Stopper (The); WS-200.
    - f. Or approved equal.
  - 2. Description: Passive-infrared type, 120/277 V, adjustable time delay up to 30 minutes, 180-degree field of view, with a minimum coverage area of 900 sq. ft..
- B. Wall-Switch Sensors:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Hubbell; AT120 for 120 V, AT277 for 277 V.
    - b. Leviton; ODS 15-ID.
    - c. Cooper
    - d. Or approved equal.
  - 2. Description: Adaptive-technology type, 120/277 V, adjustable time delay up to 20 minutes, 180-degree field of view, with a minimum coverage area of 900 sq. ft..
- C. Long-Range Wall-Switch Sensors:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Hubbell; ATP1600WRP.
    - b. Leviton; ODWWV-IRW.



- c. Pass & Seymour; WA1001.
  - d. Watt Stopper (The); CX-100.
  - e. Or approved equal.
2. Description: Passive-infrared type, 120/277 V, adjustable time delay up to 30 minutes, 110-degree field of view, with a minimum coverage area of 1200 sq. ft..
- D. Long-Range Wall-Switch Sensors:
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Hubbell; ATD1600WRP.
    - b. Leviton; ODW12-MRW.
    - c. Watt Stopper (The); DT-200.
    - d. Or approved equal.
  2. Description: Dual technology, with both passive-infrared- and ultrasonic-type sensing, 120/277 V, adjustable time delay up to 30 minutes, 110-degree field of view, and a minimum coverage area of 1200 sq. ft..
- E. Wide-Range Wall-Switch Sensors:
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Hubbell; ATP120HBRP.
    - b. Leviton; ODWHB-IRW.
    - c. Pass & Seymour; HS1001.
    - d. Watt Stopper (The); CX-100-3.
    - e. Or approved equal.
  2. Description: Passive-infrared type, 120/277 V, adjustable time delay up to 30 minutes, 150-degree field of view, with a minimum coverage area of 1200 sq. ft..
- F. Exterior Occupancy Sensors:
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Leviton; PS200-10.
    - b. Watt Stopper (The); EW-100-120.
    - c. Or approved equal.
  2. Description: Passive-infrared type, 120/277 V, weatherproof, adjustable time delay up to 15 minutes, 180-degree field of view, and 110-foot detection range. Minimum switch rating: 1000-W incandescent, 500-VA fluorescent.

## 2.12 COMMUNICATIONS OUTLETS

- A. Telephone Outlet:
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cooper; 3560-6.
    - b. Leviton; 40649.



- c. Pass & Seymour
  - d. Or approved equal.
- 2. Description: Single RJ-45 jack for terminating 100-ohm, balanced, four-pair UTP; TIA/EIA-568-B.1; complying with Category 5e. Comply with UL 1863.
- B. Combination TV and Telephone Outlet:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cooper; 3562.
    - b. Leviton; 40595.
    - c. Pass & Seymour
    - d. Or approved equal.
  - 2. Description: Single RJ-45 jack for 100-ohm, balanced, four-pair UTP; TIA/EIA-568-B.1; complying with Category 5e; and one Type F coaxial cable connector.

### 2.13 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
  - 1. Plate-Securing Screws: Metal with head color to match plate finish.
  - 2. Material for Finished Spaces 0.04-inch- thick, brushed brass with factory polymer finish.
  - 3. Material for Unfinished Spaces: Galvanized steel.
  - 4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."
  - 5. For receptacles with other than 120 volt, inscribe voltage available.
  - 6. For receptacles served by emergency circuit, inscribe "Emergency."
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant die-cast aluminum with lockable cover.

### 2.14 MULTIOUTLET ASSEMBLIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Hubbell Incorporated.
  - 2. Wiremold Company.
  - 3. MonoSystems
  - 4. Or approved equal.
- B. Components of Assemblies: Products from a single manufacturer designed for use as a complete, matching assembly of raceways and receptacles.
- C. Raceway Material: Metal, with manufacturer's standard finish.
- D. Wire: No. 12 AWG.



- E. Maximum 15 ampere receptacle, minimum wiring capacity with receptacles, three No. 12.
  - 1. Raceway: Total width shall be 1.28 inches by 0.75 inches deep with a cross sectional area of 0.8 square inches, with minimum thickness of 0.025 inches and base thickness of 0.04 inches.
  - 2. Standard lengths: 3, 5, 6 feet.
  - 3. Receptacle: Pre-wired on two circuits alternating configuration, 15 ampere, 15 volt THREE pole, grounded, 12 inch on center.

## 2.15 FINISHES

- A. Color: Wiring device catalog numbers in Section Text do not designate device color.
  - 1. Wiring Devices Connected to Normal Power System: As selected by the Commissioner, unless otherwise indicated or required by NFPA 70 or device listing.
  - 2. Wiring Devices Connected to Emergency Power System: Red.
  - 3. TVSS Devices: Blue.
  - 4. Isolated-Ground Receptacles: Orange.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
- B. Coordination with Other Trades:
  - 1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
  - 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
  - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
  - 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
  - 1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
  - 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
  - 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
  - 4. Existing Conductors:



- a. Cut back and pigtail, or replace all damaged conductors.
- b. Straighten conductors that remain and remove corrosion and foreign matter.
- c. Pigtail existing conductors is permitted provided the outlet box is large enough.

**D. Device Installation:**

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

**E. Receptacle Orientation:**

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

**F. Device Plates:** Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

**G. Dimmers:**

1. Install dimmers within terms of their listing.
2. Verify that dimmers used for fan speed control are listed for that application.
3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.

**H. Arrangement of Devices:** Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

**I. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.**

### **3.2 IDENTIFICATION**

**A. Comply with Division 26 Section "Identification for Electrical Systems."**



1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with red-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

### 3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
  1. Test Instruments: Use instruments that comply with UL 1436.
  2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.
- B. Tests for Convenience Receptacles:
  1. Line Voltage: Acceptable range is 105 to 132 V.
  2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
  3. Ground Impedance: Values of up to 2 ohms are acceptable.
  4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
  5. Using the test plug, verify that the device and its outlet box are securely mounted.
  6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

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**SECTION 26 28 13  
FUSES**

**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. Cartridge fuses rated 600V AC and less for use in control circuits, enclosed switches, and enclosed controllers.
2. Plug fuses rated 125-V ac and less for use in plug-fuse-type enclosed switches and fuseholders.
3. Plug-fuse adapters for use in Edison-base, plug-fuse sockets.
4. Spare-fuse cabinets.

B. Related Sections include the following:

1. Division 26 Section "Enclosed Switches and Circuit Breakers."
2. Division 26 Section "Enclosed Controllers."
3. Division 26 Section "Switchboards."
4. Division 26 Section "Panelboards."

**1.3 SUBMITTALS**

- A. Product Data: For each type of product indicated. Include construction details, material, dimensions, descriptions of individual components, and finishes for spare-fuse cabinets. Include the following for each fuse type indicated:

1. Ambient Temperature Adjustment Information: If ratings of fuses have been adjusted to accommodate ambient temperatures, provide list of fuses with adjusted ratings.
  - a. For each fuse having adjusted ratings, include location of fuse, original fuse rating, local ambient temperature, and adjusted fuse rating.
  - b. Provide manufacturer's technical data on which ambient temperature adjustment calculations are based.
2. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
3. Current-limitation curves for fuses with current-limiting characteristics.





4. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse. Submit on translucent log-log graph paper.
5. Coordination charts and tables and related data.
6. Fuse sizes for elevator feeders and elevator disconnect switches.

B. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals. In addition to items specified in DDC General Conditions, include the following:

1. Ambient temperature adjustment information.
2. Current-limitation curves for fuses with current-limiting characteristics.
3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse. Submit on translucent log-log graph paper.
4. Coordination charts and tables and related data.

#### **1.4 QUALITY ASSURANCE**

- A. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NEMA FU 1 for cartridge fuses.
- D. Comply with NFPA 70.
- E. Comply with UL 248-11 for plug fuses.

#### **1.5 PROJECT CONDITIONS**

- A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F or more than 100 deg F, apply manufacturer's ambient temperature adjustment factors to fuse ratings.

#### **1.6 COORDINATION**

- A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

#### **1.7 EXTRA MATERIALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.



1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Cooper Bussmann, Inc.
  2. Edison Fuse, Inc.
  3. Shawmut, Inc.
  4. Littelfuse, Inc.
  5. Or approved equal.

### **2.2 CARTRIDGE FUSES**

- A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

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### **2.3 PLUG FUSES**

- A. Characteristics: UL 248-11, nonrenewable plug fuses; 125-V ac.

### **2.4 PLUG-FUSE ADAPTERS**

- A. Characteristics: Adapters for using Type S, rejection-base plug fuses in Edison-base fuseholders or sockets; ampere ratings matching fuse ratings; irremovable once installed.

### **2.5 SPARE-FUSE CABINET**

- A. Characteristics: Wall-mounted steel unit with full-length, recessed piano-hinged door and key-coded cam lock and pull.
  1. Size: Adequate for storage of spare fuses specified with 15 percent spare capacity minimum.
  2. Finish: Gray, baked enamel.
  3. Identification: "SPARE FUSES" in 1-1/2-inch- high letters on exterior of door.
  4. Fuse Pullers: For each size of fuse, where applicable and available, from fuse manufacturer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.
- B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.
- C. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.
- D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 FUSE APPLICATIONS

- A. Cartridge Fuses:
  - 1. Fuse selection has been based on characteristics published by Bussman. If fuses by other manufacturer are supplied, coordinate the entire distribution system and submit for evaluation.
  - 2. All fuses shall be current limiting type, rated at 200,000 ampere IC.
  - 3. Dual Element, Time Delay, Maximum Rating: 600 ampere at required voltage.
    - a. Equal to type FA or FB (UL Class RK5).
    - b. Equal to type FC or FD (UL Class RK1).
  - 4. Time Delay Type, Over 600 Ampere: Equal to Type FE (UL Class L).
  - 5. Fast Acting Type:
    - a. Equal to type FF or FG (UL Class RK1) up to 600 ampere.
    - b. Equal to type FH (UL Class L) over 600 ampere.
  - 6. All Fuses: Same manufacturer.
  - 7. For types see SCHEDULES at the end of this Section.
- B. Plug Fuses:
  - 1. Motor Branch Circuits: Edison-base type, dual-element time delay.
  - 2. Other Branch Circuits: Edison-base type, single-element fast acting.

**3.3 INSTALLATION**

- A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.
- B. Install plug-fuse adapters in Edison-base fuseholders and sockets. Ensure that adapters are irremovable once installed.
- C. Install spare-fuse cabinet(s).

**3.4 IDENTIFICATION**

- A. Install labels complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems" and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block, socket, and holder.

**3.5 SCHEDULES (Basis of Design)**

- A. Type FA: Fusetron FRN, 250 volt, 15-600 amp.
- B. Type FB: Fusetron FRS, 600 volt, 15-600 amp.
- C. Type FC: Low-Peak LPN, 250 volt, 15-600 amp.
- D. Type FD: Low-Peak LPS, 600 volt, 15-600 amp.
- E. Type FE: Hi-Cap KRP-C, 600 volt, 601-6000 amp.
- F. Type FF: Limitron KTN, 250 volt, 15-600 amp.
- G. Type FG: Limitron KTS, 600 volt, 15-600 amp.
- H. Type FH: Limitron KTU, 600 volt, 601-6000 amp.

**END OF SECTION 26 28 13**

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**SECTION 26 28 16  
ENCLOSED SWITCHES AND CIRCUIT BREAKERS**

**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. Fusible switches.
2. Nonfusible switches.
3. Toggle switches.
4. Bolted pressure contact switches.
5. Molded-case circuit breakers (MCCBs).
6. Molded-case switches.
7. Enclosures.

B. Related Sections:

1. Division 26 "Identification for Electrical Systems."
2. Division 26 "Switchboards."
3. Division 26 "Panelboards."
4. Division 26 "Fuses."
5. Division 26 "Enclosed Controllers."

**1.3 DEFINITIONS**

- A. NC: Normally closed.
- B. NO: Normally open.
- C. SPDT: Single pole, double throw.

**1.4 PERFORMANCE REQUIREMENTS**

- A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.



1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

## 1.5 SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
  1. Enclosure types and details for types other than NEMA 250, Type 1.
  2. Current and voltage ratings.
  3. Short-circuit current ratings (interrupting and withstand, as appropriate).
  4. Include evidence of NRTL listing for series rating of installed devices.
  5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
  6. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device. Submit on translucent log-log graph paper.
- B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.
  1. Wiring Diagrams: For power, signal, and control wiring.
- C. Qualification Data: For qualified testing agency.
- D. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.
  1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- E. Field quality-control reports.
  1. Test procedures used.
  2. Test results that comply with requirements.
  3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- F. Manufacturer's field service report.
- G. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in DDC General Conditions, include the following:



1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.
2. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device. Submit on translucent log-log graph paper.

## 1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
    1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.
  - B. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.
  - C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.
  - D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- 
- E. Comply with NFPA 70.

## 1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
  1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.
  2. Altitude: Not exceeding 6600 feet.
- B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by the City of New York or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:
  1. Notify Commissioner and City of New York no fewer than 10 working days in advance of proposed interruption of electric service.
  2. Indicate method of providing temporary electric service.
  3. Do not proceed with interruption of electric service without Commissioner and City of New York written permission.
  4. Comply with NFPA 70E.



## 1.8 COORDINATION

- A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

## 1.9 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Fuses: Spares Equal to 6 percent of quantity installed for each size and type.
  - 2. Fuse Pullers: Two for each size and type.

## PART 2 - PRODUCTS

### 2.1 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Eaton Electrical Inc.; Cutler-Hammer .
  - 2. General Electric Company.
  - 3. Siemens Energy & Automation, Inc.
  - 4. Square D; a brand of Schneider Electric.
  - 5. Or approved equal.
- B. Type HD, Heavy Duty, Single Throw, 600-V AC, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
  - 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
  - 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
  - 3. Isolated Ground Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
  - 4. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
  - 5. Auxiliary Contact Kit: Two NO/NC (Form "C") auxiliary contacts, arranged to activate before switch blades open.
  - 6. Hookstick Handle: Allows use of a hookstick to operate the handle.
  - 7. Lugs: Mechanical type, suitable for number, size, and conductor material.



## 2.2 NONFUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer.
  2. General Electric Company.
  3. Siemens Energy & Automation, Inc.
  4. Square D; a brand of Schneider Electric.
  5. Or approved equal.
- B. Type HD, Heavy Duty, Single Throw, 600-V AC, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
  2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
  3. Isolated Ground Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
  4. Auxiliary Contact Kit: Two NO/NC (Form "C") auxiliary contacts, arranged to activate before-switch-blades-open.
  5. Hookstick Handle: Allows use of a hookstick to operate the handle.
  6. Lugs: Compression type, suitable for number, size, and conductor material.

## 2.3 TOGGLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer.
  2. General Electric Company.
  3. Siemens Energy & Automation, Inc.
  4. Square D; a brand of Schneider Electric.
  5. Or approved equal.
- B. Non-fused, load break, horsepower rated, maximum rated.
1. Two-Pole: 20 ampere at 240 volt and 480 volt, GE TC 228 or equal.
  2. Three-Pole: 30 ampere at 240 volt and 20 ampere at 600 volt, GE TC 2868 or equal.

## 2.4 BOLTED PRESSURE CONTACT SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  2. Pringle Electrical Manufacturing Company, Inc.
  3. Siemens Energy & Automation, Inc.
  4. Square D; a brand of Schneider Electric.
  5. Or approved equal.
- B. Main-Contact Interrupting Capability: Minimum of 12 times the switch current rating.
- C. Operating Mechanism: Manual handle operation to close switch; stores energy in mechanism for opening and closing.
1. Electric Trip: Operation of lever or push-button trip switch, or trip signal from ground-fault relay or remote-control device, causes switch to open.
  2. Mechanical Trip: Operation of mechanical lever, push button, or other device causes switch to open.
- D. Auxiliary Switches: Factory installed, single pole, double throw, with leads connected to terminal block, and including one set more than quantity required for functional performance indicated.
- E. 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 current 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).
- F. Open-Fuse Trip Device: Arranged to trip switch open if a phase fuse opens.

## **2.5 MOLDED-CASE CIRCUIT BREAKERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer.
  2. General Electric Company.
  3. Siemens Energy & Automation, Inc.
  4. Square D; a brand of Schneider Electric.
  5. Or approved equal.
- B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.



- C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 400A and larger.
- D. Adjustable, Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
- E. 400A and Above Shall be Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with 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.
- F. Integrally Fused Circuit Breakers: Thermal-magnetic trip element with integral limiter-style fuse listed for use with circuit breaker and trip activation on fuse opening or on opening of fuse compartment door.
- G. Ground-Fault, Equipment-Protection (GFEP) Circuit Breakers: With Class B ground-fault protection (30-mA trip).
- H. Features and Accessories:
  - 1. ~~Standard frame sizes, trip ratings, and number of poles.~~
  - 2. Lugs: Compression type, suitable for number, size, trip ratings, and conductor material.
  - 3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
  - 4. Ground-Fault Protection: Comply with UL 1053; integrally mounted, self-powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
  - 5. Shunt Trip: Trip coil energized from separate circuit, with coil-clearing contact.
  - 6. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
  - 7. Auxiliary Contacts: Two SPDT switches with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
  - 8. Alarm Switch: One NO contact that operates only when circuit breaker has tripped.
  - 9. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.
  - 10. Zone-Selective Interlocking: Integral with ground-fault trip unit; for interlocking ground-fault protection function.
  - 11. Electrical Operator: Provide remote control for on, off, and reset operations.

## 2.6 MOLDED-CASE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



1. Eaton Electrical Inc.; Cutler-Hammer.
  2. General Electric Company.
  3. Siemens Energy & Automation, Inc.
  4. Square D; a brand of Schneider Electric.
  5. Or approved equal.
- B. General Requirements: MCCB with fixed, high-set instantaneous trip only, and short-circuit withstand rating equal to equivalent breaker frame size interrupting rating.
- C. Features and Accessories:
1. Standard frame sizes and number of poles.
  2. Lugs: Compression type, suitable for number, size, trip ratings, and conductor material.
  3. Ground-Fault Protection: Comply with UL 1053; remote-mounted and powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
  4. Shunt Trip: Trip coil energized from separate circuit, with coil-clearing contact.
  5. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
  6. Auxiliary Contacts: Two SPDT switches with "a" and "b" contacts; "a" contacts mimic switch contacts, "b" contacts operate in reverse of switch contacts.
  7. Alarm Switch: One NO contact that operates only when switch has tripped.
  8. Key Interlock Kit: Externally mounted to prohibit switch operation; key shall be removable only when switch is in off position.
  9. Zone-Selective Interlocking: Integral with ground-fault shunt trip unit; for interlocking ground-fault protection function.
  10. Electrical Operator: Provide remote control for on, off, and reset operations.

## 2.7 ENCLOSURES

- A. All enclosed disconnect switches and circuit breakers shall have NEMA 1 general purpose enclosures unless otherwise noted. Provide enclosures suitable for locations as indicated on the drawings and as described below.
1. NEMA 1 surface or flush-mounted general purpose enclosures primarily intended for indoor use.
  2. NEMA 3R raintight enclosures intended for outdoor use primarily to provide against rain, sleet, and damage from external ice formation.
- B. All enclosed disconnect switches and circuit breakers shall have nameplates, front cover mounted, that contain a permanent record of catalog number and maximum rating, provide handle mechanisms that are padlockable in the OFF position.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 INSTALLATION**

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Comply with mounting and anchoring requirements.
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- D. Install fuses in fusible devices.
- E. Comply with NECA 1.

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**3.3 IDENTIFICATION**

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."
  - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
  - 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

**3.4 FIELD QUALITY CONTROL**

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Acceptance Testing Preparation:
  - 1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
  - 2. Test continuity of each circuit.



D. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
3. Perform the following infrared scan tests and inspections and prepare reports:
  - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each enclosed switch and circuit breaker. Remove front panels so joints and connections are accessible to portable scanner.
  - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each enclosed switch and circuit breaker 11 months after date of Substantial Completion.
  - c. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

E. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

**3.5 ADJUSTING**

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit-breaker trip ranges as specified in Division 26 Section "Enclosed Switches and Circuit Breakers".

**3.6 SCHEDULES**

A. Interrupting Capacities (AMP): RMS Symmetrical, unless otherwise indicated on drawings.

1. Power Type: 240 volts AC, 3 pole.

<b>Frame (amps)</b>	<b>Interrupting Capacity</b>	<b>Short Time Rating</b>
250	65,000	25,000
800	65,000	25,000
1,600	85,000	35,000



3,000	100,000	35,000
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- a. 240 volts AC, 2 or 3 pole, thermal magnetic type.

Frame (amps)	Interrupting Capacity
225	25,000
400	42,000
H100	65,000
H250	65,000
H400	65,000

- b. 240 volts AC, 2 or 3 pole, solid state type.

Frame (amps)	Interrupting Capacity
600	42,000
800	42,000
1,200	42,000
3,000	125,000
H600	65,000
H800	65,000
H1,200	65,000

- c. Combination molded case circuit breaker and current limiting fuses: 2 or 3 pole.

Frame (amps)	Interrupting Capacity
100	200,000
400	200,000
800	200,000
1,600	200,000

END OF SECTION 26 28 16





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**SECTION 26 29 13**  
**ENCLOSED 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 SUMMARY**

- A. This Section includes the following enclosed controllers rated 600 V and less
1. Full-voltage manual.
  2. Full-voltage magnetic.
  3. Reduced-voltage magnetic,
  4. Reduced-voltage solid state.
  5. Multi speed.
- ~~B. Motor starters and disconnects shall be furnished under the Electrical Contract except where specifically shown or specified to be furnished by other trades. Motor starters and disconnects shall be manufactured and rated in accordance with NEMA, UL and IEEE standards. IEC RATED CONTACTORS AND OVERLOADS ARE NOT ACCEPTABLE.~~
- C. All motor starters shall be rated for the available fault current at the point of application.
- D. Related Sections include the following:
1. Division 26 Section "Enclosed Switches and Circuit Breakers."
  2. Division 26 Section "Fuses."

**1.3 DEFINITIONS**

- A. CPT: Control power transformer.
- B. MCCB: Molded-case circuit breaker.
- C. MCP: Motor circuit protector.
- D. N.C.: Normally closed.
- E. N.O.: Normally open.
- F. OCPD: Overcurrent protective device.

- G. SCR: Silicon-controlled rectifier.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Enclosed controllers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

#### 1.5 SUBMITTALS

- A. Product Data: For each type of enclosed controller, include dimensions and manufacturer's technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each enclosed controller, include dimensioned plans, elevations, sections, and details, including required clearances and service space around controller enclosure.
1. Show tabulations of installed devices, equipment features, and ratings. Include the following:
    - a. Each installed unit's type and details.
    - b. Factory installed devices.
    - c. Nameplate legends.
    - d. Short-circuit current rating of integrated unit.
    - e. Listed and labeled for integrated short-circuit current (withstand) rating of overcurrent protective devices in combination controllers by an NRTL.
    - f. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices in combination controllers.
  2. Wiring Diagrams: Power, signal, and control wiring.
- C. Qualification Data: For qualified testing agency.
- D. Coordination Drawings: Floor plans, drawn to scale, showing dimensioned layout, required working clearances, and required area above and around enclosed controllers where pipe and ducts are prohibited. Show enclosed controller layout and relationships between electrical components and adjacent structural and mechanical elements. Show support locations, type of support, and weight on each support. Indicate field measurements.
- E. Manufacturer Seismic Qualification Certification: Submit certification that enclosed controllers, accessories, and components will withstand seismic forces. Include the following:
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."



2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- F. Qualification Data: For testing agency.
- G. Field quality-control test reports.
- H. Operation and Maintenance Data: For enclosed controllers to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section DDC General Conditions, include the following:
1. Routine maintenance requirements for enclosed controllers and all installed components.
  2. Manufacturer's written instructions for testing and adjusting circuit breaker and MCP trip settings.
  3. Manufacturer's written instructions for setting field-adjustable overload relays.
  4. Manufacturer's written instructions for testing, adjusting, and reprogramming reduced-voltage solid-state controllers.
- I. Load-Current and Overload-Relay Heater List: Compile after motors have been installed and arrange to demonstrate that selection of heaters suits actual motor nameplate full-load currents.

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## 1.6 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** A qualified manufacturer. Maintain, within proximity of Project site, a service center capable of providing instruction, parts, and emergency maintenance and repairs.
- B. **Testing Agency Qualifications:** An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association, NETA, or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.
1. **Testing Agency's Field Supervisor:** Person currently certified by the InterNational Electrical Testing Association, NETA, or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- C. **Source Limitations:** Obtain enclosed controllers of a single type through one 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 and marked for intended use.
- E. Comply with NFPA 70.
- F. **Product Selection for Restricted Space:** Drawings indicate maximum dimensions for enclosed controllers, minimum clearances between enclosed controllers, and for adjacent surfaces and other items. Comply with indicated maximum dimensions and clearances.

- G. IEEE Compliance: Fabricate and test enclosed controllers according to IEEE 344 to withstand seismic forces.

### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. If stored in areas subject to weather, cover enclosed controllers to protect them from weather, dirt, dust, corrosive substances, and physical damage. Remove loose packing and flammable materials from inside controllers; install temporary electric heating, with at least 250 W per controller to prevent condensation.

### 1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:

1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.
2. Altitude: Not exceeding 6600 feet.

- B. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Commissioner and City of New York no fewer than 10 working days in advance of proposed interruption of electrical service.
2. Indicate method of providing temporary utilities.
3. Do not proceed with interruption of electrical service without Commissioner and City of New York written permission.
4. Comply with NFPA 70E.

### 1.9 COORDINATION

- A. Coordinate layout and installation of enclosed controllers with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate size and location of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section "Concrete Work."
- C. Coordinate installation of roof curbs, equipment supports, and roof penetrations.
- D. Coordinate features of enclosed controllers and accessory devices with pilot devices and control circuits to which they connect.
- E. Coordinate features, accessories, and functions of each enclosed controller with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.



**1.10 EXTRA MATERIALS**

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Circuit Breakers: Furnish one of each type installed.
  2. Fuses for Fused Switches: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
  3. Control Power Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.
  4. Indicating Lights: Two of each type and color installed.
  5. Auxiliary Contacts: Furnish one spare for each size and type of magnetic controller installed.
  6. Power Contacts: Furnish three spares for each size and type of magnetic contactor installed.

**PART 2 - PRODUCTS**

**2.1 FULL-VOLTAGE CONTROLLERS**

- A. General Requirements for Full-Voltage Controllers: Comply with NEMA ICS 2, general purpose, Class A.
- ~~B. Motor-Starting Switches: "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off or on.~~
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
    - b. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
    - c. Rockwell Automation, Inc.; Allen-Bradley brand.
    - d. Siemens Energy & Automation, Inc.
    - e. Square D; a brand of Schneider Electric.
    - f. Or approved equal.
  2. Configuration: Nonreversing.
  3. Surface mounting.
  4. Red pilot light.
- C. Fractional Horsepower Manual Controllers: "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off, on, or tripped.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
    - b. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
    - c. Rockwell Automation, Inc.; Allen-Bradley brand.



- d. Siemens Energy & Automation, Inc.
  - e. Square D; a brand of Schneider Electric.
  - f. Or approved equal.
2. Configuration: Nonreversing.
  3. Overload Relays: Inverse-time-current characteristics; NEMA ICS 2, Class 10 tripping characteristics; heaters matched to nameplate full-load current of actual protected motor; external reset push button; bimetallic type.
  4. Surface mounting.
  5. Red pilot light.
- D. Magnetic Controllers: Full voltage, across the line, electrically held.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
    - b. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
    - c. Rockwell Automation, Inc.; Allen-Bradley brand.
    - d. Siemens Energy & Automation, Inc.
    - e. Square D; a brand of Schneider Electric.
    - f. Or approved equal.
  2. Configuration: Nonreversing.
  3. Contactor Coils: Pressure-encapsulated type with coil transient suppressors.
    - a. Operating Voltage: Depending on contactor NEMA size and line-voltage rating, manufacturer's standard matching control power or line voltage.
  4. Power Contacts: Totally enclosed, double-break, silver-cadmium oxide; assembled to allow inspection and replacement without disturbing line or load wiring.
  5. Control Circuits: 120-V ac; obtained from integral CPT, with primary and secondary fuses, with CPT of sufficient capacity to operate integral devices and remotely located pilot, indicating, and control devices.
    - a. CPT Spare Capacity: 50 VA.
  6. Bimetallic Overload Relays:
    - a. Inverse-time-current characteristic.
    - b. Class 10 tripping characteristic.
    - c. Heaters in each phase matched to nameplate full-load current of actual protected motor and with appropriate adjustment for duty cycle.
    - d. Ambient compensated.
    - e. Automatic resetting.
  7. N.O., isolated overload alarm contact.
  8. External overload reset push button.



- E. Combination Magnetic Controller: Factory-assembled combination of magnetic controller, OCPD, and disconnecting means.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
    - b. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
    - c. Rockwell Automation, Inc.; Allen-Bradley brand.
    - d. Siemens Energy & Automation, Inc.
    - e. Square D; a brand of Schneider Electric.
    - f. Or approved equal.
  2. Fusible Disconnecting Means:
    - a. NEMA KS 1, heavy-duty, horsepower-rated, fusible switch with clips or bolt pads to accommodate indicated fuses.
    - b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.
    - c. Auxiliary Contacts: N.O./N.C., arranged to activate before switch blades open.
  3. Nonfusible Disconnecting Means:
    - a. NEMA KS 1, heavy-duty, horsepower-rated, nonfusible switch.
    - b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.
    - c. Auxiliary Contacts: N.O./N.C., arranged to activate before switch blades open.
  4. MCP Disconnecting Means:
    - a. UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents, instantaneous-only circuit breaker with front-mounted, field-adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
    - b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.
    - c. Auxiliary contacts "a" and "b" arranged to activate with MCP handle.
    - d. N.O. alarm contact that operates only when MCP has tripped.
    - e. Current-limiting module to increase controller short-circuit current (withstand) rating to 100 kA.

## 2.2 REDUCED-VOLTAGE MAGNETIC CONTROLLERS

- A. General Requirements for Reduced-Voltage Magnetic Controllers: Comply with NEMA ICS 2, general purpose, Class A; closed-transition; adjustable time delay on transition.
- B. Reduced-Voltage Magnetic Controllers: Reduced voltage, electrically held.





1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
    - b. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
    - c. Rockwell Automation, Inc.; Allen-Bradley brand.
    - d. Siemens Energy & Automation, Inc.
    - e. Square D; a brand of Schneider Electric.
    - f. Or approved equal.
  
  2. Configuration:
    - a. Wye-Delta Controller: Four contactors, with a three-phase starting resistor/reactor bank.
    - b. Part-Winding Controller: Separate START and RUN contactors, field-selectable for 1/2- or 2/3-winding start mode, with either six- or nine-lead motors; with separate overload relays for starting and running sequences.
    - c. Autotransformer Reduced-Voltage Controller: Medium-duty service, with integral overtemperature protection; taps for starting at 50, 65, and 80 percent of line voltage; two START and one RUN contactors.
  
  3. Contactor Coils: Pressure-encapsulated type with coil transient suppressors.
    - a. Operating Voltage: Depending on contactor NEMA size and line-voltage rating, manufacturer's standard matching control power or line voltage.
  
  4. Power Contacts: Totally enclosed, double-break, silver-cadmium oxide; assembled to allow inspection and replacement without disturbing line or load wiring.
  5. Control Circuits: 120-V ac; obtained from integral CPT, with primary and secondary fuses, with CPT of sufficient capacity to operate integral devices and remotely located pilot, indicating, and control devices.
    - a. CPT Spare Capacity: 50 VA.
  
  6. Bimetallic Overload Relays:
    - a. Inverse-time-current characteristic.
    - b. Class 10 tripping characteristic.
    - c. Heaters in each phase matched to nameplate full-load current of actual protected motor and with appropriate adjustment for duty cycle.
    - d. Ambient compensated.
    - e. Automatic resetting.
  
  7. N.O., isolated overload alarm contact.
  8. External overload reset push button.
- C. Combination Reduced-Voltage Magnetic Controller: Factory-assembled combination of reduced-voltage magnetic controller, OCPD, and disconnecting means.



1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  - b. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
  - c. Rockwell Automation, Inc.; Allen-Bradley brand.
  - d. Siemens Energy & Automation, Inc.
  - e. Square D; a brand of Schneider Electric.
  - f. Or approved equal.
  
2. Fusible Disconnecting Means:
  - a. NEMA KS 1, heavy-duty, horsepower-rated, fusible switch with clips or bolt pads to accommodate indicated fuses.
  - b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.
  - c. Auxiliary Contacts: N.O./N.C., arranged to activate before switch blades open.
  
3. Nonfusible Disconnecting Means:
  - a. NEMA KS 1, heavy-duty, horsepower-rated, nonfusible switch.
  - b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.
  - c. Auxiliary Contacts: N.O./N.C., arranged to activate before switch blades open.

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4. MCP Disconnecting Means:
  - a. UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents, instantaneous-only circuit breaker with front-mounted, field-adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
  - b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.
  - c. Auxiliary contacts "a" and "b" arranged to activate with MCP handle.
  - d. N.O. alarm contact that operates only when MCP has tripped.
  - e. Current-limiting module to increase controller short-circuit current (withstand) rating to 100 kA.

### 2.3 MULTISPEED MAGNETIC CONTROLLERS

- A. General Requirements for Multispeed Magnetic Controllers: Comply with NEMA ICS 2, general purpose, Class A.
  
- B. Multispeed Magnetic Controllers: Two speed, full voltage, across the line, electrically held.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Eaton Electrical Inc.; Cutler-Hammer Business Unit.



- b. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
  - c. Rockwell Automation, Inc.; Allen-Bradley brand.
  - d. Siemens Energy & Automation, Inc.
  - e. Square D; a brand of Schneider Electric.
  - f. Or approved equal.
2. Configuration: Nonreversing; two winding.
  3. Contactor Coils: Pressure-encapsulated type with coil transient suppressors.
    - a. Operating Voltage: Depending on contactor NEMA size and line-voltage rating, manufacturer's standard matching control power or line voltage.
  4. Power Contacts: Totally enclosed, double break, silver-cadmium oxide; assembled to allow inspection and replacement without disturbing line or load wiring.
  5. Control Circuits: 24-V ac; obtained from integral CPT, with primary and secondary fuses, with CPT of sufficient capacity to operate integral devices and remotely located pilot, indicating, and control devices.
    - a. CPT Spare Capacity: 50 VA.
  6. Compelling relays shall ensure that motor will start only at low speed.
  7. Accelerating timer relays shall ensure properly timed acceleration through speeds lower than that selected.
  8. Decelerating timer relays shall ensure automatically timed deceleration through each speed.
  9. Antiplugging timer relays shall ensure a time delay when transferring from FORWARD to REVERSE and back.
  10. Bimetallic Overload Relays:
    - a. Inverse-time-current characteristic.
    - b. Class 10 tripping characteristic.
    - c. Heaters in each phase matched to nameplate full-load current of actual protected motor and with appropriate adjustment for duty cycle.
    - d. Ambient compensated.
    - e. Automatic resetting.
  11. N.O., isolated overload alarm contact.
  12. External overload reset push button.
- C. Combination Multispeed Magnetic Controller: Factory-assembled combination of reduced-voltage magnetic controller, OCPD, and disconnecting means.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
    - b. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
    - c. Rockwell Automation, Inc.; Allen-Bradley brand.
    - d. Siemens Energy & Automation, Inc.



- e. Square D; a brand of Schneider Electric.
  - f. Or approved equal.
2. Fusible Disconnecting Means:
- a. NEMA KS 1, heavy-duty, horsepower-rated, fusible switch with clips or bolt pads to accommodate indicated fuses.
  - b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.
  - c. Auxiliary Contacts: N.O./N.C., arranged to activate before switch blades open.
3. Nonfusible Disconnecting Means:
- a. NEMA KS 1, heavy-duty, horsepower-rated, nonfusible switch.
  - b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.
  - c. Auxiliary Contacts: N.O./N.C., arranged to activate before switch blades open.
4. MCP Disconnecting Means:
- a. UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents, instantaneous-only circuit breaker with front-mounted, field-adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
  - b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.
  - c. Auxiliary contacts "a" and "b" arranged to activate with MCP handle.
  - d. N.O. alarm contact that operates only when MCP has tripped.
  - e. Current-limiting module to increase controller short-circuit current (withstand) rating to 100 kA.

## 2.4 ENCLOSURES

- A. Enclosed Controllers: NEMA ICS 6, to comply with environmental conditions at installed location.
- 1. Dry and Clean Indoor Locations: Type 1.
  - 2. Outdoor Locations: Type 3R.

## 2.5 ACCESSORIES

- A. A HAND-OFF-AUTO selector switch shall be mounted in the face of each starter enclosure. The selector switch shall be so wired that when it is in the HAND or AUTO position, all SAFETY controls are wired in series with the selector switch. All CONTROL DEVICES shall be wired in the AUTO position only.
- B. Each starter enclosure shall have a suitable 120 Volt secondary control transformer fused separately on each phase of the primary and secondary, and grounded on the secondary.



- C. Each starter shall have a push to test transformer type red pilot light mounted in the face of the starter enclosure. The pilot light shall be wired so it will be on when the motor is energized.
- D. Magnetic starters shall be furnished for motors, one half (1/2) horsepower and greater or any 3 phase motor, unless indicated otherwise on plan.
- E. Provide adjustable 0 to 60 second "on" time delay relay on starters where indicated on drawings and wire into the "auto" position of the selector switch to delay motor starting.
- F. Provide adjustable phase failure-reversal and under voltage relay protection on all motor starters NEMA size 3 and larger. Wire ahead of the H-O-A switch.
- G. Manual starters with thermal overload protection shall be furnished for fractional horsepower; single-phase motors unless otherwise noted and shall be Bulletin 600 with a pilot light, flush mounted in finished areas.
- H. General Requirements for Control Circuit and Pilot Devices: NEMA ICS 5; factory installed in controller enclosure cover unless otherwise indicated.
  - 1. Elapsed Time Meters: Heavy duty with digital readout in hours; resettable.
  - 2. Meters: Panel type, 2-1/2-inch minimum size with 90- or 120-degree scale and plus or minus two percent accuracy. Where indicated, provide selector switches with an off position.
- I. Reversible N.C./N.O. auxiliary contact(s).
- J. Control Relays: Auxiliary and adjustable solid-state time-delay relays.
- K. Phase-Failure, Phase-Reversal, and Undervoltage and Overvoltage Relays: Solid-state sensing circuit with isolated output contacts for hard-wired connections. Provide adjustable undervoltage, overvoltage, and time-delay settings.
- L. Space heaters, with N.C. auxiliary contacts, to mitigate condensation in Type 3R enclosures installed outdoors or in unconditioned interior spaces subject to humidity and temperature swings.
- M. Sun shields installed on fronts, sides, and tops of enclosures installed outdoors and subject to direct and extended sun exposure.
- N. Cover gaskets for Type 1 enclosures.

## 2.6 FACTORY FINISHES

- A. Finish: Manufacturer's standard gray color paint applied to factory-assembled and -tested enclosed controllers before shipping.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine enclosed controllers before installation. Reject enclosed controllers that are wet, moisture damaged, or mold damaged.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 INSTALLATION**

- A. Wall-Mounted Controllers: Install enclosed controllers on walls with tops at uniform height unless otherwise indicated, and by bolting units to wall or mounting on lightweight structural-steel channels bolted to wall. For controllers not at walls, provide freestanding racks complying with Division 26 Section "Hangers and Supports for Electrical Systems."
- B. Floor-Mounted Controllers: Install enclosed controllers on 4-inch nominal-thickness concrete base. Comply with requirements for concrete base specified in Division 03 Section "Concrete Work."
  - 1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
  - 2. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
  - 3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 4. Install anchor bolts to elevations required for proper attachment to supported equipment.
- C. Seismic Bracing: Comply with requirements specified.
- D. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- E. Install fuses in each fusible-switch enclosed controller.
- F. Install fuses in control circuits if not factory installed. Comply with requirements in Division 26 Section "Fuses."
- G. Install heaters in thermal overload relays. Select heaters based on actual nameplate full-load amperes after motors have been installed.
- H. Install, connect, and fuse thermal-protector monitoring relays furnished with motor-driven equipment.
- I. Comply with NECA 1.

### 3.3 CONCRETE BASES

- A. Coordinate size and location of concrete bases. Verify structural requirements with Commissioner.
- B. Concrete base is specified in Division 26 Section "Hangers and Supports for Electrical Systems," and concrete materials and installation requirements are specified in Division 03.

### 3.4 IDENTIFICATION

- A. Identify enclosed controllers, components, and control wiring. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
  - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
  - 2. Label each enclosure with engraved nameplate.
  - 3. Label each enclosure-mounted control and pilot device.

### 3.5 CONTROL WIRING INSTALLATION

- A. Install wiring between enclosed controllers and remote devices and facility's central control system.
- B. Bundle, train, and support wiring in enclosures.
- C. Connect hand-off-automatic switch and other automatic-control devices where applicable.
  - 1. Connect selector switches to bypass only those manual- and automatic-control devices that have no safety functions when switch is in manual-control position.
  - 2. Connect selector switches with enclosed controller circuit in both hand and automatic positions for safety-type control devices such as low- and high-pressure cutouts, high-temperature cutouts, and motor overload protectors.

### 3.6 CONNECTIONS

- A. Conduit installation requirements are specified in other Division 26 Sections. Drawings indicate general arrangement of conduit, fittings, and specialties.
- B. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

### 3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.



1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Acceptance Testing Preparation:
1. Test insulation resistance for each enclosed controller, component, connecting supply, feeder, and control circuit.
  2. Test continuity of each circuit.
- D. Tests and Inspections:
1. Inspect controllers, wiring, components, connections, and equipment installation. Test and adjust controllers, components, and equipment.
  2. Test insulation resistance for each enclosed-controller element, component, connecting motor supply, feeder, and control circuits.
  3. Test continuity of each circuit.
  4. Verify that voltages at controller locations are within plus or minus 10 percent of motor nameplate rated voltages. If outside this range for any motor, notify Construction Manager and the City of New York before starting the motor(s).
  5. Test each motor for proper phase rotation.
  6. Perform each electrical test and visual and mechanical inspection stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  7. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  8. Perform the following infrared (thermographic) scan tests and inspections and prepare reports:
    - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each multi-pole enclosed controller. Remove front panels so joints and connections are accessible to portable scanner.
    - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each multi-pole enclosed controller 11 months after date of Substantial Completion.
    - c. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
  9. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Enclosed controllers will be considered defective if they do not pass tests and inspections.
- F. Prepare test and inspection reports including a certified report that identifies enclosed controllers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.





**3.8 ADJUSTING**

- A. Set field-adjustable switches, auxiliary relays, time-delay relays, timers, and overload-relay pickup and trip ranges.
- B. Adjust overload-relay heaters or settings if power factor correction capacitors are connected to the load side of the overload relays.
- C. Adjust the trip settings of MCPs and thermal-magnetic circuit breakers with adjustable instantaneous trip elements. Initially adjust to six times the motor nameplate full-load ampere ratings and attempt to start motors several times, allowing for motor cooldown between starts. If tripping occurs on motor inrush, adjust settings in increments until motors start without tripping. Do not exceed eight times the motor full-load amperes (or 11 times for NEMA Premium Efficient motors if required). Where these maximum settings do not allow starting of a motor, notify Commissioner and City of New York before increasing settings.
- D. Set the taps on reduced-voltage autotransformer controllers at 50 percent.
- E. Set field-adjustable switches and program microprocessors for required start and stop sequences in reduced-voltage solid-state controllers.
- F. Set field-adjustable circuit-breaker trip ranges as specified in Division 26 Section "Enclosed Switches and Circuit Breakers."

**3.9 PROTECTION**

- A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions until enclosed controllers are ready to be energized and placed into service.
- B. Replace controllers whose interiors have been exposed to water or other liquids prior to Substantial Completion.

**3.10 DEMONSTRATION**

- A. Engage a factory-authorized service representative to instruct the City of New York's maintenance personnel to adjust, operate, and maintain enclosed controllers, and to use and reprogram microprocessor-based, reduced-voltage solid-state controllers.

**END OF SECTION 26 29 13**



**SECTION 26 32 13  
ENGINE GENERATORS**

**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 packaged engine-generator sets for emergency power supply with the following features:
1. Diesel engine.
  2. Unit-mounted cooling system.
  3. Unit-mounted control and monitoring.
  4. Performance requirements for sensitive loads.

- 
- B. Related Sections include the following:

1. Section 263600 "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

**1.3 DEFINITIONS**

- A. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.
- B. LP: Liquid petroleum.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the following:
1. Thermal damage curve for generator.
  2. Time-current characteristic curves for generator protective device.

- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
1. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
  2. Design Calculations: Signed and sealed by a qualified and licensed in the State of New York. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
  3. Vibration Isolation Base Details: Signed and sealed by a qualified Professional engineer licensed in the State of New York. Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.
  4. Wiring Diagrams: Power, signal, and control wiring.

### 1.5 INFORMATIONAL SUBMITTALS

- A. Manufacturer Seismic Qualification Certification: Submit certification that Tank, engine-generator set, batteries, battery racks, accessories, and components will withstand seismic forces at the project location. Include the following:
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
  2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- B. Qualification Data: For installer.
- C. Source quality-control test reports.
1. Certified summary of prototype-unit test report.
  2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
  3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
  4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
  5. Report of sound generation.
  6. Report of exhaust emissions showing compliance with applicable regulations.
  7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.
- D. Field quality-control test reports.
- E. Warranty: Special warranty specified in this Section.



## 1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in DDC General Conditions, include the following:
1. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.

## 1.7 EXTRA MATERIAL SUBMITTALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Fuses: One for every 10 of each type and rating, but no fewer than one of each.
  2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
  3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.

## 1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Properly trained by manufacturer for installation of units required for this Project.
- 
1. Service Proximity: Within proximity from Installer's place of business to Project site.
  2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints of engine skid mounts, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Manufacturer Qualifications: A qualified manufacturer. Maintain, within proximity of Project site, a service center capable of providing instruction, parts, and emergency maintenance repairs.
- C. Source Limitations: Obtain packaged generator sets and auxiliary components through one 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 and marked for intended use.
- E. Comply with ASME B15.1.
- F. Comply with NFPA 37.
- G. Comply with NFPA 70.
- H. Comply with NFPA 110 requirements for Level 1 emergency power supply system.
- I. Comply with UL 2200.

- J. Engine Exhaust Emissions: Comply with applicable state and local government requirements.
- K. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at the police precinct building due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

### 1.9 PROJECT CONDITIONS

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by the City of New York or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
  - 1. Notify the City of New York no fewer than two days in advance of proposed interruption of electrical service.
  - 2. Do not proceed with interruption of electrical service without the City of New York's written permission.
- B. Environmental Conditions: Engine-generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:
  - 1. Ambient Temperature: 5 to 40 deg F
  - 2. Relative Humidity: 0 to 95 percent.
  - 3. Altitude: Sea level to 1000 feet.
- C. Unusual Service Conditions: Engine-generator equipment and installation are required to operate under the following conditions:
  - 1. High salt-dust content in the air due to sea-spray evaporation.

### 1.10 COORDINATION

- A. Coordinate size and location of concrete bases for package engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

### 1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Two(2) years from date of Substantial Completion.



**1.12 WARRANTY SERVICE**

- A. Initial Warranty Service: Beginning at Substantial Completion, provide 12 months' full service by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive inspection 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.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Caterpillar C9 generator or a comparable product by one of the following:
- B. Kohler
- C. Cummins
- D. Approved Equal

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**2.2 ENGINE-GENERATOR SET**

- A. Factory-assembled and -tested, engine-generator set.
- B. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.
1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.
- C. Capacities and Characteristics:
1. Power Output Ratings: Nominal ratings as indicated.
2. Output Connections: Three-phase, four wire.
3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.
- D. Generator-Set Performance:
1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.



3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time: Comply with NFPA 110, Type 10, system requirements.

**E. Generator-Set Performance for Sensitive Loads:**

1. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.
  - a. Nameplate Data for Oversized Generator: Show ratings required by the Contract Documents rather than ratings that would normally be applied to generator size installed.
2. Steady-State Voltage Operational Bandwidth: 1 percent of rated output voltage from no load to full load.
3. Transient Voltage Performance: Not more than 10 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within 0.5 second.
4. Steady-State Frequency Operational Bandwidth: Plus or minus 0.25 percent of rated frequency from no load to full load.
5. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
6. Transient Frequency Performance: Less than 2-Hz variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within three seconds.
7. Output Waveform: At no load, harmonic content measured line to neutral shall not exceed 2 percent total with no slot ripple. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
8. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to winding insulation or other generator system components.
9. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.
  - a. Provide permanent magnet excitation for power source to voltage regulator.



10. Start Time: Comply with NFPA 110, Type 10, system requirements.

### 2.3 ENGINE

- A. Fuel: Fuel oil, Grade DF-2.
- B. Rated Engine Speed: 1800 rpm.
- C. Maximum Piston Speed for Four-Cycle Engines: 2250 fpm.
- D. Lubrication System: The following items are mounted on engine or skid:
  1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
  2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
  3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.
- E. Engine Fuel System:
  1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting-and-load-conditions.
  2. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.
- F. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level I equipment for heater capacity.
- G. Governor: Adjustable isochronous, with speed sensing.
- H. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.
  1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
  2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
  3. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
  4. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.
    - a. Rating: 50-psig maximum working pressure with coolant at 180 deg F, and noncollapsible under vacuum.
    - b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.





- I. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.
  1. Minimum sound attenuation of 25 dB at 500 Hz.
  2. Sound level measured at a distance of 10 feet from exhaust discharge after installation is complete shall be 85 dBA or less.
  
- J. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.
  
- K. Starting System: 24-V electric, with negative ground.
  1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
  2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
  3. Cranking Cycle: As required by NFPA 110 for system level specified.
  4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide specified cranking cycle at least three times without recharging.
  5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
  6. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
  7. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:
    - a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
    - b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 deg C to plus 60 deg C to prevent overcharging at high temperatures and undercharging at low temperatures.
    - c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
    - d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
    - e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
    - f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

## **2.4 FUEL OIL STORAGE**

- A. Comply with NFPA 30.



- B. Day Tank: Comply with UL 142, freestanding, factory-fabricated fuel tank assembly, with integral, float-controlled transfer pump and the following features:
1. Containment: Integral rupture basin with a capacity of 150 percent of nominal capacity of day tank.
    - a. Leak Detector: Locate in rupture basin and connect to provide audible and visual alarm in the event of day-tank leak.
  2. Tank Capacity: Fuel for 72 hours continuous operation at 100 percent rated power output with 90% tank capacity per NFPA 30
  3. Pump Capacity: Exceeds maximum flow of fuel drawn by engine-mounted fuel supply pump at 110 percent of rated capacity, including fuel returned from engine.
  4. Low-Level Alarm Sensor: Liquid-level device operates alarm contacts at 25 percent of normal fuel level.
  5. High-Level Alarm Sensor: Liquid-level device operates alarm and redundant fuel shutoff contacts at midpoint between overflow level and 100 percent of normal fuel level.
  6. Piping Connections: Factory-installed fuel supply and return lines from tank to engine; local fuel fill, vent line, overflow line; and tank drain line with shutoff valve.
  7. Redundant High-Level Fuel Shutoff: Actuated by high-level alarm sensor in day tank to operate a separate motor device that disconnects day-tank pump motor. Sensor shall signal solenoid valve, located in fuel suction line between fuel storage tank and day tank, to close. Both actions shall remain in shutoff state until manually reset. Shutoff action shall initiate an alarm signal to control panel but shall not shut down engine-generator set.
  8. Day tank shall be suitable for pressures up to 150 psi.
  9. Day tank shall be factory tested to withstand 25 psi per NYC Code, unless higher rating is noted on plans or schedules.
  10. Tank normal/emergency vents complying with NYC Mechanical Code Sections 1305.7, 1305.8, 1305.8.4, in accordance with NFPA 30 Section 4.2.5.2.
    - a. Tank manufacturer shall submit calculations to the Commissioner demonstrating that normal and 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.
  11. Fuel Shutoff – provide solenoid valve in fuel suction line between fuel storage tank and engine to close upon activation of a fire detector within the generator enclosure. Provide all accessories and wiring to the generator control panel.
- C. Tank testing shall be performed in accordance with the requirements of the NYC Fire Code Section 3404.2.12.3.

## 2.5 CONTROL AND MONITORING

- A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or



- equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.
- B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.
- C. Configuration: Operating and safety indications, protective devices, basic system controls, engine gages, instrument transformers, generator disconnect switch or circuit breaker, and other indicated components shall be grouped in a combination control and power panel. Control and monitoring section of panel shall be isolated from power sections by steel barriers. Panel features shall include the following:
1. Switchboard Construction: Freestanding unit complying with Section 262413 "Switchboards."
  2. Current and Potential Transformers: Instrument accuracy class.
- D. Indicating and Protective Devices and Controls:
1. AC voltmeter.
  2. AC ammeter.
  3. AC frequency meter.
  4. DC voltmeter (alternator battery charging).
  5. Engine-coolant temperature gage.
  6. Engine lubricating-oil pressure gage.
  7. Running-time meter.
  8. Ammeter-voltmeter, phase-selector switch(es).
  9. Generator-voltage adjusting rheostat.
  10. Start-stop switch.
  11. Overspeed shutdown device.
  12. Coolant high-temperature shutdown device.
  13. Coolant low-level shutdown device.
  14. Oil low-pressure shutdown device.
  15. Fuel tank derangement alarm.
  16. Fuel tank high-level shutdown of fuel supply alarm.
  17. Generator overload.
- E. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.
- F. Connection to Data Link: A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals.
- G. Common Remote Audible Alarm: Comply with NFPA 110 requirements for Level 1 systems. Include necessary contacts and terminals in control and monitoring panel.
1. Overcrank shutdown.



2. Coolant low-temperature alarm.
  3. Control switch not in auto position.
  4. Battery-charger malfunction alarm.
  5. Battery low-voltage alarm.
- H. Remote Alarm Annunciator: Comply with NFPA 99. An LED labeled with proper alarm conditions shall identify each alarm event and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.
- I. Remote Emergency-Stop Switch: Flush; wall mounted, unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

## 2.6 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Generator Circuit Breakers: Molded-case, electronic-trip type; 100 percent rated; complying with UL 489. Refer to electrical single line diagram for ratings and quantities.
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 Disconnect Switch: Molded-case type, 100 percent rated.
1. Rating: Matched to generator output rating.
  2. Shunt Trip: Connected to trip switch when signaled by generator protector or by other protective devices.
- C. 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.



## **2.7 GENERATOR, EXCITER, AND VOLTAGE REGULATOR**

- A. Comply with NEMA MG 1.
- B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.
- C. Electrical Insulation: Class H or Class F.
- D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.
- E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.
- F. Enclosure: Dripproof.
- G. Instrument Transformers: Mounted within generator enclosure.
- H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.
  - 1. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band.
- I. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.
- J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- K. Subtransient Reactance: 12 percent, maximum.

## **2.8 MOTORS**

- A. General requirements for motors are specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
  - 1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
  - 2. Controllers, Electrical Devices, and Wiring: Electrical devices and connections are specified in electrical Sections.

## **2.9 VIBRATION ISOLATION DEVICES**

- A. Elastomeric Isolator Pads: Oil- and water-resistant elastomer or natural rubber, arranged in single or multiple layers, molded with a nonslip pattern and galvanized-steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment.



1. Material: Bridge-bearing neoprene, complying with AASHTO M 251.
2. Durometer Rating: 50.
3. Number of Layers: Two

**B. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.**

1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch-thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation.
2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

## **2.10 FINISHES**

- A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer. Color to be selected by the City of New York**

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## **2.11 SOURCE QUALITY CONTROL**

- A. Prototype Testing: Factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.**
1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.
- B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:**
1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
  2. Full load run.
  3. Maximum power.
  4. Voltage regulation.
  5. Transient and steady-state governing.
  6. Single-step load pickup.
  7. Safety shutdown.
  8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Commissioner.
  9. Report factory test results within 10 days of completion of test.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator performance.
- B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.
- B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.
- C. Install packaged engine generator with restrained spring isolators having a minimum deflection of 1 inch on 4-inch-high concrete base. Secure sets to anchor bolts installed in concrete bases.
- D. Install Schedule 40, black steel piping with welded joints and connect to engine muffler. Install thimble at wall. Piping shall be same diameter as muffler outlet.
  - 1. Install condensate drain piping to muffler drain outlet full size of drain connection with a shutoff valve, stainless-steel flexible connector, and Schedule 40, black steel pipe with welded joints.
- E. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

### **3.3 CONNECTIONS**

- A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping and specialties.
- B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.
- C. Connect engine exhaust pipe to engine with flexible connector.
- D. Connect fuel piping to engines with a gate valve and union and flexible connector.
- E. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."



- F. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

### 3.4 IDENTIFICATION

- A. Identify system components according to Section 230553 "Identification for HVAC Piping and Equipment" and Section 260553 "Identification for Electrical Systems."

### 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- C. Tests and Inspections:
  - 1. Submit test scripts/forms for each of the tests listed below for approval prior to test schedule, notify the City of New York and the Commissioner of the scheduled test.
  - 2. Provide all equipment/cabling necessary to perform the tests required in this section including but not limited to 100% capacity load banks and cables. Provide temporary connections for load bank as coordinated with owner.
  - 3. Fill tank to capacity (100%) with rated fuel for testing, commissioning and handover.
  - 4. Perform tests recommended by manufacturer and each electrical test and visual and mechanical inspection except those indicated to be optional for "AC Generators and for Emergency Systems" specified in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  - 5. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to, single-step full-load pickup test single-step full-load pickup test with a minimum 4 hour full load run test.
  - 6. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.
    - a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
    - b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
    - c. Verify acceptance of charge for each element of the battery after discharge.
    - d. Verify that measurements are within manufacturer's specifications.
  - 7. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
  - 8. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.





9. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg. Connect to exhaust line close to engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's written allowable limits for the engine.
  10. Exhaust Emissions Test: Comply with applicable government test criteria.
  11. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
  12. Harmonic-Content Tests: Measure harmonic content of output voltage under 25 percent and at 100 percent of rated linear load. Verify that harmonic content is within specified limits.
  13. Noise Level Tests: Measure A-weighted level of noise emanating from generator-set installation, including engine exhaust and cooling-air intake and discharge, at four locations on the property line, and compare measured levels with required values.
- D. Coordinate tests with tests for transfer switches and run them concurrently.
- E. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.
- F. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
- G. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
- H. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- I. Remove and replace malfunctioning units and retest as specified above.
- J. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.
- K. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.
- L. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each power wiring termination and each bus connection. Remove all access panels so terminations and connections are accessible to portable scanner.
1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 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 terminations and connections checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.



**3.6 DEMONSTRATION**

- A. Engage a factory-authorized service representative to instruct the City of New York's maintenance personnel to adjust, operate, and maintain packaged engine generators. Refer to DDC General Conditions.

**END OF SECTION 26 32 13**



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**SECTION 26 36 00  
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].
- B. Design Drawing E-601

**1.2 SUMMARY**

- A. This Section includes transfer switches rated 600 V and less, including the following:
  - 1. Automatic transfer switches.
  - 2. Bypass/isolation switches.

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**1.3 SUBMITTALS**

- A. Product Data: For each type of product indicated. Include rated capacities, weights, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Dimensioned plans, elevations, sections, and details showing minimum clearances, conductor entry provisions, gutter space, installed features and devices, and material lists for each switch specified.
  - 1. Single-Line Diagram: Show connections between switches, power sources, and loads; show interlocking provisions for each switch.
- C. Manufacturer Seismic Qualification Certification: Submit certification that transfer switches accessories, and components will withstand seismic forces. Include the following:
  - 1. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  - 2. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- D. Qualification Data: For qualified testing agency.
- E. Field quality-control test reports.
- F. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals. Include the following:



1. Features and operating sequences, both automatic and manual.
2. List of all factory settings of relays; provide relay-setting and calibration instructions, including software, where applicable.

#### **1.4 QUALITY ASSURANCE**

- A. **Manufacturer Qualifications:** Maintain a service center capable of providing instruction, parts, and emergency maintenance repairs within a response period of less than eight hours from time of notification, available on a 7x24x365 call basis.
- B. **Testing Agency Qualifications:** An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.
  1. **Testing Agency's Field Supervisor:** Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- C. **Source Limitations:** Obtain automatic transfer switches and control panels through one 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 and marked for intended use.
- E. Comply with NEMA ICS 1.
- F. Comply with NFPA 70.
- G. Comply with NFPA 99.
- H. Comply with NFPA 110.
- I. Comply with UL 1008 unless requirements of these Specifications are stricter.

#### **1.5 PROJECT CONDITIONS**

- A. Rate equipment for continuous operation.

#### **1.6 COORDINATION**

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.



## 1.7 WARRANTY

- A. The manufacturer's and dealer's warranty shall end two (2) years from substantial completion and shall include repair parts, labor, reasonable travel expense necessary for repairs at the jobsite, and expendables used during the course of repair.
- B. The manufacturer's authorized dealer shall be capable of administering the manufacturer and dealer's warranty for all components supplied by the selling dealer (who may or may not be the same as the servicing dealer). All warranty repairs are to be formed by the authorized dealers manufacturer certified and trained technicians. Equipment suppliers that do not perform factory authorized warranty repairs or employ factory trained technicians, as described above, for this purpose will not be considered.

## PART 2 - PRODUCTS

### 2.1 EQUIPMENT

- A. Provide one (1) 600A and one (1) 200A open transition, 3-pole with overlapping neutrals and bypass isolation ATSS, conforming to the information below.

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### 2.2 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Contactor Transfer Switches:
    - a. Automatic Switch Company (ASCO).
    - b. Russelectric, Inc.
    - c. Zenith Controls, Inc.
    - d. Or approved equal.

### 2.3 GENERAL TRANSFER-SWITCH PRODUCT REQUIREMENTS

- A. Indicated Current Ratings: Apply as defined in UL 1008 for continuous loading and total system transfer, including tungsten filament lamp loads not exceeding 30 percent of switch ampere rating, unless otherwise indicated.
- B. Tested Fault-Current Closing and Withstand Ratings: Adequate for duty imposed by protective devices at installation locations in Project under the fault conditions indicated, based on testing according to UL 1008.
  - 1. Where transfer switch includes internal fault-current protection, rating of switch and trip unit combination shall be 42KAIC.



- C. Solid-State Controls: Repetitive accuracy of all settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.
- D. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.41. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.
- E. Electrical Operation: Accomplish by a nonfused, momentarily energized solenoid or electric-motor-operated mechanism, mechanically and electrically interlocked in both directions.
- F. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.
  - 1. Limitation: Switches using molded-case switches or circuit breakers or insulated-case circuit-breaker components are not acceptable.
  - 2. Switch Action: Double throw; mechanically held in both directions.
  - 3. Contacts: Silver composition or silver alloy for load-current switching. Conventional automatic transfer-switch units, rated 225 A and higher, shall have separate arcing contacts.
- G. Neutral Switching: Where three-pole switches are indicated, provide fully rated overlapping neutral contacts.
- H. Neutral Terminal: Solid and fully rated, unless otherwise indicated.
- I. Annunciation, Control, and Programming Interface Components: Devices at transfer switches for communicating with remote programming devices and control panels shall have communication capability matched with remote device.
- J. Factory Wiring: Train and bundle factory wiring and label, consistent with Shop Drawings, either by color-code or by numbered or lettered wire and cable tape markers at terminations.
  - 1. Designated Terminals: Pressure type, suitable for types and sizes of field wiring indicated.
  - 2. Power-Terminal Arrangement and Field-Wiring Space: Suitable for top, side, or bottom entrance of feeder conductors as indicated.
  - 3. Control Wiring: Equipped with lugs suitable for connection to terminal strips.
- K. Enclosures: General-purpose NEMA 250, Type 12, complying with NEMA ICS 6 and UL 508, unless otherwise indicated.

## 2.4 AUTOMATIC TRANSFER SWITCHES

- A. Comply with Level 1 equipment according to NFPA 110.
- B. Switching Arrangement: Double-throw type, incapable of pauses or intermediate position stops during normal functioning, unless otherwise indicated.



- C. Manual Switch Operation: Under load, with door closed and with either or both sources energized. Transfer time is same as for electrical operation. Control circuit automatically disconnects from electrical operator during manual operation.
- D. Manual Switch Operation: Unloaded. Control circuit automatically disconnects from electrical operator during manual operation.
- E. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval is adjustable from 1 to 30 seconds.
- F. Digital Communication Interface: Matched to capability of control panel.
- G. In-Phase Monitor: Programmable in operation or not, factory-wired, internal relay controls transfer so it occurs only when the two sources are synchronized in phase. Relay compares phase relationship and frequency difference between normal and emergency sources and initiates transfer when both sources are within 15 electrical degrees, and only if transfer can be completed within 60 electrical degrees. Transfer is initiated only if both sources are within 2 Hz of nominal frequency and 70 percent or more of nominal voltage.
- H. Motor Disconnect and Timing Relay: Controls designate starters so they disconnect motors before transfer and reconnect them selectively at an adjustable time interval after transfer. Control connection to motor starters is through wiring external to automatic transfer switch. Time delay for reconnecting individual motor loads is adjustable between 1 and 60 seconds, and settings are as indicated. ~~Relay contacts handling motor control circuit inrush and seal currents are rated for actual currents to be encountered.~~
- I. Automatic Transfer-Switch Features:
  - 1. Undervoltage Sensing for Each Phase of Normal Source and Alternate Source: Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100 percent of nominal, and dropout voltage is adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.
  - 2. Adjustable Time Delay: For override of normal-source voltage sensing to delay transfer and engine start signals. Adjustable from zero to six seconds, and factory set for one second.
  - 3. Voltage/Frequency Lockout Relay: Prevent premature transfer to generator. Pickup voltage shall be adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency shall be adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.
  - 4. Time Delay for Retransfer to Normal Source: Adjustable from 0 to 30 minutes, and factory set for 10 minutes to automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
  - 5. Test Switch: Simulate normal-source failure.
  - 6. Switch-Position Pilot Lights and form C contacts: Indicate source to which load is connected.
  - 7. Provide two sets of Form 'C' contacts with time delay for customer functions. Contacts to operate prior to transfer from either normal to emergency or from emergency to normal.
  - 8. Source-Available Indicating Lights and form C contacts: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.





- a. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
  - b. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."
9. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V ac.
10. Indicator Contacts: One set of two-pole, double-throw contacts operate when emergency source voltage is present at transfer switch terminals. One set of two-pole, double-throw contacts operate when normal source voltage is present at transfer switch terminals.
11. Transfer Override Switch: Overrides automatic retransfer control so automatic transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status. Provide terminals for activation of this feature by remote contacts.
12. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
13. Engine Shutdown Contacts: Instantaneous; shall initiate shutdown sequence at remote engine-generator controls after retransfer of load to normal source.
14. Engine Shutdown Contacts: Time delay adjustable from zero to five minutes, and factory set for five minutes. Contacts shall initiate shutdown at remote engine-generator controls after retransfer of load to normal source.
15. Engine-Generator Exerciser: Solid-state, programmable-time switch starts engine generator and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods are adjustable from 10 to 30 minutes. Factory settings are for 7-day exercise cycle, 20-minute running period, and 5-minute cool-down period. Exerciser features include the following:
- a. Exerciser Transfer Selector Switch: Permits selection of exercise with and without load transfer.
  - b. Push-button programming control with digital display of settings.
  - c. Integral battery operation of time switch when normal control power is not available.

## **2.5 BYPASS/ISOLATION SWITCHES**

- A. Comply with requirements for Level 1 equipment according to NFPA 110.
- B. Description: Manual type, arranged to select and connect either source of power directly to load, isolating transfer switch from load and from both power sources. Include the following features for each combined automatic transfer switch and bypass/isolation switch:
  1. Means to lock bypass/isolation switch in the position that isolates transfer switch with an arrangement that permits complete electrical testing of transfer switch while isolated. While isolated, interlocks prevent transfer-switch operation, except for testing or maintenance.



2. Drawout Arrangement for Transfer Switch: Provide physical separation from live parts and accessibility for testing and maintenance operations.
  3. Bypass/Isolation Switch Current, Voltage, Closing, and Short-Circuit Withstand Ratings: Equal to or greater than those of associated automatic transfer switch, and with same phase arrangement and number of poles.
  4. Contact temperatures of bypass/isolation switches shall not exceed those of automatic transfer-switch contacts when they are carrying rated load.
  5. Operability: Constructed so load bypass and transfer-switch isolation can be performed by 1 person in no more than 2 operations in 15 seconds or less.
  6. Legend: Manufacturer's standard legend for control labels and instruction signs shall describe operating instructions.
  7. Maintainability: Fabricate to allow convenient removal of major components from front without removing other parts or main power conductors.
- C. Interconnection of Bypass/Isolation Switches with Automatic Transfer Switches: Factory-installed copper bus bars; plated at connection points and braced for 65KAIC.
- D. Microprocessor Controller & Monitor
1. The controller shall include standard open architecture protocol and a serial remote communication port.
  2. The controller shall include internal long-life battery backup.
  3. The controller shall include self-diagnostics and a 20 character LCD display and keypad for access to the system.
  4. The monitor shall display all three phases of voltage, both sources, source availability, and frequency within 1% accuracy.
  5. The controller shall include 3 phase over/under voltage, over/under frequency, phase sequence detection, and phase differential monitoring on both normal and emergency sources.
  6. The controller shall include event history of number of, date, and time of transfers and most recent exercise.

## 2.6 ADDITIONAL REQUIREMENTS

- A. Selective load disconnect control contacts
1. Provide contacts on each ATS which operate with a time delay prior to the transfer of the ATS for the normal source to the emergency source.
- B. Remote Monitoring
1. Provide a communications card on each ATS which allows for the communication with an existing EPMS system. This communications card shall be capable of communicating



via SNMP as well as Modbus over Ethernet. Communications channel shall provide standard ATS status available on the local display including current ATS loading

- C. Delayed Transfer to Emergency
  - 1. Provide option to delay transfer from normal to emergency up to 5 minutes to allow for the re-establishment of normal source power.

## **2.7 SOURCE QUALITY CONTROL**

- A. Factory test and inspect components, assembled switches, and associated equipment. Ensure proper operation. Check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Design each fastener and support to carry load indicated by seismic requirements and according to seismic-restraint details.
- B. Floor-Mounting Switch: Anchor to floor by bolting.
  - 1. Concrete Bases: 4 inches high, reinforced, with chamfered edges. Extend base no more than 4 inches in all directions beyond the maximum dimensions of switch, unless otherwise indicated or unless required for seismic support.
- C. Control Panel Mounting: Provide NEMA 1 enclosure for the mounting of these panels.
- D. All equipment shall be identified by name or function by means of nameplates.
- E. Except as otherwise noted, nameplates shall be of laminated phenolic compound with beveled edges and engraved to display White characters on a colored background. Each nameplate shall have a ¼" color band around the perimeter of the nameplate. Color to be determined by the Commissioner. Nameplate text size and description shall be coordinated.
- F. Nameplates shall be attached using self-tapping stainless steel screws.
- G. Set field-adjustable intervals and delays, relays, and engine exerciser clock.

### **3.2 CONNECTIONS**

- A. Wiring to Remote Components: Match type and number of cables and conductors to control and communication requirements of transfer switches as recommended by manufacturer.



Increase raceway sizes at no additional cost to the City of New York if necessary to accommodate required wiring.

- B. Furnish and install all power and interconnect control and alarm wiring between transfer switches, the generator system or switchgear.

### 3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform tests and inspections and prepare test reports.

- B. 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.
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.
- C. 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.
- D. Coordinate testing with testing of generator and run them concurrently.



- E. 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.
- F. Remove and replace malfunctioning components and retest as specified above.
- G. 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.

#### **3.4 DEMONSTRATION**

- A. Engage a factory-authorized service representative to instruct the City of New York's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment as specified.
- B. Coordinate this instruction with that for generator equipment.

**END OF SECTION 26 36 00**



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**SECTION 26 51 00  
INTERIOR LIGHTING**

**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. Division 26 Section "Wiring Devices" for manual wall-box dimmers for incandescent lamps.

**1.2 SUMMARY**

- A. Section Includes:
    - 1. Interior lighting fixtures, lamps, and ballasts.
    - 2. Emergency lighting units.
    - 3. Exit signs.
    - 4. Lighting fixture supports.
    - 5. Retrofit kits for fluorescent lighting fixtures.
- 

**1.3 SUBMITTALS**

- A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, and finishes.
- B. Shop Drawings: Show details of nonstandard or custom lighting fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories. Product Certificates: For each type of ballast for bi-level and dimmer-controlled fixtures, from manufacturer.
- C. Field quality-control reports.

**1.4 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.



## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Products: Subject to compliance with requirements, provide product by one of the following or approved equal:
  - 1. Lithonia
  - 2. Cooper
  - 3. GE
  - 4. Or approved equal.

### **2.2 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS**

- A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
- B. Fluorescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

### **2.3 BALLASTS FOR LINEAR FLUORESCENT LAMPS**

- A. General Requirements for Electronic Ballasts:
  - 1. Comply with UL 935 and with ANSI C82.11.
  - 2. Designed for type and quantity of lamps served.
  - 3. Ballasts shall be designed for full light output unless another BF, dimmer, or bi-level control is indicated.
  - 4. Sound Rating: Class A
  - 5. Total Harmonic Distortion Rating: Less than 10 percent.
  - 6. Transient Voltage Protection: IEEE C62.41.1 and IEEE C62.41.2, Category A or better.
  - 7. Operating Frequency: 42 kHz or higher.
  - 8. Lamp Current Crest Factor: 1.7 or less.
  - 9. BF: 0.88 or higher.
  - 10. Power Factor: 0.95 or higher.
- B. Electromagnetic Ballasts: Comply with ANSI C82.1; energy saving, high-power factor, Class P, and having automatic-reset thermal protection.



1. Ballast Manufacturer Certification: Indicated by label.
- C. Single Ballasts for Multiple Lighting Fixtures: Factory wired with ballast arrangements and bundled extension wiring to suit final installation conditions without modification or rewiring in the field.
- D. Ballasts for Low-Temperature Environments: Electronic or electromagnetic type rated for 0 deg F starting and operating temperature with indicated lamp types.

## 2.4 EMERGENCY FLUORESCENT POWER UNIT

- A. Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast. Comply with UL 924.
  1. Emergency Connection: Operate one fluorescent lamp(s) continuously at an output of 1100 lumens each. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
  2. Nightlight Connection: Operate one fluorescent lamp continuously.
  3. Test Push Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space.
    - a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    - b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
  4. Battery: Sealed, maintenance-free, nickel-cadmium type.
  5. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
  6. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

## 2.5 EXIT SIGNS

- A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with regulations of The City of New York.
- B. Internally Lighted Signs:
  1. Lamps for AC Operation: Fluorescent, two for each fixture, 20,000 hours of rated lamp life.
  2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.
    - a. Battery: Sealed, maintenance-free, nickel-cadmium type.
    - b. Charger: Fully automatic, solid-state type with sealed transfer relay.



- c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
- d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
- e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

## **2.6 EMERGENCY LIGHTING UNITS**

- A. General Requirements for Emergency Lighting Units: Self-contained units complying with UL 924.
  - 1. Battery: Sealed, maintenance-free, lead-acid type.
  - 2. Charger: Fully automatic, solid-state type with sealed transfer relay.
  - 3. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
  - 4. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
  - 5. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
  - 6. Wire Guard: Heavy-chrome-plated wire guard protects lamp heads or fixtures.
  - 7. Integral Time-Delay Relay: Holds unit on for fixed interval of 15 minutes when power is restored after an outage.

## **2.7 FLUORESCENT LAMPS**

- A. T8 rapid-start lamps, rated 32 W maximum, nominal length of 48 inches, 2800 initial lumens (minimum), CRI 75 (minimum), color temperature 3500K, and average rated life 20,000 hours unless otherwise indicated.

## **2.8 LIGHTING FIXTURE SUPPORT COMPONENTS**

- A. Comply with Division 26 Section "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.
- B. Rod Hangers: 3/8-inch minimum diameter, cadmium-plated, threaded steel rod.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.
- B. Comply with NFPA 70 for minimum fixture supports.
- C. Suspended Lighting Fixture Support:
  - 1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
  - 2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
  - 3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
- D. Air-Handling Lighting Fixtures: Install with dampers closed and ready for adjustment.
- E. Adjust aimable lighting fixtures to provide required light intensities.
- F. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

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**3.2 FIELD QUALITY CONTROL**

- A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.
- B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

**END OF SECTION 26 51 00**



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**SECTION 28 31 12  
ZONED (DC LOOP) FIRE-ALARM 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 SUMMARY**

- A. Section Includes:
1. Fire-alarm control unit.
  2. Manual fire-alarm boxes.
  3. System smoke detectors.
  4. Notification appliances.
  5. Digital alarm communicator transmitter.
  6. Radio alarm transmitter.
- 

**1.3 DEFINITIONS**

- A. LED: Light-emitting diode.
- B. NICET: National Institute for Certification in Engineering Technologies.

**1.4 SYSTEM DESCRIPTION**

- A. Noncoded system, dedicated to fire-alarm service only.

**1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.
1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.
  2. Include voltage drop calculations for notification appliance circuits.
  3. Include battery size calculations.



4. Include performance parameters and installation details for each detector, verifying that each detector is listed for the complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
5. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale and coordinating installation of duct smoke detectors and access to them. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations.
6. Include floor plans to indicate final outlet locations showing zone designation of each device. Show size and route of cable and conduits.

**C. General Submittal Requirements:**

1. Submittals shall be approved prior to submitting them to the Commissioner.
2. Shop Drawings shall be prepared by persons with the following qualifications:
  - a. Trained by manufacturer in fire-alarm system design.
  - b. NICET-certified fire-alarm technician.

**D. For smoke and heat detectors indicated to comply with performance requirements and design criteria, including analysis data, signed and sealed by the licensed in the State of New York professional engineer responsible for their preparation.**

1. Drawings showing the location of each smoke and heat detector, the ratings of each, and installation details as needed to comply with the listing conditions of the detector.
2. Design Calculations: Calculate requirements for selecting the spacing and sensitivity of detection, complying with NFPA 72.

**1.6 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For qualified Installer.
- B. Field quality-control reports.

**1.7 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. Deliver copies to the Commissioner and include the following:
  1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
  2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
  3. Record copy of site-specific software.
  4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:



- a. Frequency of testing of installed components.
  - b. Frequency of inspection of installed components.
  - c. Requirements and recommendations related to results of maintenance.
  - d. Manufacturer's user training manuals.
5. Manufacturer's required maintenance related to system warranty requirements.
  6. Abbreviated operating instructions for mounting at fire-alarm control unit.
  7. Copy of NFPA 25.

## **1.8 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but no fewer than 1 unit.
  2. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but no fewer than 1 unit.
  3. Smoke and Fire Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than 1 unit of each type.
  4. Detector Bases: Quantity equal to 2 percent of amount of each type installed, but no fewer than 1 unit of each type.
  5. Keys and Tools: One extra set for access to locked and tamperproofed components.
  - ~~6. Audible and Visual Notification Appliances: One of each type installed.~~
  7. Fuses: Two of each type installed in the system.

## **1.9 QUALITY ASSURANCE**

- A. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm technician.
- B. Source Limitations for Fire-Alarm System and Components: Obtain fire-alarm system from single source from single manufacturer. Components shall be compatible with, and operate as, an extension of existing system.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## **1.10 PROJECT CONDITIONS**

- A. Interruption of Existing Fire-alarm Service: Do not interrupt fire-alarm service to facilities occupied by the City of New York or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:
1. Notify Commissioner no fewer than two weeks in advance of proposed interruption of fire-alarm service.





2. Do not proceed with interruption of fire-alarm service without Commissioner's written permission.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or approved equal:
  1. Faraday; Siemens Building Technologies, Inc.
  2. Fire Control Instruments Inc.; a Honeywell company.
  3. Fire-Lite Alarms; a Honeywell company.
  4. Gamewell, a Honeywell company.
  5. GE Infrastructure; a unit of General Electric Company
  6. NOTIFIER; a Honeywell company.
  7. Siemens Building Technologies, Inc.; Fire Safety Division.
  8. Silent Knight; a Honeywell company.
  9. SimplexGrinnell LP; a Tyco International company.
  10. Or approved equal.

### **2.2 SYSTEMS OPERATIONAL DESCRIPTION**

- A. Fire-alarm signal initiation shall be by one or more of the following devices:
  1. Manual stations.
  2. Smoke detectors.
- B. Fire-alarm signal shall initiate the following actions:
  1. Continuously operate alarm notification appliances.
  2. Identify alarm zone at fire-alarm control unit.
  3. Transmit an alarm signal to the remote alarm receiving station.
- C. Supervisory signal initiation shall be by one or more of the following devices and systems:
  1. Valve supervisory switch.
- D. System trouble signal initiation shall be by one or more of the following devices and actions:
  1. Open circuits, shorts, and grounds in designated circuits.
  2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
  3. Loss of primary power at fire-alarm control unit.
  4. Ground or a single break in fire-alarm control unit internal circuits.
  5. Abnormal ac voltage at fire-alarm control unit.
  6. Break in standby battery circuitry.
  7. Failure of battery charging.



8. Abnormal position of any switch at fire-alarm control unit.
- E. System Trouble and Supervisory Signal Actions: Initiate notification appliance and annunciate at fire-alarm control unit.

### 2.3 FIRE-ALARM CONTROL UNIT

- A. General Requirements for Fire-Alarm Control Unit:
  1. Modular, power-limited design with electronic modules, UL 864 listed.
    - a. Include a real-time clock for time annotation of events.
- B. Alphanumeric Display and System Controls: Display alarm, supervisory, and component status messages and the programming and control menu.
  1. Annunciator and Display: Liquid-crystal type, one line of 40 characters, minimum.
- C. Circuits:
  1. No Fewer Than Two Initiating Device Circuits:
    - a. One circuit, NFPA 72, Class B.
  2. No Fewer Than Two Notification Appliance Circuits: NFPA 72, Class B, Style Y.
- D. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.
- E. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory signals, supervisory and digital alarm communicator transmitters and, digital alarm radio transmitters shall be powered by the 24-V dc source.
  1. Alarm current draw of the entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.
- F. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.
  1. Batteries: Sealed lead calcium.
- G. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.



## 2.4 MANUAL FIRE-ALARM BOXES

- A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.
1. Single-action mechanism, pull-lever type.
  2. Double-action mechanism requiring two actions to initiate an alarm, pull-lever type.
  3. Station Reset: Key- or wrench-operated switch.
  4. Indoor Protective Shield: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.
  5. Weatherproof Protective Shield: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm.

## 2.5 SYSTEM SMOKE DETECTORS

- A. General Requirements for System Smoke Detectors:
1. Operating at 24-V dc, nominal.
  2. Detectors shall be two-wire type.
  3. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
  4. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
  5. Integral Visual-Indicating Light: LED type indicating detector has operated and power-on status.
  6. Provide multiple levels of detection sensitivity for each sensor, with alarm-verification feature.
- B. Ionization Smoke Detector: Comply with UL 268.

## 2.6 NOTIFICATION APPLIANCES

- A. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.
1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.
- B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.



- C. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch-high letters on the lens.
1. Rated Light Output:
    - a. 15/30/75/110 cd, selectable in the field.
  2. Mounting: Wall mounted.
  3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
  4. Flashing shall be in a temporal pattern, synchronized with other units.
  5. Strobe Leads: Factory connected to screw terminals.
  6. Mounting Faceplate: Factory finished, red.

## 2.7 DIGITAL ALARM COMMUNICATOR TRANSMITTER

- A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632 and be listed and labeled by an NRTL.
- B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on line(s) is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.
- C. Local functions and display at the digital alarm communicator transmitter shall include the following:
1. Verification that both telephone lines are available.
  2. Programming device.
  3. LED display.
  4. Manual test report function and manual transmission clear indication.
  5. Communications failure with the central station or fire-alarm control unit.
- D. Digital data transmission shall include the following:
1. Zone of the alarm initiating device.
  2. Zone of the supervisory signal.
  3. Zone of the trouble initiating device.
  4. Loss of ac supply or loss of power.
  5. Low battery.
  6. Abnormal test signal.
  7. Communication bus failure.
- E. Secondary Power: Integral rechargeable battery and automatic charger.



- F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

## 2.8 DEVICE GUARDS

- A. Description: Welded wire mesh of size and shape for the manual station, smoke detector, gong, or other device requiring protection.
  - 1. Factory fabricated and furnished by manufacturer of the device.
  - 2. Finish: Paint of color to match the protected device.

## PART 3 - EXECUTION

### 3.1 EQUIPMENT INSTALLATION

- A. Comply with NFPA 72 for installation of fire-alarm equipment.
- B. Smoke- or Heat-Detector Spacing:
  - 1. Comply with NFPA 72, "Smoke-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for smoke-detector spacing.
  - 2. Comply with NFPA 72, "Heat-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for heat-detector spacing.
  - 3. Smooth ceiling spacing shall not exceed 30 feet.
  - 4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix A in NFPA 72.
  - 5. HVAC: Locate detectors not closer than 5 feet from air-supply diffuser or return-air opening.
  - 6. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture.
- C. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.
- D. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
- E. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling.
- F. Device Location-Indicating Lights: Locate in public space near the device they monitor.
- G. Fire-Alarm Control Unit: Surface mounting, with tops of cabinets not more than 72 inches above the finished floor.
- H. Annunciator: Install with top of panel not more than 72 inches above the finished floor.

**3.2 CONNECTIONS**

- A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Division 08. Connect hardware and devices to fire-alarm system.
  - 1. Verify that hardware and devices are NRTL listed for use with fire-alarm system in this Section before making connections.
- B. Connect supervised interface devices to the following devices and systems. Install the interface device less than 3 feet from the device controlled.
  - 1. Smoke dampers in air ducts of designated air-conditioning duct systems.
  - 2. Supervisory connections at valve supervisory switches.
  - 3. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.
  - 4. Supervisory connections at fire-pump engine control panel.

**3.3 IDENTIFICATION**

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- B. Install framed instructions in a location visible from fire-alarm control unit.

**3.4 GROUNDING**

- A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

**3.5 FIELD QUALITY CONTROL**

- A. Field tests shall be witnessed by authorities having jurisdiction.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- C. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. Tests and Inspections:
  - 1. Visual Inspection: Conduct the visual inspection prior to testing.



- a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
  - b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing, and Maintenance" Chapter in NFPA 72.
  3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
  4. Test visible appliances for the public operating mode according to manufacturer's written instructions.
  5. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
- E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
- F. Fire-alarm system will be considered defective if it does not pass tests and inspections.
- G. Prepare test and inspection reports.
- H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.
- I. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with the visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

### **3.6 DEMONSTRATION**

- A. Engage a factory-authorized service representative to instruct City of New York's maintenance personnel to adjust, operate, and maintain fire-alarm system.

**END OF SECTION 28 31 12**





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**CITY OF NEW YORK**

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Contractor \_\_\_\_\_

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

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Entered in the Comptroller's Office

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

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

