NOTICE TO BIDDERS -NEW BID SUBMISSION PROCEDURES DUE TO COVID-19

The bid submission and opening procedures for this contract will follow the procedures set forth below.

THE BIDDER MUST CAREFULLY READ THE DATES AND TIMES IN THE PROCUREMENT DOCUMENTS, AS THEY NOW DIFFER FROM PREVIOUS DDC PROJECTS.

Bid Submission Procedures

- 1. The representative delivering the bid must maintain required social distancing measures keep at least 6 feet away from others, and a mask or face covering is recommended.
- 2. The representative delivering the bid must comply with the requirements below in order to enter the DDC office building at 30-30 Thomson Ave.

As such, please allow sufficient time for these procedures when arriving to deliver the bid so that the bid may be submitted on time.

Upon your arrival to 30-30 Thomson Ave, proceed to the telephone to the left of the building located near the Mailroom. Please call the following Bid Room number "718-391-2691" and inform the staff that you are waiting outside the mailroom to drop off your bid. A DDC staff will come out to retrieve your bid. These steps are in place to ensure all precautionary safety measures are followed while in the office, as the health and safety of staff and visitors is our number one priority.

If there are any issues dropping off the bid, the bidder should email <u>CSB_ProjectInquiries@ddc.nyc.gov</u> for additional instructions.

- 3. All bids must be delivered by hand within the time shown in the procurement documents. No bids will be accepted by mail or parcel service (USPS, FedEx, UPS, DHL, etc.).
- 4. Bid submissions must be in a single, sealed envelope and clearly labeled on the outside with the following:
 - a. Project ID
 - b. Project Name
 - c. e-PIN no.
 - d. Name of Contractor
 - e. Contact person
 - f. Email address
 - g. Phone number
- 5. Bid submissions must not contain any staples or paper clips.
- 6. The ACCO staff will provide a time stamp sticker to be applied to the bid envelope. The person dropping off the bid will be provided an opportunity to take a picture of the time stamped bid package as proof of drop off.
- 7. Please use the link indicated in the procurement documents to join the virtual bid opening.



Construction

CITY OF NEW YORK DEPARTMENT OF DESIGN AND CONSTRUCTION DIVISION OF PUBLIC BUILDINGS VOLUME 1 – BID BOOKLET

SINGLE CONTRACT REVISED WICKS VERSION

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Introduction

This Bid Booklet is intended to provide general information necessary for bidding on a DDC public works project and is part of the Contract Documents, as per Article 1.1 of the Standard Construction Contract.

As this contract is solicited via the PASSPort system, the bidder will be required to complete all of the PASSPort forms and questionnaires. These forms and questionnaires, along with the bidder's responses, will become part of the Bid Booklet.

Additional information on the PASSPort system can be found at the following website: <u>https://www1.nyc.gov/site/mocs/systems/passport-user-materials.page</u>

Bid Submission Requirements

THE FOLLOWING MUST BE COMPLETED AND SUBMITTED FOR THE BID TO BE CONSIDERED RESPONSIVE:

- 1. Completed electronic bid submission in PASSPort;
 - a. All required fields in PASSPort must be completed.
- 2. One-page signed Bid Submission Form delivered in person to DDC before the bid due date; and
- 3. Bid security, if required.
 - a. If Bid security is in a form of a bid bond, bidders must include it with their electronic PASSPort submission.
 - b. If Bid security is in a form of a certified check, bidders must deliver the certified check with the signed Bid Submission Form.

BIDDERS ARE ADVISED THAT PAPER BID SUBMISSIONS WILL BE DEEMED NON-RESPONSIVE. BIDDERS MUST SUBMIT THEIR BIDS ELECTRONICALLY IN PASSPORT, PROVIDE THE BID SECURITY, AND DELIVER TO DDC THE ONE-PAGE SIGNED BID SUBMISSION FOR THE BID TO BE CONSIDERED RESPONSIVE.

THE FOLLOWING <u>MAY</u> RESULT IN THE BID BEING FOUND NON-RESPONSIVE:

- 1. Any discrepancy between the total bid price listed on the Bid Submission Form and the bid information submitted in PASSPort.
- 2. Failure to upload required files or documents as part of a mandatory PASSPort Questionnaire response.
- 3. Uploading an incorrect file as part of a mandatory PASSPort Questionnaire response.
 - a. For clarity, this includes uploading the bid breakdown on a form other than the Excel file provided in the PASSPort Questionnaire.

Notices to Bidders

Single Contract

SINGLE CONTRACT: The requirements of the Wicks Law for separate prime contractors do not apply to this Project. The Project consists of a single contract.

PROJECT LABOR AGREEMENT: This contract is NOT subject to a Project Labor Agreement ("PLA").

Pre Bid Questions (PBQs)

Please be advised that PBQs should be submitted to the Agency Contact Person (<u>CSB_projectinquiries@ddc.nyc.gov</u>) at least five (5) business days (by 5:00 PM EST) prior to the bid opening date as indicated in the PASSPort procurement.

All PBQs must reference the Project ID. If a bidder has multiple PBQs for the same Project ID, the PBQs must be numbered sequentially, even if they are submitted separately.

While the PASSPort system has a facility for submitting inquiries, bidders are directed to send PBQs as directed above instead of using the PASSPort inquiry system.

Inquiries sent using the PASSPort inquiry system will not be considered PBQs.

NYC Contract Financing Loan Fund

If your business is working as a prime or subcontractor on a project with a City agency or City-funded entity, you may be eligible for a Contract Financing Loan from a participating lender coordinated with the NYC Department of Small Business Services (SBS). Loan repayment terms align with the contract payment schedule.

For more information: Call 311 or visit <u>https://www1.nyc.gov/nycbusiness/article/contract-financing-loan-fund</u>

M/WBE Notice to Prospective Contractors

PARTICIPATION BY MINORITY-OWNED AND WOMEN-OWNED BUSINESS ENTERPRISES IN CITY PROCUREMENT (9/2020 version)

ARTICLE I. M/WBE PROGRAM

Section 6-129 of the Administrative Code of the City of New York ("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. Contracts solicited through the Procurement and Sourcing Solutions Portal (PASSPort) will contain a Schedule B in the format outlined in the Schedule B – M/WBE Utilization Plan & PASSPort rider. The provisions of this notice will apply to contracts subject to the M/WBE Program established by Section 6-129 regardless of solicitation source.

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.

References to MBEs or WBEs shall also include such businesses certified pursuant to the executive law where credit is required by section 311 of the New York City Charter or other provision of law.

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 1 to this Contract (see Page 1, Line 1 Total Participation Goals) or will be set forth on Schedule B, Part 1 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 DSBS 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 2 (see Pages1-2) 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; (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; as well as the name, addresses, and telephone numbers of the M/WBE subcontractors if required by the solicitation; and (d) the prospective contractor's required certification and affirmations. 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 2 (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 2 (see Pages 1-2) 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; (c) in cases where the contractor intends to award direct subcontractors; 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; as well as the name, addresses, and telephone numbers of the M/WBE subcontractors if required by the solicitation; and (d) the prospective contractor's required certification and affirmations. 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 2). A SCHEDULE B SUBMITTED BY THE BIDDER/PROPOSER WHICH DOES NOT INCLUDE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE PARTICIPATION GOALS IS GRANTED (SCHEDULE B, PART 3). 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 city-certified MBE and WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6451, or by visiting or writing DSBS at One Liberty Plaza, New York, New York, 10006, 11th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311. A firm that is certified as both an MBE and a WBE may be counted either toward the goal for MBEs or the goal for WBEs, but not both. No credit shall be given for participation by a graduate MBE or graduate WBE, as defined in Section 6-129(c)(20).

7. Where an **M/WBE** Utilization Plan has been submitted, the Contractor shall, with each voucher for payment, and/or periodically as Agency may require, submit statements, certified under penalty of perjury, which shall include, but not be limited to,: the total amount the Contractor paid to its direct subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount direct subcontractors paid to indirect subcontractor; 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 is direct 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 3 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 <u>MWBEModification@ddc.nyc.gov</u>. Full or partial waiver requests that are received later than seven (7) calendar days prior to the date and time the bids, proposals, or Task Orders are due may be rejected as untimely. Bidders, proposers, or contractors, as applicable, who have submitted timely 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, 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 the Contractor was required to identify in its bid or proposal the MBEs and/or WBEs they intended to use in connection with the performance of the Contract or Task Order, substitutions to the identified firms may only be made with the approval of the Agency, which shall only be given when the Contractor has proposed to use a firm that would satisfy the **Participation Goals** to the same extent as the firm previously identified, unless the Agency determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts. In making such determination, the Agency shall require evidence of the efforts listed in Section 11(a) above, as applicable, along with any other relevant factors.

13. 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.

14. 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.

15. 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 a **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 a **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 PASSPort as caution data.

Affirmation

The 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 disclosed in PASSPort.
- 5. The bidder hereby affirms that is has paid all applicable City income, excise and other taxes for all it has conducted business activities in New York City.
- 6. 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).

7. 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.

- 8. 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.
- 9. 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.
- 10. 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.
- 11. 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.
- 12. M/WBE UTILIZATION PLAN: By signing its bid, the bidder agrees to the M/WBE Vendor Certification and Required Affirmations set forth below, unless a full waiver of the Participation Goals is granted.

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

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.

Special Notice to Bidders – Proprietary Items

- A. <u>General</u>: 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. <u>Bid</u>: In preparing its lump sum bid, the Contractor must include in its bid any costs for the purchase of the proprietary item, as well as any costs above and beyond the purchase price, including, without limitation, any costs for transportation, including delivery, shipping or special handling costs, any costs for installation, and any costs for related materials, as well as any mark-up for the Contractor's overhead and profit.
- C. <u>Required Proprietary Item(s)</u>:

CONTRACT NO. 1:

1.	Proprietary Item:	Modified Bituminous Membrane Roofing
	Specification Section:	07 52 16
	Manufacturer:	Siplast
2.	Proprietary Item:	Building Management and Control System
	Specification Section:	23 09 23
	Manufacturer:	Honeywell
3.	Proprietary Item:	Fire Alarm Life Safety System
	Specification Section:	28 31 00
	Manufacturer:	United Technologies Edwards EST3

BID SUBMISSION FORM

Bidder Name:	C.D.E. Air Conditioning Co., Inc.
Procurement Title:	85022B0083-LQQBHHVAC - Queensboro Hill Public
	Library HVAC Replacement
RFx Name:	85022B0083-LQQBHHVAC - Queensboro Hill Public
	Library HVAC Replacement

The above-named bidder affirms and declares:

- 1. The bidder has completed and submitted all required information for the above procurement in the PASSPort system;
- 2. Any discrepancy between the bid price listed on this Bid Submission Form and the bid information submitted in PASSPort may result in the agency finding the bid non-responsive; and
- 3. This bid is being submitted in accordance with New York State General Municipal Law § 103.

Lump Sum Bid Amount (Bid Price Item Grid) + All Allowances (Allowances Item Grid)	\$\$1,980,233.00 \$15,000.00	
= Total Bid Price: (a/k/a Total Amount)	\$\$1,995,233.00	
	Bidder Signature	
EIN (if applicable):	112217107 (EIN must match the EIN of the entity that submitted bid information in PASSPort)	
Bidder Name:	C.D.E. Air Conditioning Co., Inc.	
By:	Joseph F. Azara (Name of Partner of Corporate Officer)	
Signature:	Signitur of Partner of Corporate Office	

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS. That we, C.D.E. Air Conditioning Co., Inc. 321 39th Street

Brooklyn, NY 11232

hereinafter referred to as the "Principal", and Liberty Mutual Insurance Company 175 Berkeley Street Boston, MA 02116

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

Ten Percent Of The Total Amount Bid

(\$<u>10%</u>), 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

Queensboro Hill Public Library - HVAC Replacement - Project ID: LQQBHHVAC

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.

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

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

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

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

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the <u>16</u>_day of <u>June</u>_____, <u>2022</u>____.

(Seal)

Principal	(L.0.)
By: Jup 8-C	z
Liberty Matual Insurance Company	

(Seal)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Kings ss:
On this 4 day of 1 ne , 2022 , before me personally came
to me known, who, being by me duly sworn, did
depose and say that he/she/they resides at
New York
that he/she/they is the <u>President</u> of
C.D.E. Air Conditioning Co., Inc.
the corporation described in and which executed the foregoing instrument; that he/she/they 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/she/they signed his name
thereto by like order.

PAULA BRAVO NOTARY PUBLIC, STATE OF NEW YORK Registration No. 01BR6367980 Qualified in KINGS County Commission ENOten730 Public Exp. 12/04/25

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of	County of		SS:
On this	day of	,	, before me personally
appeared		to me know	n and known to me to be one of
the members of th	ne firm of		described in and
who executed the	foregoing instrument, and I	ne/she/they ackno	wledged to me that he/she/they

Notary Public

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/she/they executed the same.

Notary Public

AFFIX ACKNOWLEDGMENTS AND JUSTIFICATION OF SURETIES

CITY OF NEW YORK PAGE 3 DEPARTMENT OF DESIGN AND CONSTRUCTION BID BOND FORM MARCH 2021 VERSION

ACKNOWLEDGEMENT OF SURETY COMPANY

STATE OF New Jersey

COUNTY OF Morris

ON THE 16th DAY OF June, 2022 BEFORE ME PERSONALLY APPEARED <u>Krystal L. Stravato</u> TO ME KNOWN, WHO BEING BY ME DULY SWORN, DID DEPOSE AND SAY; THAT (S)HE IS THE ATTORNEY-IN-FACT OF <u>Liberty Mutual Insurance Company</u>, THE CORPORATION THAT EXECUTED THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT SUCH CORPORATION EXECUTED THE SAME.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND AFFIXED MY OFFICIAL SEAL, AT MY OFFICE IN THE ABOVE COUNTY, THE DAY AND YEAR WRITTEN ABOVE.

slanden 9 Notary Public

Ursula Jakubiak A Notary Public of New Jersey My Commission Expires March 8, 2026





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

> Liberty Mutual Insurance Company The Ohio Casualty Insurance Company West American Insurance Company

Certificate No: 8207604-985316

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Edward Reilly; Jaclyn Thomas; Kevin T. Walsh, Jr.; Krystal L. Stravato; Marisol Mojica; Michael Marino; Thomas MacDonald

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

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this <u>6th</u> day of <u>April</u>, <u>2022</u>.



Renee C. Llewellyn, Assistant Secretary



LIBERTY MUTUAL INSURANCE COMPANY

FINANCIAL STATEMENT - DECEMBER 31, 2021

Assets

Cash and Bank Deposits	\$2,234,770,744
*Bonds — U.S Government	4,250,615,811
*Other Bonds	16,983,165,862
*Stocks	20,075,458,019
Real Estate	182,250,567
Agents' Balances or Uncollected Premiums	7,607,687,836
Accrued Interest and Rents	120,173,987
Other Admitted Assets	14,076,622,575

Liabili	ities	
Unearned Premiums		\$9,106,965,847
Reserve for Claims and Claims Ex	pense	25,279,158,493
Funds Held Under Reinsurance Tre	eaties	315,537,902
Reserve for Dividends to Policyho	lders	1,726,291
Additional Statutory Reserve		139,634,000
Reserve for Commissions, Taxes a	nd	
Other Liabilities		8,638,106,801
Total		\$43,481,129,334
Special Surplus Funds	\$178,192,363	
Capital Stock	10,000,075	
Paid in Surplus	11,804,736,755	
Unassigned Surplus	10,056,686,874	
Surplus to Policyholders		22,049,616,067
Total Liabilities and Surplus		\$65,530,745,401



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

I, TIM MIKOLAJEWSKI, Assistant Secretary of Liberty Mutual Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2021, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 8th day of March, 2022.

TAMiholajewski

Assistant Secretary

<u>Notice to Bidders</u> Bidder's Identification of Subcontractors

Please be advised that pursuant to GML § 101(5) each 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 subcontractor:

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

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

The completed BIDS Form must be uploaded in the Sealed Subcontractor List subtab of the Subcontractors and Joint Ventures tab of the RFx. Failure to submit the properly completed BIDS Form including the names of subcontractors and the agreed-upon amounts to be paid to each may result in the rejection of the bid as non-responsive.

Please Note: For any contract that is subject to M/WBE Participation Goals under Section § 6-129 of the Administrative Code of the City of New York, if the bidder's intention to use its own forces to do any of the above-referenced work would result in failure to attain the Participation Goals identified in the M/WBE Utilization Plan, the bidder must request and obtain a full or partial waiver of the Participation Goals (Schedule B - Waiver) in advance of bid submission. The bidder must submit the approved waiver determination or otherwise agree to the Participations Goals as stated in the Schedule B (Parts I and II) as part of a responsive bid submission.

After the low bid is announced, the sealed list submitted by the low bidder will be opened and the names of the subcontractors will be announced. The sealed lists of subcontractors submitted by all other bidders shall be maintained by the Agency unopened unless such bidder shall become the low bidder (e.g., the initial low bidder is found non-responsive). All unopened lists of subcontractors will be deleted from PASSPort after the contract is awarded.

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 NYS Labor Law § 222(2)(e), or if the subcontractor has become otherwise unwilling, unable or unavailable to perform the subcontract.

Bidder's Identification of Subcontractors (BIDS Form)

Please list the subcontractors and agreed-upon amounts to be paid to each. Please note if any trade is not applicable to this project. If any of the work in the trade categories below is split between two or more subcontractors, please provide a description of the work to be performed by each subcontractor. If self-performing, please list your own name.

Please Note: Bidder may satisfy any required M/WBE Subcontractor Participation Goals by proposing one or more M/WBE subcontractors for any portion of the work to be performed by the below trades.

1. Plumbing and Gas Fitting Contractor(s): Description of work for each subcontractor: *Trade not applicable to this work. (Subcontractor Name) \$ (Agreed-upon amount to be paid to Subc (Subcontractor Name) \$ (Agreed-upon amount to be paid to Subcontractor) Steam Heating, Hot Water Heating, Ventilating 2. Description of work for each subcontractor: and Air Conditioning Apparatus Contractor(s): Self Performed: C.D.E. Air Conditioning Co., Inc. (Subcontractor itra (Agreed-upon amount to be p to Si (Subcontractor me) \$ (Agreed-upon amount to be paid to Subcontractor) Description of work for each subcontractor: 3. Electric Wiring and Standard Illuminating Fixtures Contractor(s): Electrical Work G.S.H. Electric, Inc. (Subcontractor Name) 350,000.00 \$ (Agreed-upon amount to be paid to Subcontractor) (Subcontractor Name) \$ (Agreed-upon amount to be paid to Subcontractor)

SPECIAL EXPERIENCE REQUIREMENTS

Special Experience Requirements apply as indicated below.

Bidder(s):	HVAC Work	XYES	NO
Specific Areas of Work:	General Construction Work	XYES	NO

- (A) <u>SPECIAL EXPERIENCE REQUIREMENTS FOR THE BIDDER IF APPLICABLE</u>: 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) <u>OUALIFICATION FORM</u>: 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 PASSPort. 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) <u>CONDITIONS</u>: 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) <u>JOINT VENTURES</u>: 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 075216: Modified Bituminous Membrane Roofing
- (2) Special experience requirements applicable to the contractor or subcontractor who will perform specific areas of work are summarized below.
 - For Section 075216, the contractor or subcontractor performing the work of this section must be meet the requirements of DDC General Conditions Section 014000 "Quality Requirements," Article 1.7.C.3.
- (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 PASSPort.

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 075216, 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

Name of Contractor: C.D.E Air Conditioning Co., Inc.		
Name of Project: <u>67th Street Branch Library - HVAC Replacement (Reg. 20191403886)</u>		
Location of Project: 328 East 67th Street, New York, NY 10065		
Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:		
Name: Kayla Hom - NYC Dept. of Design and Construction		
Title: Project Manager Phone Number: (347) 622-0455, HomKa@ddc.nyc.gov		
Brief description of the Project completed or the Project in progress: HVAC Replacement		
Was the Project performed as a prime, a subcontractor or a sub-subcontractor: Prime		
Amount of Contract, Subcontract or Sub-subcontract: <u>\$2,181,028.00</u>		
Start Date and Completion Date: <u>NTP 10/11/2018 - 01/08/2020</u>		
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 the Project completed or the Project in progress:		
Was the Project performed as a prime, a subcontractor or a sub-subcontractor:		
Amount of Contract, Subcontract or Sub-subcontract:		
Start Date and Completion Date:		

QUALIFICATION FORM

Name of Contractor: C.D.E Air Conditioning Co., Inc.
Name of Project: Mott Haven Branch Library - HVAC Library (Reg.20191429341)
Location of Project: <u>321 East 140th Street, Bronx, NY 10454</u>
Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:
Name: Bienvenido Perez Jr NYC Dept. of Design and Construction
Title: Project Manager Phone Number: (347) 682-0298, PerezJrBi@ddc.nyc.gov
Brief description of the Project completed or the Project in progress: HVAC Upgrade
Was the Project performed as a prime, a subcontractor or a sub-subcontractor: Prime
Amount of Contract, Subcontract or Sub-subcontract: \$1,969,354.00
Start Date and Completion Date: <u>NTP 08/2019 - Ongoing</u>

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 the Project completed or the Project in progress:
Was the Project performed as a prime, a subcontractor or a sub-subcontractor:
Amount of Contract, Subcontract or Sub-subcontract:
Start Date and Completion Date:

QUALIFICATION FORM

Nome of Contractory C.D.F.Air Conditioning Co. Inc.
Name of Project: Eastchester Library (Reg. # 20191429056)
Location of Project: <u>1385 East Gun Hill Road, Bronx, NY 10469</u>
Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:
Name: Kayla Hom - NYC Dept. of Design and Construction
Title: <u>Project Manager</u> Phone Number: <u>(</u> 347) 622-0455, HomKa@ddc.nyc.gov
Brief description of the Project completed or the Project in progress: HVAC Replacement
Was the Project performed as a prime, a subcontractor or a sub-subcontractor: Prime
Amount of Contract, Subcontract or Sub-subcontract: <u>\$1,274,910.00</u>
Start Date and Completion Date: <u>NTP 7/22/2019 - Ongoing</u>

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 the Project completed or the Project in progress:
Was the Project performed as a prime, a subcontractor or a sub-subcontractor:
Amount of Contract, Subcontract or Sub-subcontract:
Start Date and Completion Date:



SCHEDULE B - M/WBE Utilization Plan

Part 1: M/WBE Participation Goals

Contract Overview (To be completed by contracting agency)

APT E-Pin#TBD	FMS Project ID# <u>LQQBHHVAC</u>				
Project Title_LQQBHHVAC	Agency PIN#_TBD				
Contracting Agency Department of Design and Construction	Bid/Proposal Response Date				
Agency Address 30-30 Thomson Avenue	City_Long Island CityState_NYZIP_11101				
Contact Person Maria Johnston	Title_MWBE Outreach & Compliance Analyst				
Telephone 718-391-1234	_{Email} latorrema@ddc.nyc.gov				

Project Description (attach additional pages if necessary) Queesboro Hill Public Library HVAC Replacement

M/WBE Participation Goals for Services

Enter the percentage amount for each category or for an unspecified Goal.

Prime Contract Construction

Category and Breakdown: Unspecified 15.00 % Black American 3.00 % Hispanic American 2.00 % Asian American 0.00 % Women 0.00 %

Total Participation Goals 20.00 %

Bidder or proposer is required OR is not required to specifically identify the contact information of all M/WBE firms they intend to use as a subcontractor on this contract, including the M/WBE vendor name, address and telephone number in the space provided below in Part 2 Section 4.

Part 2: M/WBE Participation Plan

(To be completed by the bidder/proposer unless granted a full waiver, which must be submitted with the bid/proposal in lieu of this form)

Section 1: Prime Contractor Contact Information

Tax ID# 112217107	_ FMS Vendor ID#_0000477680						
Business Name C.D.E. Air Conditioning Co., Inc.	Contact Person Joseph F. Azara						
Business Address 321 39th Street	City Brooklyn State NY	_{ZIP} 11232					
Telephone 718-788-1040	Email josepha@cdeair.com						

Section 3: Contractor M/WBE Utilization Plan

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 in the panels in Section 2, 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 in the panels in Section 2, 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 in the panels in Section 2, as applicable.

Section 2: M/WBE Utilization Goal Calculation

Prime Contractor Adopting Agency Participation Goals

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

Total Bid/Proposal Value \$ 1,995,233.00

multiplied by x

Total Participation Goals 20.00 % (Line 1 above)

Calculated M/WBE Participation Amount \$________

Prime Contractor With Partial Waiver Approval Adopting

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

Total Bid/Proposal Value \$____

multiplied by x

Total Revised Participation Goals_____%

Calculated M/WBE Participation Amount \$

Line 3

Section 4: 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?

Enter a brief description of the type(s) and dollar value of subcontracts for all services you plan to subcontract if awarded this contract, along with the anticipated start and end dates for such subcontracts. For each item, indicate whether the work is designated for participation by an M/WBE. Where the contracting agency's solicitation has indicated a requirement that the bidder or proposer specifically identify the contact information of all M/WBEs they intend to use on this contract, vendors must also include the M/WBE vendor name, address and telephone number in the space provided below. Use additional sheets if necessary.

	Start Date End Date		Planned	Designated for M/WBE		M/WBE		M/WBE
Description of Work 1. Electrical	(MM/YY) 10 / 22	(MM/YY) 12 / 23	\$ Amount \$ 350,000.00	Y	N	Vendor Name GSH Electrical	M/WBE Address 491 East 166th Street, Bronx, NY 10456	Telephone (718) 585 - 4100
2. GC Work & Demolition	10 / 22	12 / 23	\$ 350,000.00			BTG Contracting LLC	223 Wall Street #222 Huntington, NY 11743	(631) 424 - 943
3. Insulation	10 / 22	12 / 23	\$ 30,300.00			GM Insulation	1345 Rosser Avenue, Elmont, NY 11003	(516) 354 - 6000
4. Steamfitting	10 / 22	12 / 23	\$ 100,000	•		Vanguard HVAC Technologies Inc.	2907 Quentin Road, Brooklyn, NY 11229	(718) 377 - 1273
5. Rigging	10 / 22	12 / 23	_{\$} 43,000					() -
6. Roofing	10 / 22	12 / 23	<u></u> \$10,000					() -
7. Steelwork	10 / 22	12 / 23	_{\$} 20,000					() -
8. Balancing	10 / 22	12 / 23	_{\$} 5,000					() -
9. Temp. Controls	10 / 22	12 / 23	\$ 115,000					() -
10. Ductwork	10 / 22	12 / 23	\$ <u>230,000</u>				<u> </u>	() -

Section 5: 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 soliciting and obtaining the participation of certified MBE and/or WBE firms.

Signature	Date 8/25/2022
Print Name Joseph F. Azara	_{Title} President

50.00

%



CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

Sponsor Agency: QPL

CSI Number	Description	Quantity	Unit	Tota Ma	Fotal Cost of Material		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		Total Cost of Labor		al Cost of iipment	To Ma La Eq	tal Cost: aterials, bor and uipment
	CONTRACT 1 - HVAC WORK																																		
<u>01 0000</u>	GENERAL REQUIREMENTS (DDC GENERAL CONDITIONS)																																		
01 7200	PROTECTION OF EXISTING CONSTRUCTION																																		
	Mobilization	1	ls			\$	99,700			\$	99,700																								
	Temporary Heat	1	ls	\$	-	\$	-	\$	-		N/A																								
	Security Guards	1	ls			\$	30,000			\$	30,000																								
	Division 1 Subtotal									\$	129,700																								
02 0000																																			
02 0000	SELECTIVE DEMOLITION REMOVAL AND SALVAGE																																		
02 4113	Remove existing ceiling system: ACT including tile, grid	4 500																																	
	suspension system fixtures etc. DM 801 (incl. Electrical	4,500	sf	\$	7 650	\$	56 250			\$	63 900																								
	disconnects. HVAC disconnects)		01	Ŷ	1,000	Ŭ,	00,200			Ψ	00,000																								
	Remove existing ceiling system (incl. Core drilling roof slab to																																		
	provide new mechanical pipe penetration, Temporary Protection,			\$	6,000	\$	25,000			\$	31,000																								
	Protection to interior brick fascia)		lf																																
	Division 2 Subtotal									\$	94,900																								
								\$	5,000																										
05 0000																																			
05 0000																																			
05 1000	STRUCTURAL STEEL																																		

Department of Design and Construction

CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC Sponsor Agency: QPL

Total Cost: Total Cost CSI Total Cost of **Total Cost of** Materials. Unit Description Quantity of Material Labor Labor and Number Equipment Equipment Dunnage steel to roof; W8x13 29,700 900 13,500 \$ lb \$ \$ 43,200 5,000 \$ Craneage 10.000 \$ dav Temporary protection to roof 12,500 1 ls \$ 5.000 \$ 7,500 \$ **Division 5 Subtotal** \$ 60,700 THERMAL AND MOISTURE PROTECTION 07 0000 07 5216 MODIFIED BITUMINOUS MEMBRANE ROOFING Fan roof curb 1 \$ 500 \$ 3.000 \$ 3.500 ea Roof mechanical pipe penetration as per det 3/A802 2 \$ \$ \$ 1,000 6,000 7,000 ea Roof duct penetration (assumed support framing) 3 \$ \$ 7.000 \$ ea 1.500 8,500 Flashing at pipe penetration and mechanical curb \$ ea Additional Roof repairs at MEP demolition and new works \$ 1 ls Rough blocking for new equipment, etc. \$ 1 ls 07 8413 THROUGH PENETRATION FIRESTOP SYSTEMS Roof mechanical penetration firestopping 6/A802 \$ \$ 500 500 ls loc Electrical conduit wall penetration firestopping 4,5/A802 3,000 ls \$ 3.000 \$ loc **Division 7 Subtotal** \$ 22,500 08 0000 DOORS AND WINDOWS ACCESS DOORS (included w/ 233000 and 260533) 08 3113



CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

Sponsor Agency: QPL

CSI Number	Description	Quantity	Unit	Total Cos Materia	t of I	Total Cost of Labor	Total Cost of Equipment	Total Mate Labo Equi	Cost: Frials, or and pment
09 0000									
09 5100									
	New 2x2 ACT celling	4.500	sf	\$ 81.0	000	\$ 148.500		\$	229.500
		.,		φ 0.,		· · · · · · · · · · · · · · · · · · ·		¥ .	
09 9123	INTERIOR PAINTING (included w/ 095100)								
	Division 9 Subtotal							\$	229,500
23 0000	HEATING, VENTILATING AND AIR CONDITIONING (HVAC)								
	ACCESS DOORS IN GENERAL CONSTRUCTION FOR HVAC								
23 0005	(included w/ 233000)								
23 0200	FIRESTOPPING FOR HVAC								
	Firestopping and penetration	ls	st	\$ 5	500	\$ 2,000		\$	2,500
22.0512	ELECTRIC MOTORS (included w/ 236210)								
23 03 13									
23 0519	METERS AND GAUGES FOR HVAC PIPING AND DUCTWORK								
	Miscellaneous HVAC requirements (dampers, accessories, turning vanes, etc)		ls	\$ 1,4	26	\$ 1,000		\$	2,426
					-				
23 0523	VALVES								
	Misc . Valves and specialties hot water S/R	2	system	\$ 9,5	500	\$ 18,000		\$	27,500

Department of Design and Construction

CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

Sponsor Agency: QPL

CSI Number	Description	Quantity	Unit	Total Cost of Material	Total Cost of Labor	Total Cost of Equipment	Total Cost: Materials, Labor and Equipment
	Misc . Valves and specialties refrigerant piping		system				\$-
23 0529	HANGERS, ANCHORS AND SUPPORTS (included w/ 235110)			_	_		
23 0540	ACOUSTICS (included w/ 233000)	_					
23 0548	VIBRATION ISOLATION						
	Vibration / sound insulation	ls	units	\$ 3,800			\$ 3,800
23 0553	SYSTEMS IDENTIFICATION						
	System ID	1	ls	\$ 1,000	\$ 5,000		\$ 6,000
00.0500							
23 0593	IESTING, ADJUSTING AND BALANCING						
	Air & water test and balance adjustments and reports (including	1	la		\$ 10,000		\$ 10,000
	Existing air devices)	I	15				
	Clean ductwork (existing duct)	1	le		by Library		¢
	Cleaning recaulking and resealing existing louvers	1	-13 - E2		by Library		φ - \$
	Pipe cleaning and chemical water treatment		cu				Ψ -
	Cleaning, flushing & testing piping		ls	\$ 300	\$ 2,000		\$ 2,300
				φ 000	¢,000		ф <u>2,000</u>
23 0700	INSULATION						
	Insulation hot water piping	ls	lf	\$ 3,000	\$ 20,000		\$ 23,000
	Insulation refrigerant piping	ls	lf	\$ 900	\$ 4,800		\$ 5,700
	Duct insulation	ls	sf	\$ 1,000	\$ 6,000		\$ 7,000
23 0800	COMMISSIONING OF HVAC (included w/ 236210 and 233400)						
23 0923	BUILDING MANAGEMENT AND CONTROL SYSTEM (BMCS)						
	Honeywell controllers - headend equipment	1	ls		\$ 34,000	\$ 27,000	\$ 61,000
CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

CSI Number	Description	Quantity	Unit	Tota N	al Cost of Iaterial	Total Cost of Labor		Total o Equip	Cost f ment	Total Cost: Materials, Labor and Equipment
	BMS control panel	ls	ea	\$	11,700	\$	40,000	\$ 19	9,000	\$ 70,70
	Split AC1/ACCU1 system - remote wall mounted microprocessor w/ LCD display		ea							inc
	Split AC2/ACCU2 system - remote wall mounted microprocessor w/ LCD display		ea							inc
	Unitary controls - R 410a		ea							inc
	Exhaust fans		ea							inc
	ALD and FSD damper		ea							inc
	L.V. and 120V ATC / BMS requirements	ls	sys	\$	2,900	\$	50,000			\$ 52,90
	Miscellaneous control work requirements	1	ls							inc
	Calibration, Testing , sequence & Training Temperature control system	1	ls							\$ 5,00
23 2123	PUMPS									
	FFP-1 freeze protection pump 7 gpm, 1/6 hp, ECM motor		ea	\$	2,250	\$	5,000			\$ 7,25
	FFP-2 freeze protection pump 38 gpm, 1 hp, ECM motor		ea	\$	5,000	\$	6,800			\$ 11,80
	Condensate pump .93 gpm (AC)		ea							non
23 2500	PIPE CLEANING AND CHEMICAL WATER TREATMENT (included w/ 235210)									
23 2600	WATER SPECIALTIES (included w/ 235210)									
22 2000										
23 3000	Demolition:									
	Disconnect and remove existing duct with related accessories - mezzanine		lbs	\$	500	\$	3,000			\$ 3,50
	Disconnect and remove existing duct with related accessories - 1- st floor, existing ceiling diffusers with related duct		lbs	\$	500	\$	2,500			\$ 3,00
	Disconnect and remove existing ceiling return grilles		ea							\$

CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

CSI Number	Description	Quantity	Unit	Total Cost Material	of 1	Total Cost of Labor	Total Cost of Equipment	Total Cost: Materials, Labor and Equipment
	Disconnect and remove existing AC1/ACCU1 1350 cfm, 6 tons DX					¢ 19.000		¢ 19.000
	cooling, 95 mbh heating with related duct and control	1	ea			φ 10,000		φ 16,000
	Disconnect and remove existing AC2/ACCU2 11100 cfm, 31 tons					¢ 10.000		¢ 10.000
	DX cooling, 95 mbh heating with related duct and control		ea			φ 10,000		φ 16,000
	Disconnect and remove existing RF-1 exhaust fans 1350 cfm		ea		:	\$ 2,500		\$ 2,500
	Disconnect and remove existing RF-2 exhaust fans 11100 cfm		ea		:	\$ 2,500		\$ 2,500
	Disconnect and remove existing roof mounted exhaust fan TX-1					¢ 4.000		¢ 4.000
	490 cfm		ea			φ 4,000		φ 4,000
	Disconnect and remove refrigerant piping		lf		:	\$ 4,000		\$ 4,000
	Disconnect and remove hot water piping cut and cap	ls	loc		:	\$ 4,500		\$ 4,500
	Misc, demolition requirements	1	ls		:	\$ 4,000		\$ 4,000
	New:							
	Upgrade existing dunnage support		ea					\$-
	Coordination, as built drawings requirements	ls	hrs		;	\$ 10,000		\$ 10,000
	Hoisting and setting of split units		units		:	\$ 75,000		\$ 75,000
	Protection - egress / ingress	1	ls					\$-
	Start-up, instructions, site specific requirements	1	ls		:	\$ 10,000		\$ 10,000
	Commissioning of HVAC	1	ls		:	\$ 3,000		\$ 3,000
	Misc. rentals, small tools, site specific requirements	1	ls					\$-
	Galvanized duct (including plenums) - mezzanine	4,800	lbs	\$ 19,2	00	\$ 81,600		\$ 100,800
	Galvanized duct (including plenums) - 1-st floor	8,200	lbs	\$ 32,8	00	\$ 139,400		\$ 172,200
	Smoke detector - install T.B.D.		ea		:	\$ 4,000		\$ 4,000
	AD access door	25	ea	\$ 3,1	25	\$ 6,250		\$ 9,375
	Louver with bird screen	ls	sf	\$ 2,5	00	\$ 4,000		\$ 6,500
	Louver with bird screen		sf					\$-
	Louver with bird screen		sf					\$-
	Flexible duct connector	60	lf	\$ 1,5	00	\$ 5,820		\$ 7,320
	Tie-in duct	20	ea	\$ 8,8	00	\$ 10,000		\$ 18,800
23 3313	DAMPERS							
	Back draft damper		ea					\$-



CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

							Total Coat	Total Cost:
CSI	Description	Quantity	Unit	Tota	al Cost of	Total Cost of	Total Cost	Materials,
Number	Description	Quantity	Unit	N	laterial	Labor	01 Equipment	Labor and
							Equipment	Equipment
	FSD/AD fire smoke damper 18"x12"	1	ea	\$	1,000	\$ 900		\$ 1,900
	FSD/AD fire smoke damper 42"x24"	1	ea	\$	2,000	\$ 1,500		\$ 3,500
	FSD/AD fire smoke damper 32"x16"	2	ea	\$	2,000	\$ 2,500		\$ 4,500
	FSD/AD fire smoke damper 38"x12"	1	ea	\$	1,000	\$ 900		\$ 1,900
	FSD/AD fire smoke damper 36"x6"	1	ea	\$	1,000	\$ 900		\$ 1,900
	FSD/AD fire smoke damper 16"x10"	1	ea	\$	1,000	\$ 900		\$ 1,900
	FSD/AD fire smoke damper 39"x7"	1	ea	\$	1,000	\$ 900		\$ 1,900
	FSD/AD fire smoke damper 15"x8"	1	ea	\$	1,000	\$ 900		\$ 1,900
	ALD damper 20"x8"	1	ea	\$	130	\$ 600		\$ 730
	ALD damper 18"x12"	1	ea	\$	130	\$ 600		\$ 730
	ALD damper 20"x10"	2	ea	\$	260	\$ 1,200		\$ 1,460
	ALD damper 18"x6"	3	ea	\$	390	\$ 1,800		\$ 2,190
	ALD damper 36"x8"	3	ea	\$	390	\$ 1,800		\$ 2,190
	ALD damper 96"x20"	1	ea	\$	600	\$ 600		\$ 1,200
	ALD damper 60"x18"	2	ea	\$	700	\$ 1,200		\$ 1,900
	ALD damper 80"x12"	1	ea	\$	700	\$ 600		\$ 1,300
	Manual blade damper 32"x16"	1	ea	\$	500	\$ 300		\$ 800
	VD damper regulator for diffuser	50	ea	\$	3,000	\$ 3,000		\$ 6,000
23 3400	DAMPERS							
	Fans and accessories - greenheck as basis of design:							
	Disconnect switch - curb adaptor:							
	RF/SX-1 Supply / return fan 3000 cfm, 1/4 hp, VFD	1	ea	\$	2,000	\$ 1,200		\$ 3,200
	RF/SX-2 Supply / return fan 10000 cfm, 4 hp, VFD	1	ea	\$	12,000	\$ 1,200		\$ 13,200
	TX-1 490 cfm , 0.03 HP - roof mounted	1	ea	\$	2,000	\$ 600		\$ 2,600
	Starter		ea					none
23 3610	AIR OUTLETS AND INLETS							
	Ceiling Air diffuser 24"x24"	50	ea	\$	5,000	\$ 8,000		\$ 13,000
	Ceiling return grill 18"x12"	10	ea	\$	750	\$ 1,000		\$ 1,750
	Ceiling return grill 48"x12"	4	ea	\$	400	\$ 1,200		\$ 1,600

CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

CSI Number	Description	Quantity	Unit	Tot N	al Cost of Material	Tot	al Cost of Labor	Total Cost of Equipment	Tot Ma La Eq	al Cost: aterials, bor and uipment
	Ceiling return grill 42"x12"	2	ea	\$	200	\$	850		\$	1,050
23 5210	PIPING AND ACCESSORIES									
	Hydronic piping: Hot water S/R piping 1.1/2" dia Pipe / fittings / supports	le	63	¢	5 085	¢	20 370		¢	26 355
	Hot water S/R piping 1 1/2" dia Pipe / fittings / supports	ls	ea	φ \$	2 835	φ \$	7 560		Ψ \$	10.395
	Tie-in to existing system	2	ea	Ψ	2,000	\$	5,625		\$	5.625
	Refrigerant piping:					Ŧ	0,020		Ŧ	0,010
	5/8" Dia pipe/ fittings / supports	110	lf	\$	3,465	\$	8,415		\$	11,880
	1 5/8" Dia pipe/ fittings / supports	60	lf	\$	1,500	\$	3,750		\$	5,250
	1 3/8" Dia pipe/ fittings / supports	65	lf	\$	1,625	\$	4,355		\$	5,980
	1/2" Dia pipe/ fittings / supports		lf						\$	-
	Refrigerant fill	ls	ea	\$	3,000	\$	8,500		\$	11,500
	Condensate drain 1" dia pipe/ fittings / supports, Route the AC units' condensate discharge to the nearest floor drain.	2	loc	\$	1,250	\$	3,800		\$	5,050
23 6210	AIR COOLED AIR CONDITIONING UNITS									
	Split DX system VAV conditioning units AC1/ACCU1 1400 cfm, cooling 62.51 btuh , heating 62.72 mbh gpm, 70.85 mbh, evaporator fan 3 hp, 1400 cfm, filtration system, air economizer system, VFD	1	еа	\$	61,000	\$	33,000		\$	94,000
	AC2/ACCU2 11100 cfm, cooling 382.97 btuh , heating 38 gpm, 380.96 mbh, evaporator fan 15 hp, 11100 cfm, filtration system, air economizer system, VFD	1	ea	\$	190,000	\$	37,000		\$	227,000
23 8216	COILS (included w/ 236210)			1				l 		
23 8500	VARIABLE FREQUENCY CONTROLLERS			1						
ľ	Variable frequency drive - 15 hp (material only)		ea						\$	-
	Variable frequency drive - 4 hp (material only)	1	ea	\$	6,500				\$	6,500
	Variable frequency drive - 3 hp (material only)		ea						\$	-



CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

CSI Number	Description	Quantity	Unit	Total Cost of Material	Total Cost of Labor	Total Cost of Equipment	Total Cost: Materials, Labor and Equipment
	Variable frequency drive - 1 hp (material only)	1	ea	\$ 4,000			\$ 4,000
23 8600	ELECTRIC MOTOR CONTROLLERS (included w/ 236210 and 233400) Division 23 Subtotal						\$ 1,267,706
							. , ,
26,0000							
26 0000	ELECTRICAL SPECIAL CONDITIONS						
20 0002	Demolition (disconnect and make safe):						
	Disconnect power to HVAC equipment		ea		\$ 30,000		\$ 30,000
	Disconnect power to disconnect switches		ea		¢ 00,000		incl
	Disconnect/reconnect existing feeder to replaced panel	1	ls				incl
	Disconnect/reconnect power to lighting fixtures	1	ls				incl
	Motor starters		ea				incl
	625 Amp panel		ea				incl
	CCTV camera		ea				incl
	Lighting fixture		lf				incl
	Remove/reinstall existing exit sign		ea				incl
	Lighting fixture (strip)		lf				incl
	Occupancy sensor, ceiling mounted		ea				incl

CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

CSI Number	Description	Quantity	Unit	Total Cost of Material	Total Cost of Labor	Total Cost of Equipment	Total Cost: Materials, Labor and Equipment
	Existing conductors to HVAC equipment	1	ls				incl
	Temporary Lighting, power		sf				incl
	Video Surveillance System:						
	CCTV camera		ea				\$-
	Cable cat.6		lf				\$-
	Software, camera license, testing	1	ls				\$-
	Clean and re-lamp existing lighting fixtures to remain	16	ea		\$ 6,400		\$ 6,400
	Trace existing circuits	1	ls				\$-
	Vibration isolation/seismic restraint	1	ls				\$-
	Cutting/patching	1	ls				\$-
	Miscellaneous work, coordination w/other trades, deliveries, etc.	1	ls				\$-
26 0005	ACCESS DOORS IN GENERAL CONSTRUCTION FOR ELECTRICAL (incl. w/ 260533)						
26 0265	ELECTRICAL TESTING, ADJUSTING AND BALANCING						
	Electrical Testing, Adjusting and Balancing	1	ls		\$ 3,000		\$ 3,000
26 0280	EQUIPMENT CONNECTIONS AND COORDINATION						
	VFD (F.B.O.) - up to 20 HP	4	ea	\$ 884	\$ 4,500		\$ 5,384
	Air conditioning unit AC-1	1	ea		\$ 1,000		\$ 1,000
	Air conditioning unit AC-2	1	ea		\$ 1,000		\$ 1,000
	Air cooled condensing unit ACCU-1	1	ea		\$ 1,000		\$ 1,000
	Air cooled condensing unit ACCU-2	1	ea		\$ 1,000		\$ 1,000
	Fans	2	ea		\$ 200		\$ 200
	Freeze protection pump	2	ea		\$ 200		\$ 200
	Condensate pump	1	ea		\$ 50		\$ 50
26 0290	CEILING, FLOOR AND WALL ELECTRICAL PENETRATION FIRE SEALS	1			\$ 1000		\$ 1.000
			15		φ 1,000	1	φ 1,000

CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

CSI Number	Description	Quantity	Unit	То	tal Cost of Material	Total Cost of Labor	Total Cost of Equipment	Total Cos Materials Labor an	st: s, 1d
ļ								Lquipine	m
26.0519									
20 03 13	250 MCM	140	lf	¢	700	\$ 5,600		¢ 6	300
		140	II If	φ	560	\$ 5,000		\$ 0, ¢ 1	100
			II If	φ	560	\$ 030 ¢ 630		ψ 1, ¢ 1	100
	# 4 wite	15	II If	φ ¢	560	\$ 000		φ I, ¢ 1	190
		160	II If	ф Ф	500	φ 030 ¢ 630		<u> </u>	190
		100	II II	þ	1 000	\$ 030 ¢ 0.000		<u>ຈີ I,</u>	190
		1,000	II	\$	1,000	\$ 2,000		<u></u> \$3,	000
26.0526	GPOUND SYSTEM (incl. w/ 260510)								
20 0320									
26 0533	RACEWAYS AND BOXES								
20 0000	Reconfigure/extend existing conduit	is	ام			\$ 1.800		\$ 1	800
	3/4" conduit (for cameras)	ls	lf			\$ 1,000		<u>φ 1,</u> \$ 1	250
	3/4" RGS	ls Is	lf			\$ 625		<u> </u>	625
		10				φ 020		Ψ	020
26 0553	SYSTEMS IDENTIFICATION								
	Systems Identification	1	ls	\$	400	\$ 800		\$ 1	200
				Ť	100	ф 000		ψ י,	200
26 0800	COMMISSIONING OF ELECTRICAL (incl. w/ 260265)								
26 0923	LIGHTING CONTROL DEVICES								
	Occupancy sensor, ceiling mounted	11	ea	\$	7.810	\$ 5.544		\$ 13.	354
				,	,	· · · · ·			
26 2416	PANELBOARDS								
	600 Amp panel	1	ea	\$	750	\$ 5,500		\$6,	250
									-
26 2726	WIRING DEVICES								
	15 Amp 3-pole circuit breaker	7	ea	\$	252	\$ 1,750		\$2,	002
	15 Amp 1-pole circuit breaker	4	ea	\$	52	\$ 200		\$	252
	GFI receptacle, WP	2	ea	\$	36	\$ 76		\$	112



CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

CSI Number	Description	Quantity	Unit	Tota N	al Cost of Iaterial	Total La	Cost of abor	Tot Equ	al Cost of upment	Total Cost: Materials, Labor and Equipment
	Toggle switch		ea							\$
26 2813	FUSES (600 V AND LESS) (incl. w/ 260519)									
26 2816	DISCONNECT SWITCHES									
	400 Amp NEMA 3R disconnect switch	1	ea	\$	1,000	\$	2,350	\$	2,840	\$ 6,190
	100 Amp NEMA 3R disconnect switch	1	ea	\$	540	\$	2,100	\$	2,000	\$ 4,640
	100 Amp NEMA 1 disconnect switch	2	ea	\$	400	\$	3,220	\$	1,000	\$ 4,620
	30 Amp NEMA 1 disconnect switch	2	ea	\$	124	\$	1,860	\$	340	\$ 2,324
26 5000	LUMINAIRES AND ACCESSORIES									
	Installation only:									
	Lighting fixture type "A"	16	lf	\$	592	\$	8,064			\$ 8,656
	Lighting fixture type "B"	23	lf	\$	943	\$	13,110			\$ 14,053
	Lighting fixture type "C"	10	lf	\$	380	\$	5,040			\$ 5,420
	Lighting fixture type "D"	3	lf	\$	114	\$	1,500			\$ 1,614
	Lighting fixture type "F" (8')	18	ea	\$	666	\$	9,000			\$ 9,666
	Furnish only	1	ls							\$
	Division 26 Subtotal									\$ 148,322
<u>28 0000</u>	ELECTRONIC SAFETY AND SECURITY									
28 3100	FIRE ALARM LIFE-SAFETY SYSTEM									
	Remove/reinstall existing smoke detector	17	ea			\$	3,740			\$ 3,740

CONTRACT 1 - HVAC WORK

Project: Queensboro Hill Public Library HVAC Replacement

Location: 60-05 Main Street, Queens, NY 11355

Bidder: C.D.E. Air Conditioning Co., Inc.

DDC ID: LQQBHHVAC

CSI Number	Description	Quantity	Unit	То	tal Cost of Material	Tota	al Cost of Labor	Total Cost of Equipment	⊢∽⊥ш	otal Cost: laterials, abor and quipment
	Reconnect to existing circuits		ea						\$	-
	Smoke detector, duct mounted	5	ea	\$	625	\$	4,400		\$	5,025
	Fire smoke damper	7	ea	\$	490	\$	6,160		\$	6,650
	3/4" conduit	300	lf	\$	1,020	\$	3,750		\$	4,770
	# 12 wire	300	lf	\$	120	\$	600		\$	720
	Tie-in to existing system/reprogramming/testing	1	ls			\$	6,000		\$	6,000
	Division 28 Subtotal								\$	26,905
	TOTAL CONTRACT 1 - HVAC WORK								\$	1,980,233

Code	Label	Additions	YOU MUST ENTER 1 IN THE BOXES BELOW	Additions _1	Field type
	ALLOWANCE for Incidental Asbestos Abatement				
i2_1	(Section 028013 of the Specifications)	15000	1	15000	Additional Fees

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 email and will specify the types of information which must be submitted directly to DDC.

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 in 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 DDC 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. If such a meeting is convened, the bidder will be advised as to any additional material to be provided.

Project References

A. Contracts completed by the bidder

List all contracts substantially completed within the last 4 years, up to a maximum of 10 projects, in descending order of date of substantial completion. *please see attached next page for CDE's additional list of completed projects

Project & Location	Contract Type	Contract Amount (\$000)	Date Completed	Owner Reference & Tel. No.	Architect/Engineer Reference & Tel. No. (if different from owner)
67th Street Library 328 67th Street New York, NY 100655	HVAC Prime	2,189,511.00	March 2022	NYC DDC - Kayla Hom HomKa@ddc.nyc.gov 347-622-0455	Syska Hennessy Group 212-921-2300
2 Bronx Libraries - 2150 Uni. Branch Library & 1215 Morrison Avenue	HVAC Prime	1,751,631.00	March 2022	NYC DDC - Andrew Murjas MurjasAn@ddc.nyc.gov	Greenman-Pedersen, Inc. 646-791-8800
NYCHA Long Island Baptist Houses 550 Sutter Avenue, Brooklyn, NY	HVAC Prime	4,189,499.00	September 2021	NYCHA - Chris Sabbagh Chris.Sabbagh@nycha.nyc 718-414-7107	gov
PS 360 Bronx	HVAC Prime	3,271,253.00	September 2018	NYCSCA Muhammad Sharif MSHARIF@nycsca.org 646-879-1762	SCA - Architecture & Engineering aeplansdesk@nycsca.org
Hunter College Campus School	HVAC Prime	11,717,540.00	February 2022	DASNY - Yunjung Lee YLee@dasny.org	Genesys Engineering P.C. - Charles Klee 631-974-5171
The Scholars Academy (IS 323) Queens	HVAC Prime	17,329,098.00	March 2022	NYC SCA-Reinaldo Rosales 718-472-8237 917-418-3510	SCA - Architecture & Engineering aeplansdesk@nycsca.org
Morrisania Library	HVAC Prime	1,639,408.00	June 2022	NYC DDC - Kayla Hom 347-622-0455 HomKa@ddc.nyv.gov	Syska Hennessy Group 212-921-2300

*highlighted in YELLOW are projects where CDE were PRIME CONTRACTORS.

*highlighted in GREEN are projects with significant GC work.

PROJECT NAME AND LOCATION	PROJECT NUMBER	OWNER/CONTACT	TELEPHONE NO.	FINAL CONTRACT PRICE	COMPLETION DATE
Morrisania Library Rooftop HVAC Unit Replacement HVAC Upgrad	20201407086	NYC DDC Kayla Homm	(347) 622-0455	1,629,841	June, 2022
67 th Street Branch Library HVAC Roof Replacement	20191403886	NYC DDC Kayla Hom	(718) 391-1265 (646) 879-6572	2,189,511	March, 2022
26 th Ward Water Pollution Control Plant 122-66 Flatlands Avenue, Brooklyn NY	20161410771 Contract 26W-20	Skanska-Picone, JV Michael Wright	(516) 403-0915	3,777,432	March, 2022
St. James Recreation Center Reconstruction of Boiler, Heating System & A/C	X044-113MA1 20191407039	NYC Dept. of Parks Frank Fusco	(929) 271-2704 (917) 530-4361	1,650,148	January, 2022
Long Island Baptist Houses Replacement of Boilers & Hot Water Heaters	BL1821015	NYCHA Kelwyn Lyken	(212) 306-4611	4,189,499	September, 2021
Schiff House Daycare Center Renovation	3340909999	Inniss Construction Andy Inniss	(718) 291-8102	1,848,107	September, 2021
4 DHS Site Energy Efficiency Measures	20171416940	NYC DDC Steven Thorne	(646) 617-4227	4,306,863	September, 2020
2 DCAS Sites Energy Conservation Measures	20181403173	NYC DDC Teodor Balan	(718) 391-2488 (917) 890-4373	985,179	June, 2020
Appellate Court House Roof and Operational Spaces Upgrade	20161429673	Neelam Construction Vendant Bhanderi	(201) 768-2213 (201) 835-9339	737,682	May, 2020
Bill Brown Memorial Park Reconstruction of Comfort Station	B109-112M	Northe Group, Inc. Albert Zihenni	(212) 533-6070	313,575	May, 2020
Bowery Bay WTP, Contract BB-64 Main Sewage Pump Upgrades, Control & Piping	20151428773	Picone-Schiavone, JV Mike Boranian	(516) 790-3094 (516) 523-2143	1,240,499	May, 2020
Bronx Family & Criminal Court & Health Building Energy Conservation Measures	20171413981	NYC DDC Muhammad Hussain	(718) 916-5342	7,492,254	May, 2020
Bushwick Green Central Knoll Park Construction of Comfort Station	B395-115MA-1	NESCO Chris Holtz	(718) 361-0044	158,202	May, 2020
2 NYPD Precincts Replacement of Generators	P079GENER 2018/1426587	Commerce Electric James Tamboris	(718) 233-4955	816,928	May, 2020
HS IS 89 HVAC Work	C000014865	Delric Construction Anthony Delacerra/ Robert Ricciardi	(973) 427-0058	4,300,000	April, 2020
Sorrentino Recreation Center Boilers / HVAC System	Q446-216M 2017142671	NYC Dept. of Parks & Recreation Vladimir Biba	(917) 635-2564 (718) 370—6708	1,523,757	April, 2020
Atlantic Men's Shelter & 67 th Precinct Energy Upgrades	20171417117	NYC DDC Carlyle Clinton	(347) 865-0218	2,177,563	December, 2019
FIT Alumni Residence Hall HVAC Chiller Plant Upgrade	C1386	Kallen & Lemelson Sam Baytalsky	(212) 643-9898	2,704,884	December, 2019

Staten Island University Hospital (SIUH)	13-1707-18	EW Howell, Co. LLC	(516) 921-7100	383,629	August, 2019
UREA Make Ready		Hans Laros	(516) 390-8179		<u> </u>
1270 Prove Avenue Propy NV	HP-237	Spectraserv, Inc.	(973) 589-0277	22,900	June, 2019
Paruch College		Conosus Engineering DC	(014) 622 6400		
Baruch College	20/9500000	Charles Vies	(914) 055-0490	9 921 000	Fohmory 2010
ITVAC & Controis Opgrade	3040303333	Christopher Hollister	(031) 974-3171 (014) 712-5840	0,031,090	reditially, 2019
Staton Island Armory		Office of Conoral Services (OCS)	(714) 712-3040		
Provide Energy Efficient Retrofit	45441H	Taiudeen Alava Building CPM	(646) 296-2132	788,621	February, 2019
SUNV College of Optomotry		State University Construction			
33 West 42nd Street NV NV	41056 02	Fund (SUCE)	(518) 320-3230	5 461 466	February 2010
33 West 42 "Street, IVI IVI	41050-02	Simon Stein RA	(518) 729-6248	5,401,400	redituary, 2019
Brooklyn Central Library		NVC DDC	(718) 301-1132		
OpeNVC Energy Retrofit	20151429177	Raijy Bhagat	(710) 391-1132 (347) 203-1755	5,914,313	January, 2019
South West Brooklyn Marine Transfer Station		Prismatic Develop/NVC DDC	(973) 882-1133 X266		
1824 Shore Parkway, Brooklyn NY	20141418737	Mike Penitione Prismatic	(973) 776-4680	8,663,567	January, 2019
Christopher Street Substation - PATH		Mass Electric Construction Co	(775)776 1000		
Replacement and Ungrade HVAC Work	PAT-624.154	Ricky Kaby	(201) 930-4930	1,088,579	December, 2018
26th Ward Water Pollution Control Plant	Project No. WP-205	NVC Dept of Environ Protection			
20 Wald Water Foliation Control Flant	Contract 26W-12H	Ioanna Heim	(718) 647-6510	12,927,364	December, 2018
SCA Headquarters – Data Center		Jannelli Construction			
3030 Thomson Avenue, LIC NY 11101	C000013304	Vincent Iannelli	(718) 836-2000	1,224,482	November, 2018
Susan Wagner High School – Black Box Theater	C000010550	Vertex Companies, Inc.		4.05.4.040	
0 0	C000013573	Andrew Sargent	(646) 553-3500	4,274,313	November, 2018
PS 195 (Queens)	C000010501	NYC SCA	(017) 416 0600	((22 2(0	0 (1 - 2010
Flood Elimination/Heating Plant Upgrade	C000013531	Muhammad Akbar	(917) 416-2608	6,632,268	October, 2018
PS 360 (Bronx)	C000012405	NYC SCA	(646) 970 1762	2 771 752	Santambar 2019
HVAC Replacement & New Roof	C000013493	Muhammad F. Sharif	(040) 879-1702	5,271,255	September, 2018
Asser Levy Bathhouse Boiler Reconstruction	N/C/L 010N/	NYC Dept. of Parks & Recreation	(718) 760-6767	1 247 720	Mary 2019
Asser Levy Place, NY NY	10104-215101	Vladimir Biba	Cell: (646) 879-6572	1,547,750	Way, 2018
CUNY Data Center	CITYW-CUCF-01-09-	EPIC Management	(945) 501 1000	201 100 00	March 2010
AC-8 Replacement	07-GC-1	Dennis Hagerty	(845) 521-1022	561,160.00	Warch, 2016
23 rd Precinct Station House	20171406505	NYPD	(217) 215 8265	211 201	November 2017
Installation of New Cooling Towers	20171400505	Stephen Sailer	(347) 243-8303	511,501	November, 2017
District 7 Sanitation Garage	20151/20101	NYC DDC	(718) 391-1342	3 704 688	Soptombor 2017
HVAC System Replacement	20131427101	Jermaine Francis	(347) 401-4987	5,704,000	September, 2017
Governor's Island Facilities Management	00088	The LiRo Group	(516) 434 0721	1 667 754	March 2017
Building 110	70000	Nadia Usmani	(310) 434-7721	1,002,234	Iviaicii, 2017
NYC College of Technology – NYCCT	FS_CSNI080S	The LiRo Group/Ecosystem	(516) 214-8472	1 301 706	January 2017
Boiler Plant Repairs	E9-G910009	Marco Barbosa	(347) 901-0278	1,371,700	January, 2017

Pre-K 66 (Staten Island) 1625 Forest Avenue, Staten Island, NY	C000013711	Arnell Construction Alvin Rodriguez	(718) 852-8500	4,012,000	January, 2017
Bowery Bay WPCP 4301 Berrian Boulevard, Astoria, New York	Project# WP-237 Contract BB-57H	Hazen & Sawyer/NYC DEP Eamon Kelly	(845) 642-4335	28,719,670	June, 2016
Bowery Bay WPCP Anaerobic Digester Gas System Improvements 4301 Berrian Boulevard, Astoria, New York	Project# WP-237 Contract BB-210	Spectraserv – CDM/NYPA John Kling	(973) 589-0277	2,083,679	April 2016
Metropolitan Hospital Center Energy Conservation HVAC Work	ES-GSN-0543	Parson Brinckerhoff Frank Verni, RA	(212) 423-7881 (917) 658-4811	1,605,768	April, 2016
Dapolito Recreation & John Jay Pool Reconstruction of Boilers	MG-113	NYC Dept. of Parks & Recreation Vladimir Biba	(718) 760-6767 Cell: (646) 879-6572	879,676	March, 2016
DEP Digester Gas System Improvement Various Locations – Oakwood Beach, Staten Island 26 th Ward & Red Hook, Brooklyn, New York	ES-GSN-0149	Spectraserv –CDM/NYPA John Kling	(973) 589-0277	3,796,308	March, 2016
New York Psychiatric Institute Conversion of 4 th Floor to Wet Lab	44220-C	Fratello Construction Steven Cianci	(631) 414-7171	2,392,110	February, 2016
PS 199 (Queens) Annex at St. Teresa 55-15 44 th Street, Sunnyside, NY	C000013478	Delric Construction Robert Ricciardi	(973) 427-0058	691,345	February, 2016
United Nations Package 3 – Airside Capital Master Plan	Contract B Package 3	Skanska USA Building Bryan Kobb Sam Alacha Cell:	(917) 367-2246 (917) 444-0573 (212) 963-2477 (646) 208-1552	9,169,198	February, 2016
120 Schermerhorn Street, Brooklyn, NY Boiler Feedwater System Replacement	Project No. C0281BOIL	NYC DDC Rebecca Clough	(718) 391-1127	1,518,657	December, 2015
Manhattan Psychiatric Center Wards Island Manhattan Forensic Relocation Package No. 1	44579	Sea Crest Construction Corp. James Dergin	(516) 868-3000 Cell: (516) 903-6619	347,000	July, 2015
Manhattan Theater Club Renovation at Friedman Theater	PV256-FRI	NYC DDC Charles Lin	(718) 391-1138 (917) 506-0551	790,199	April, 2015
PS 181 (K) 1023 York Avenue, Brooklyn NY	C000013191	Triangle General Contractors Anant Nuraula	(718) 462-2608	19,641	April, 2015
Kingsbridge Heights Community Center Construction of HVAC System	Contract No. X250-109MA1	NYC Dept. of Parks & Recreation Fred Hammerling	(718) 760-6643	880,721.00	January, 2015
Manhattan Pumping Station Newtown Creek WPCP	Project # WP-283 Contract NC-40H	Hazen & Sawyer/NYC DEP Alex Klar, P.E.	(718) 609-8701	12,623,793	January, 2015
Queens Children's Library Children's Library Discovery Center	20040018658	Hill International/NYC DDC Marc Zaretsky, Vice President	(212) 244-3700	7,979,398	December, 2014
United Nations South Screening Building		Skanska USA Building Raki Lavon	(917) 346-3739	76,588	December, 2014
Queens College Science Building HVAC Work	CITY-W-CUCF-01-09- 04-MECH	STV/CUNY Jeanny Cheung,	(212) 614-3382	478,898	November, 2014

102 Precinct Station House New Air Cooled Chiller	CT 1 056 20131420928	NYPD Stephen Sailer	(718) 476-8699 (347) 245-8365	638,138	October, 2014
Newtown Creek WPCP, NC-36H 329 Greenpoint Ave., Brooklyn, NY 11222	Project WP-283 Contract NC-36H	Hazen & Sawyer/NYC DEP Stan DiMaris	(646) 739-3709	12,428,503	September, 2014
Parks District Headquarters Bushwick Inlet Park Kent Avenue, Between N. 9 th Street, Brooklyn, NY	BG-38250-507M	NYC Dept. of Parks Matthias Augustin Lorenzo Calabrese	(718) 760-6828 (718) 760-6866	2,278,477	September, 2014
Tavern of the Green Core and Shell Renovation Contract No. 1 – General Construction Work	Contract TAVREH	NYC DDC Michael Nastasi	(718) 391-1174	3,473,822	August, 2014
Central Park Police Precinct 86 th Street Transverse Road, New York NY	20060007059	AECOM – NY / NYC DDC Douglas Kerrigan	(646) 963-6011	4,268,423	July, 2014
Pier 40 HVAC Restoration	LC4548	LiRo Program & Construction Mark Conti	(516) 938-5476	331,279	January, 2014
Paerdegat Basin Water Quality Facility 1887 Ralph Avenue, Brooklyn, New York	WP-169 Contract # CSO-5H	Hazen & Sawyer, P.C. Pietro L. Palmari, P.E.	(718) 241-2053	21,828,306	September, 2013
71st Precinct Station House Replacement of Existing Boiler & Associated Accessories	20121419085	NYPD - Bldg. Maintenance Stephen Sailer, APM III Cell:	(718) 476-8699 (347) 245-8365	383,323	August, 2013
Hunter College City University of New York Chiller Replacement of A/C Upgrades	CITY-CUCF-01-09-02- GC3	EPIC Management/CUNY Vincent Ramadani	(212) 601-2766	1,375,398	April, 2013
Newtown Creek WPCP, NC-31H 329 Greenpoint Avenue, Brooklyn, NY	Project No. WP-283 Contract NC-31H	Malcolm Pirnie/NYC DEP Stan Damaris	(646) 739-3709	16,426,796	May, 2013

B. 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)
Eastchester Library	HVAC Prime	1,274,910.00	50%	10%		NYC DDC - Kayla Hom 347-622-0455 HomKa@ddc.nyv.gov	Goldman Copeland Consulting Engineers 212-868-4660
Fresh Meadows Library	HVAC Prime	1,397,487.00	50%	40%		Queens Public Library John Katamaris John.Katamaris@quee	nslibrary.org
Mott Haven Library	HVAC Prime	2,022,740.00	50%	10%		NYC DDC - Bienvenido Perez Jr. PerezJrBi@ddc.nyc.gov	Goldman Copeland Consulting Engineers 212-868-4660
Muhlenberg Library	HVAC Prime	2,600,214.00	50%	70%		NYC DDC - Andrew Murjas MurjasAn@ddc.nyc.gov	·
*please see attached n list of contracts in prog	ext pages for CI ress	E's complete					

*highlighted in YELLOW are projects where CDE is the Prime Contractor *Highlighted in GREEN are projects with significant GC work. C.D.E. A

C.D.E. AIR CONDITIONING CO., INC. CONTRACTS IN PROGRESS JUNE 30, 2022

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PROJECT NAME AND LOCATION	PROJECT NUMBER	CONTACT /OWNER	TEL. NO.	CONTRACT	PERCENT
				PRICE INCL	COMPLETE
				C.O.'S	
Animal Care & Control Center Reconstruction	20141408086	Minelli Construction		800,197	*
Staten Island, NY		Joanne DePalma/John Gertonson	(631) 232-0222		
		Blaine Belgrave, NYC DDC	(718) 391-1377		
Broadway Library Interior Renovation	20228804715	XBR Inc.	(718) 606-0072	480,000	8
HVAC Work	LQD122BR2	Sean Bronson			
Brooklyn College West Quad Building	3575409999/CR8	DASNY	(718) 421-2621	599,668	6
Pool Chemical Storage - HVAC Work	DA# 219394	Robert Thelian			
Cumberland Hospital	16-2022-037	NYC HHC	(646) 694-5745	948,104	1
Cooling Tower Replacement	27202101	Aminul Haque			
Eastchester Library	20191429056	NYC Dept. of Design & Construction		1,259,910	*
HVAC Replacement		Hamid Tavana	(718) 391-1265		
		Kayla Hom	(347) 622-0455		
Fresh Meadows Library	667137	Queens Public Library	(718) 990-0872	1,407,280	53
Roof, HVAC & Ceiling Renovation		William Funk			
Gansevoort Penninsula	C5320	Corey H. Bedford, Gilbane	(718) 490-0877	494,068	14
Building Mechanical Construction		Tom Adams, Hudson River			
Hostos Community College	3430109999	Constructomics	(212) 337-2300	1,692,390	*
Subcellar	CR2	Gabriel Mirkov			
Hunter College Campus School	31574009999	Genesys Engineering, PC	(914) 633-6490	12,172,294	*
HVAC Upgrade		Gregg Matthews	(914) 336-7883		
		Christopher Hollister	(914) 712-5840		
Hunts Point Library Renovation - Carnegie NYPL	J08568.120-0012-000	Gilbane Building Company	(212) 312-1600	1,910,317	10
HVAC Work		Camille Rimmer	917-890-6941		
J <mark>acobi Hospital, 4th Floor Auditorium</mark>	21202104	Jacobs Engineering	(917) 892-8374	596,905	6
HVAC Upgrades		David Fox, P.E.			
Jamaica WWTP	20201417478	Hazen & Sawyer	(347) 312-3956	1,736,037	31
Reconstruction of Existing Chiller System	J-191	Pietro Palmari, P.E.	(347) 452-5216		
LaGuardia Community College	3152809999	The Fulcrum Group	(212) 463-0519	7,107,272	*
Boiler Replacement Project		Patrick Quigley/Stephen Kretzmer			
Melrose Library Renovation - Carnegie NYPL	J08568.110-011-000	Gilbane Building Company	(212) 312-1600	1,800,000	15
HVAC Work		Christian Calle	(929)431-0313		
Mott Haven Library	20191429341	NYC Dept. of Design & Construction	(718) 391-1265	2,073,396	*
HVAC Upgrade		Kayla Hom/Hamid Tavana	(646) 235-3427		

* Denotes project substantially complete

Contracts In Progress List 2022.06.30

C.D.E. AIR CONDITIONING CO., INC. CONTRACTS IN PROGRESS JUNE 30, 2022

PROJECT NAME AND LOCATION	PROJECT NUMBER	CONTACT /OWNER	TEL. NO.	CONTRACT	PERCENT
				PRICE INCL	COMPLETE
				C.O.'S	
Muhlenberg Library	20228804045	NYC Dept. of Design & Construction	(347) 404-0252	2,600,214	15
HVAC & Elevator Upgrade	LNCA14MBG	Todd Alexander			
New York Aquarium Restoration	BP-27 HVAC	Turner Construction Co.	(203) 209-9040	6,519,742	*
HVAC		Jeff Mattson	(646) 721-2013		
		Ron Speicher, Mechanical PM	(646) 721-2013		
New York Hall of Science	20211407831	NYC Dept. of Design & Construction	(917) 731-6801	2,647,155	*
Chiller Replacement & BMS Upgrade		Charles Lin			
North River WWTP Contract NR-38	20171426056	Yonkers Contracting	(914) 665-1500	2,062,614	*
Cogeneration and Electrification		John Merolla	(646) 374-0133		
Notre Dame Academy		Notre Dame	(347) 552-1504	243,500	*
A/C for Elementary School & Cottage		Carmine Winters			
PS 11 (Queens)	C000013556	Citnalta Construction	(631) 564-2614	14,597,519	*
54-25 Skillman Avenue, Woodside, NY		Philip Milo/Lenny Duke	(516) 672-8693		
Queens 7 District Garage Renovation	S136-438	Delric Construction	(973) 427-0058	144,572	72
HVAC Work	8502019VP0007C	Anthony Delacerra/Robert Ricciardi			
Queens College Razran Hall	3066809999	Genesys Engineering, PC	(631) 974-5171	16,996,429	5
HVAC Upgrade & Asbestos Abatement		Charles Klee/Gina Tomero			
Rikers Island - OBCC	072201748CPD	Commerce Electric	(718) 233-4955	303,770	*
Dishwashing Machines & Related Eqpt HVAC		James Tomboris			
Staten Island University Hospital (SIUH)	13-1725-05	EW Howell Co., LLC	(516) 921-7100	15,131,461	87
North Campus		Hans Laros	(516) 390-8179		
Staten Island University Hospital (SIUH)	13-18-16	EW Howell Co., LLC	(516) 921-7100	11,406,157	99
Overbuild		Hans Laros	(516) 390-8179		
2 Bronx Branch Libraries	20181425816	NYC Dept. of Design & Construction	(646) 235-3427	1,751,631	*
Replacement of HVAC & BMS		Hamid Tavana			
The Scholars Academy IS 323	C000013533	NYC SCA	(718) 472-8237	17,502,135	*
320 Beach 104th Street, Rockaway Park, NY		Reinaldo Rosales	(917) 418-3510		
Von King Park Cultural Arts Center	B088-111MA	D&S Restoration	(973) 345-8020	1,204,260	*
Reconstruction of Multipurpose Room		Dusko Joldzic			
West 79th Street Bridge Rotunda - Rehab.	4003-CDEA01	Judlau	(718) 554-2300	2,030,000	4
HVAC Work		Ed White			

C. 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)
NYPD 68th & 76th Precincts - Boiler Replacement	HVAC Prime	\$2,104,541.00	TBD	NYPD 646-610-4500	
NY Aquarium Conservation Hall	HVAC Prime	\$2,727,585.00	TBD		Turner Construction 646-842-1659
Flushing Community Library	HVAC Prime	\$4,391,799.00	TBD	Queens Borough Public Library - 718-480-4257	
Rehab W. 79th Street Rotunda Complex	HVAC Subcontractor	\$2,030,000.00	TBD	NYC DOT	Judlau Contracting Inc. 718-554-2300
Hillcrest Library	HVAC Prime	\$1,842,467.00	TBD	NYC DDC 718-391-1727	

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. This Safety Questionnaire will be reviewed as per Section V of the Safety Requirements for Construction Contracts, found in Volume 2 of the Contract.

1. Bidder Information:

Company Name:	C.D.E. Air Conditioning Co., Inc.
company runic.	

DDC Project Number: Project ID: LQQBHHVAC EPIN: 85022B0083

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

 \square Greater than ten (10) employees

Company has previously worked for DDC: \Box YES \Box NO

2. Type(s) of Construction Work:

Identify the types of work that the Bidder has performed in the last three years, and the types of work that are part of this Contract.

TYPE OF WORK	LAST 3 YEARS	THIS PROJECT
General Building Construction	\checkmark	\checkmark
Residential Building Construction		
Nonresidential Building Construction	\checkmark	
Heavy Construction, except building		
Highway and Street Construction		
Heavy Construction, except highways		
Plumbing, Heating, HVAC	\checkmark	\checkmark
Painting and Paper Hanging	\checkmark	\checkmark
Electrical Work	\checkmark	\checkmark
Masonry, Stonework and Plastering	\checkmark	\checkmark
Carpentry and Floor Work	\checkmark	\checkmark
Roofing, Siding, and Sheet Metal	\checkmark	\checkmark
Concrete Work	\checkmark	\checkmark
Specialty Trade Contracting	\checkmark	\checkmark
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 Bidder / Contractor may obtain its EMR by contacting its insurance broker or the NCCI. If the Bidder cannot obtain its EMR, it must submit a written explanation as to why.

The Bidder must indicate its <u>Intra</u>state and <u>Inter</u>state EMR for the past three years. [Note: For contractors with less than three years of experience, the EMR will be considered to be 1.00].

YEAR	<u>INTRA</u> STATE RATE	INTERSTATE RATE
2021-2022	0.89	
2020-2021	0.93	
2019-2020	0.91	

If the Intrastate and/or Interstate EMR for any of the past three years is greater than 1.00, the Bidder / 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 a New York City Department of Buildings (NYCDOB) construction-related violation within the last three years.
- □ YES ☑ NO Contractor has had an incident requiring OSHA notification within 8 hours (all workrelated fatalities) or an incident requiring OSHA notification within 24 hours (workrelated in-patient hospitalization, amputation and all loss of an eye).

The OSHA Form 300 "Log of Work-Related Injuries and Illnesses" and OSHA Form 300A "Summary of Work-Related Injuries and Illnesses" must be submitted for the last three years for Contractors with more than ten employees.

The Bidder / Contractor must indicate the total number of hours worked by its employees, as reflected in payroll records for the past three (3) years.

The Bidder / Contractor must submit the Incident Rate for Lost Time Injuries (the Incident Rate) for the past three (3) 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 Form 300 and OSHA Form 300A. The 200,000 hours represents the equivalent of 100 employees working forty hours a week, fifty (50) weeks per year.

Incident Rate =	Total Number of Hours Worked by Employees			
YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE		
2021	35,764	0		
2020	35,250	0		
2019	39,550	0		

If the Bidder's / 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 Bidder / Contractor must attach, to this questionnaire, a written explanation for the relatively high rate.

General Building Construction	8.5
Residential Building Construction	
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	
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

Fatality or an incident requiring OSHA notification within 24 hours (work-related in-patient hospitalization, amputation and all loss of an eye) on DDC Project(s) within the last three (3) years.

DDC Project Number(s): _____, _____,

The Bidder hereby affirms that all the information provided in this Safety Questionnaire and all additional pages and/or attachments, if applicable, consist of accurate representations.

Date: 8/23/2022

Title: President



PROJECT ID:

LQQBHHVAC

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

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

VOLUME 2 OF 3

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

Queensboro Hill Branch Library HVAC Replacement

LOCATION: BOROUGH: CITY OF NEW YORK 60-05 Main St. Queens, NY 11355

CONTRACT NO. 1

HVAC WORK

Queens Public Library FOR:

WSP BY:

Date:

April 20, 2022



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

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

VOLUME 2 OF 3

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



CITY OF NEW YORK

DEPARTMENT OF DESIGN AND CONSTRUCTION

INFORMATION FOR BIDDERS

December 2021

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CITY OF NEW YORK DEPARTMENT OF DESIGN AND CONSTRUCTION **INFORMATION FOR BIDDERS**

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1. Description and Location of Work

The description and location of the work for which bids are requested are specified in the PASSPort RFx field "Description".

2. <u>Time and Place for Receipt of Bids</u>

Sealed bids shall be received on or before the date and hour specified in the PASSPort RFx, at which time they will be publicly opened and read aloud in the presence of the Commissioner or the Commissioner's 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 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 in the PASSPort RFx.

5. <u>Pre-Bid Conference</u>

A pre-bid conference shall be held as set forth in the PASSPort RFx. 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 the PASSPort RFx.

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 The PASSPort RFx.
- (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 the Commissioner 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 the Commissioner's written approval.

9. Examination of Proposed Contract

- (A) <u>Request for Interpretation or Correction</u>: 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) <u>Only Commissioner's Interpretation or Correction Binding</u>: 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.

<u>10.</u> 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.

<u>12.</u> <u>Acknowledgment of Amendments</u>

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

<u>13.</u> <u>Bid Samples and Descriptive Literature</u>

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. <u>Pre-Opening Modification or Withdrawal of Bids</u>

Bids may be modified or withdrawn by written notice received in the office designated in the PASSPort RFx, 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.

<u>16.</u> 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.

<u>Restriction</u>: 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.

<u>18.</u> <u>Withdrawal of Bids.</u>

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 the bidder's option, may ask to be relieved of the bidder's 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.

<u>19.</u> <u>Mistake in Bids</u>

(A) <u>Mistake Discovered Before Bid Opening</u>: 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) <u>Rejection of Individual Bids</u>: 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) <u>Rejection of All Bids</u>: 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) <u>Rejection of All Bids and Negotiation With All Responsible Bidders</u>: 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.
- (B) 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:
 - 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. PASSPort COMPLIANCE

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 replaced the paper-VENDEX process. In anticipation of awards, all bidders must create online accounts in the new PASSPort system, and

file all disclosure information using PASSPort. Paper submissions, including certifications of no changes to existing VENDEX packages, will not be accepted in lieu of complete online filings using PASSPort.

All vendors that intend to do business with the City, but specifically those that fall into any of the following categories, are required to enroll:

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

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

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

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)669-2323.

26. Bid, Performance and Payment Security

- (A) <u>Bid Security</u>: Each bid must be accompanied by bid security in an amount and type specified in the PASSPort RFx questionnaire. 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 the PASSPort RFx. Bid security shall be returned to the bidder as follows:
 - 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) <u>Performance and Payment Security</u>: Performance and Payment Security must be provided in an amount and type specified in the PASSPort RFx. 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) <u>Acceptable Types of Security</u>: 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) <u>Form of Bonds</u>: 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 215-364-6465; (2) through the Internet at https://www.fiscal.treasury.gov/surety-bonds/.

(E) <u>Power of Attorney</u>: 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 releting 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 the bidder's working organizations, prior experience and performance record.
- (C) <u>Oral Examination on Qualifications</u>: 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 the bidder's 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 PASSPort Vendor Profile.

30. Labor Law Requirements

- (A) <u>General</u>: The successful bidder will be required to comply strictly with all Federal, State and local labor laws and regulations.
- (B) <u>New York State Labor Law</u>: 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) <u>Records:</u> 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.

<u>31.</u> 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) <u>Comparison of Bids</u>: 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) <u>Variations from Engineer's Estimate</u>: 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) <u>Comparison of Bids</u>: 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 Schedule, multiplied by the corresponding unit prices, and including any lump sum bids on individual items.

- (B) <u>Variations from Engineer's Estimate</u>: 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) <u>Overruns</u>: 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.

<u>36.</u> <u>Multiple Prime Contractors</u>

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

37. Locally Based Enterprise Requirements (LBE)

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

- (A) If any portion of the Contract is subcontracted, not less than ten percent of the total dollar amount of the contract shall be awarded to locally based enterprises ("LBEs"); except, where less than ten percent of the total dollar amount of the Contract is subcontracted, such lesser percentage shall be so awarded.
- (B) No contractor shall require performance and payment bonds from LBE subcontractors.
- (C) No Contract shall be awarded unless the contractor first identifies in its bid:
 - (1) the percentage, dollar amount and type of work to be subcontracted; and
 - (2) the percentage, dollar amount and type of work to be subcontracted to LBEs.
- (D) Within ten calendar days after notification of low bid, the apparent low bidder shall submit an "LBE Participation Schedule" to the contracting agency. If such schedule does not identify sufficient LBE subcontractors to meet the requirements of Administrative Code Section 6-108.1, the apparent low bidder shall submit documentation of its good faith efforts to meet such requirements.
 - (1) The "LBE Participation Schedule" shall include:
 - (a) the name and address of each LBE that will be given a subcontract,
 - (b) the percentage, dollar amount and type of work to be subcontracted to the LBE, and
 - (c) the dates when the LBE subcontract work will commence and end.
 - (2) The following documents shall be attached to the "LBE Participation Schedule":
 - (a) verification letters from each subcontractor listed in the "LBE Participation Schedule" stating that the LBE will enter into a formal agreement for work,

- (b) certification documents of any proposed LBE subcontractor which is not on the LBE certified list, and
- (c) copies of the certification letter of any proposed subcontractor which is an LBE.
- (3) Documentation of good faith efforts to achieve the required LBE percentage shall include as appropriate but not limited to the following:
 - (a) attendance at prebid meetings, when scheduled by the agency, to advise bidders of contract requirements;
 - (b) advertisement where appropriate in general circulation media, trade association publications and small business media of the specific subcontracts that would be at least equal to the percentage goal for LBE utilization specified by the contractor;
 - (c) written notification to association of small, minority and women contractors soliciting specific subcontractors;
 - (d) written notification by certified mail to LBE firms that their interest in the contract is solicited for specific work items and their estimated values;
 - (e) demonstration of efforts made to select portions of the work for performance by LBE firms in order to increase the likelihood of achieving the stated goal;
 - (f) documented efforts to negotiate with LBE firms for specific subcontracts, including at a minimum:
 - (i) The names, address and telephone numbers of LBE firms that are contacted;
 - (ii) A description of the information provided to LBE firms regarding the plans and specifications for portions of the work to be performed;
 - (iii) Documentation showing that no reasonable price can be obtained from LBE firms;
 - (iv) A statement of why agreements with LBE firms were not reached;
 - (g) a statement of the reason for rejecting any LBE firm which the contractor deemed to be unqualified; and
 - (h) documentation of efforts made to assist the LBE firms contacted that needed assistance in obtaining required insurance.
- (E) Unless otherwise waived by the Commissioner with the approval of the Office of Economic and Financial Opportunity, failure of a proposed contractor to provide the information required by paragraphs (C) and (D) above may render the bid non-responsive and the Contract may not be awarded to the bidder. If the contractor states that it will subcontract a specific portion of the work, but can demonstrate despite good faith efforts it cannot achieve its required LBE percentage for subcontracted work until after award of Contract, the Contract may be awarded, subject to a letter of compliance from the contractor stating that it will comply with Administrative Code Section 6-108.1 and subject to approval by the Commissioner. If the contractor has not met its required LBE percentage prior to award, the contractor shall demonstrate that a good faith effort has been made subsequent to award to obtain LBEs on each subcontract until its meets the required percentage.
- (F) When a bidder indicates prior to award that no work will be subcontracted, no work may be subcontracted without the prior written approval of the Commissioner, which shall be granted only if the contractor in good faith seeks LBE subcontractors at least six weeks prior to the start of work.
- (G) The contractor may not substitute or change any LBE which was identified prior to award of the contract without the written permission of the Commissioner. The contractor shall make a written application to the Commissioner for permission to make such substitution or change, explaining why the contractor needs to change its LBE subcontractor and how the contractor will meet its LBE subcontracting requirement. Copies of such application must be served on the originally identified LBE by certified mail return receipt requested,

as well as the proposed substitute LBE. The Commissioner shall determine whether or not to grant the contractor's request for substitution.

<u>38.</u> <u>Bid Submission Requirements</u>

The Bid Submission Requirements are set forth in the PASSPort RFx.

<u>39.</u> <u>Comptroller's Certificate</u>

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.

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

January 2020

THE DDC SAFETY REQUIREMENTS FOR CONSTRUCTION CONTRACTS INCLUDE THE **FOLLOWING SECTIONS:**

- I. POLICY ON SITE SAFETY
- II. PURPOSE

DDC

- **III. DEFINITIONS**
- **IV. RESPONSIBILITIES**
- SAFETY QUESTIONNAIRE V.
- VI. SITE SAFETY PLAN
- VII. KICK-OFF/PRE-CONSTRUCTION MEETINGS AND SAFETY REVIEW
- VIII. EVALUATION DURING WORK IN PROGRESS
- IX. SAFETY PERFORMANCE EVALUATION

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 contracts must, at a minimum, comply with the most current versions of all applicable federal, state and city laws, rules, and regulations, including without limitation:

- □ Code of Federal Regulations, Title 29, Part 1926 (29 CFR 1926) and applicable Sub-parts of Part 1910 U.S. Occupational Safety and Health Administration (OSHA);
- □ Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD);
- New York Codes, Rules and Regulations (NYCRR), Title 12, Part 23 Protection in Construction, Demolition and Excavation Operations;
- □ New York Codes, Rules and Regulations (NYCRR), Title 16, Part 753 Protection of Underground Facilities;
- □ New York City Administrative Code, Title 28 New York City Construction Codes;
- Rules of the City of New York, Title 15, Chapter 13 Rules Pertaining To the Prevention of the Emission of Dust from Construction Related Activities;
- □ Rules of the City of New York, Title 15, Chapter 28 Citywide Construction Noise Mitigation;
- □ Rules of the City of New York, Title 34 Chapter 2 NYCDOT Highway Rules.

The Contractor will be required to comply with all new and/or revised federal, state and city laws, rules, and regulations, issued during the course of the project, at the expense of the Contractor without any additional costs to the DDC.

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 hazards, 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 will mean the person delegated authority by the Commissioner to organize and supervise the procurement activity of subordinate Agency staff in conjunction with the City Chief Procurement Officer (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. This individual will have completed, at a minimum an authorized 30-hour OSHA Construction Safety Course. The Contractor may be required to provide more than one competent person due to construction operations and based on the number of active work sites.

Construction Safety Auditor: A representative of the Office of Construction Safety 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 audits, reviewing safety plans, reviewing construction permits, drawings, verifying Contractor's compliance with applicable federal, state and city laws, rules, regulations, and DDC Contract Safety Requirements, etc. and rendering technical advice and assistance to DDC Resident Engineers and Project Managers.

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Office of Construction Safety: A unit of DDC Safety and Site Support that assesses contractor's safety on DDC jobsites and advises responsible parties of needed corrective actions.

Registered Construction Superintendent: For certain projects, as defined in New York City Construction Codes -Title 28, the contractor will provide a Construction Superintendent registered with the NYC Department of Buildings and responsible for all duties as defined in Chapter 33 of Title 1 of the Rules of the City of New York.

Contractor: For purposes of these Safety Requirements, the term "Contractor" will mean any person or entity that enters into a contract for the performance of construction work on a DDC project. The term "Contractor" will 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 briefings, given to all jobsite personnel at project site by the Contractor before work begins and/or if hazards or potential hazards are discovered while working, with the purpose of discussing the scheduled activities for the day, the hazards related to these activities, activity specific safety procedures, and Job Hazard Analysis associated with the scheduled construction work. Daily jobsite briefings will be documented, available at the jobsite, and will include at a minimum, topics, name and signature of the person conducting the briefing session, names and signatures of attendants, name of the designated competent person, contactor's name, DDC Project ID, date, time, and location.

Director - Office of Construction Safety: Responsible for the operations of the Office of Construction Safety and the DDC Site Safety management programs.

Job Hazard Analysis (JHA): A process of identifying the major job tasks and any potential site-specific hazards that may be present during construction and establishing the means and methods to eliminate or control those hazards. A JHA will be documented, available at the jobsite and will include at a minimum work tasks, being performed, identified hazards, control methods for the identified hazards, contractor's name, DDC Project ID, location, date, name and signature of certifying person. A JHA is a living document that will be re-evaluated and revised to address new hazards and tasks that may develop and will be present at the worksite and produced upon request.

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, maintenance and protection of traffic, and excavation protective system, 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 will have at a minimum an OSHA 30-hour Construction Safety Course and other safety training applicable to Contractor's/subcontractor's project work. This individual will be responsible to oversee safety performance of the required construction work, conduct documented daily safety inspections, and implement corrective actions to maintain a safe work site. The Project Safety Representative must have sufficient experience and skills necessary to thoroughly understand the health and safety hazards and controls and must have authority to undertake corrective actions. A dedicated full-time Project Safety Representative may be required on large projects and projects deemed by DDC to be particularly high risk. DDC reserves the right to request a dedicated full-time Project Safety Representative for any reason at any time during the course of the project at the expense of the Contractor without any additional costs to the DDC. The fulltime Project Safety Representative will be present at the site during all work activities.

Resident Engineer ("RE"): Representative of the Commissioner duly designated by the Commissioner to be his/her representative at the site of the work. The RE may be a consultant retained by DDC, including a Construction Management (CM) or Resident Engineer Inspection (REI) firm. If DDC has retained a CM, REI or other consultant firm to perform management and oversite for the Project (e.g., CM-Builder, CM-Design-Builder, Project Manager, Program Manager), that CM, REI or other consultant is the Resident Engineer for purposes of these Safety Requirements.

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 New York City Construction Codes - Title 28, the Contractor will provide a Site Safety Manager with a Site Safety Manager License issued by the New York City Department of Building.

Site Safety Plan: A site-specific safety plan developed by the Contractor for a DDC project. The Site Safety Plan will identify the project work scope, identify hazards associated with the project work and include project specific safety procedures and training appropriate and necessary to complete the work. The Site Safety Plan will be submitted within 30 days from the Award Date or as otherwise directed and is subject to review and acceptance by the Office of Construction Safety prior to the commencement of work at the site.

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 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. Weekly safety meetings will be documented and will include at a minimum, topics, name and signature of the person conducting the meeting, names and signatures of attendees, contractor's name, DDC Project ID, date, and location.

Work: The construction required by the Contractor's 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. For the purposes of these Safety Requirements, the term "Work" includes all Utility Interference work (commonly referred to as "Section U", "EP-7", and "Joint Bid" work) performed in association with this Contract.

IV. RESPONSIBILITIES

All persons who manage, perform, and provide support for construction projects will conduct operations in compliance with the requirements identified in this Policy and all applicable governing regulatory agency requirements and guidelines pertaining to safety in construction.

A. Resident Engineer

- 1. Review and facilitate Contractor(s) Site Safety Plan submittals to DDC for acceptability.
- 2. Notify the Office of Construction Safety of the commencement of construction work.
- 3. Develop and implement a training verification process to ensure that all CM/REI, consultant, Contractor, and subcontractor employees are properly trained. Maintain all applicable initial and refresher training records and assures documentation availability on site.
- 4. Maintain documentation of and attend weekly safety meetings and daily safety job briefings.
- 5. Assure that Contractor(s) JHA's are current to reflect the work tasks being performed, hazards, and control methods to mitigate the identified hazards. Verify that all employees at the job site are trained on the JHAs and maintain supporting documentation on site.
- 6. Assure adequate planning for all critical construction activities (crane operation, excavation, confined space entry, etc.) including coordination between Contractor(s) /DDC/ other Agencies as required.
- 7. Maintain custody of all construction related permits, plans, approvals, drawings, etc., related to the project and assure their availability on site.
- 8. Recognize, minimize, or eliminate jobsite and public hazards, through required planning, inspection, verification, and corrective action process.
- 9. Monitor the conditions at the site for conformance with the Contractor's Site Safety Plan, DDC policies, permits, and all applicable regulations and documentation that pertain to construction safety.
- 10. Notify the Contractor and DDC immediately upon determination of any condition or activity existing which is not in compliance with the Contractor's Site Safety Plan, applicable federal, state or local codes or any

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condition that presents a potential risk of injury to the public or workers or possible damage to property. Direct the Contractor to provide such labor, materials, equipment, and supervision to remedy such conditions.

- 11. Notify the Office of Construction Safety and the ACCO's Insurance and Risk Management Unit of projectrelated accidents, incidents, and near misses as per DDC's Construction Safety Emergency and Accident Notification and Response Procedure within two (2) hours.
- 12. In case of an accident, incident, or near miss, RE is responsible to protect the integrity of the accident site including but not limited to: the safeguarding of all evidence, documentation of all personnel on site at the time of the accident, gather facts related to all accidents, incidents, or near miss, and prepare required DDC Construction Accident Report as per DDC's Construction Safety Emergency and Accident Notification and Response Procedure. Maintain all records pertaining to accidents, incidents, and near miss and have them available upon request.
- 13. Notify the Office of Construction Safety within two (2) hours of the start of an inspection by any outside/ regulatory agency personnel, including NYS, OSHA, NYC DOB or any other City/State/Federal oversight entity and forward a copy of the inspection report within one business day of its receipt.
- 14. Escort and assist Construction Safety Auditors during all field and record audits.
- 15. Report any emergency conditions to the Office of Construction Safety immediately.

Note: In addition to the responsibilities listed above, if the Resident Engineer is a CM/REI or other non-City party hired by the City to manage the Project, the Resident Engineer is also required to do the following:

- 16. Provide personnel who are certified and or trained appropriately for the requirements of the project.
- 17. Perform an investigation for any project-related accidents, incidents, and near misses. Within 24-hours of the time of the accident, incident, or near miss, the CM/REI will submit an investigation report to the Office of Construction Safety. Such report will include proposed remedial measures and implementation of corrective actions to prevent recurrence.

DDC reserves the right to request that the CM/REI replace any CM/REI personnel for any reason at any time during the project.

B. Construction Contractors

Note: For CM-Build and CM-Design-Build Projects, the CM will meet all requirements listed in this section, as well as the Resident Engineer section above.

- 1. Submit a completed Safety Questionnaire and other safety performance related documentation with its bid or as part of a pre-qualification package.
- 2. Submit a Site Safety Plan within 30 days from the Award Date or as otherwise directed. The Site Safety Plan is subject to review and acceptance by the Office of Construction Safety prior to the commencement of work at the site. The Site Safety Plan will be revised and updated as necessary during the course of the project. If requested by the Office of Construction Safety, the Site Safety Plan must be developed and submitted for approval using a web-based system, the Site Safety Plan Application (SSP App).
- Designate and identify a Project Safety Representative in the Site Safety Plan. The Contractor will immediately 3. notify the Office of Construction Safety, in a form and manner acceptable to the Office of Construction Safety, of any permanent change to the designated Project Safety Representative. In the event the primary designated Project Safety Representative is temporary unable to perform his or her duties, an alternate Project Safety Representative will be provided. Resumes, outlining the qualification and experience for the Project Safety Representative (s) will be included in the Site Safety Plan and available upon request. DDC reserves the right to request the Contractor to replace a Project Safety Representative for any reason at any time during the course of the project.
- 4. Designate and identify a Competent Person(s) in the Site Safety Plan. Contractor/subcontractor may be required to provide more than one competent person due to construction operations and based on a number of work tasks/areas. DDC reserves the right to request the Contractor to replace a Competent Person or provide additional Competent Person(s) for any reason at any time during the course of the project. The Competent Person will be present at the site during all work activities.
- 5. For certain projects, as defined in New York City Construction Codes Title 28, designate and identify the Licensed Site Safety Manager or Registered Construction Superintendent. Resumes, outlining the qualification and experience for the Licensed Site Safety Manager or Registered Construction Superintendent will be included in the Site Safety Plan and available upon request. The Contractor will immediately notify the Office

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of Construction Safety, in a form and manner acceptable to the Office of Construction Safety, of any permanent change to the designated Site Safety Manager and/or Construction Superintendent. In the event the primary designated Site Safety Manager or Construction Superintendent is temporarily unable to perform his or her duties, an alternate Licensed Site Safety Manager and/or Registered Construction Superintendent will be provided. The Office of Construction Safety must be informed of such change. DDC reserves the right to request the Contractor to replace Site Safety Manager or Construction Superintendent for any reason at any time during the course of the project.

- Develop a written Job Hazard Analysis (JHA) that identifies safety hazards and control methods for project 6. specific work tasks. A preliminary JHA will be included in the Site Safety Plan submitted by the Contractor. A JHA is a living document that will be re-evaluated and revised to address new hazards and tasks that may develop during the course of the project and will be present at the worksite and produced upon request.
- Develop project specific safety procedures to protect employees, general public, and property during all 7. 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 8. informal training and/or other communications. Conduct and document new employee and site-specific safety orientation for all Contractor and subcontractor 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 will conduct this training prior to mobilization and if necessary during the course of the project. Documentation will be provided to the RE.
- 9. Prior to performing any work on DDC projects all Contractor's and subcontractor's employees will, at a minimum, have successfully completed, within the previous five calendar years, an OSHA 10-hour construction safety course.

All training records (OSHA 10-hour, flagger, scaffold, fall protection, confined space, etc.) will be provided to the RE prior to mobilization, included in the Site Safety Plan, kept current during the course of the project, and available for review.

- 10. Conduct and document weekly safety meetings and daily job briefing sessions for the duration of the project. Attendance at weekly safety meetings and daily job briefing sessions is mandatory. A written record of weekly safety meetings will be available upon request and job briefing sessions will be available at the worksite.
- 11. As part of the Site Safety Plan, prepare site specific procedures, such as maintenance and protection of traffic plan, steel erection plan, confined space program, fall protection plan, demolition plan, site specific emergency evacuation plan, etc. (if not otherwise provided in the contract documents) and comply with all of its provisions.
- 12. Have immediately available for review at the project site where actual construction activities are being performed all applicable documentation, including but not limited to: JHAs for work tasks being performed, all required training records, MPT plan (where applicable), Noise and Dust Mitigation Plans, excavation protective system drawings (where applicable), Emergency Evacuation plan, fall protection program (where applicable), confined space program (where applicable), all required permits, daily job briefing records, all required documentation for crane operation (where applicable), daily inspection checklist, scaffold and sidewalk drawings (when applicable), safety data sheets for chemicals in use.
- 13. Comply with all federal, state and local safety and health rules, laws, and regulations.
- 14. Comply with all provisions of the Site Safety Plan.
- 15. 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.). The project specific MPT plan will be developed, implemented, and reviewed during the course of the project.
- 16. The Project Safety Representative will conduct daily safety inspections, document the inspection results, implement corrective actions for the identified hazards. Maintain the inspection records and have them available upon request.
- 17. Report unsafe or unhealthy conditions to the RE as soon as practical, but no more than 24 hours after discovery, and take prompt actions to remove or abate such conditions. Should an imminent dangerous condition be discovered, Contractor will stop all work in the area of danger until corrections are made.
- 18. Report all accidents, incidents and near misses involving injuries to workers or the general public, as well as property damage, to the RE within one (1) hour.
- 19. Following an accident or incident, unless otherwise directed, the Contractor will not remove or alter any equipment, structure, material, or evidence related to the accident or incident. 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. Take

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additional measures as necessary to secure the accident or incident site and to protect against any further injury or property damage.

- 20. The Contractor will perform an investigation into the root cause of the accident, incident, or near miss. Within 24 hours of an accident, incident, or near miss, the Contractor will prepare and submit to the RE a written investigation report detailing findings, corrective actions, and hazard mitigation implementation to prevent recurrence.
- 21. Notify the RE within two (2) hours of the start of an inspection by any outside regulatory agency personnel, including OSHA, NYC DOB, or others.
- 22. Maintain all records pertaining to all required safety compliance documents, accidents and incidents reports. DDC reserves the right to request copy of any records pertaining to the safety of the project and required by DDC and other federal, state, and city agencies, including but not limited to permits, training records, safety inspection records, drawings, equipment records, etc.
- 23. Cooperate with DDC Office of Construction Safety/ RE and address DDC recommendations on safety, which will 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 will 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 will 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 site safety plan submittals; etc.)
- Criteria 6: OSHA violation history for the last three (3) years;
- Criteria 7: Contractor will 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 Office of Construction Safety 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. SITE SAFETY PLAN

Within thirty (30) days from the Award Date or as otherwise directed, the Contractor will submit the Site Safety Plan. The Site Safety Plan will 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 Site Safety Plan is subject to review and acceptance by the Office of Construction Safety prior to the commencement of work at the site. Due to the project work scope and project duration, the Office of Construction Safety may grant a conditional acceptance for a Site Safety Plan without all sections being complete. In a case of a "Conditional Acceptance" of a Site Safety Plan, CITY OF NEW YORK SAFETY REQUIREMENTS FOR CONSTRUCTION CONTRACTS DDC 7 JANUARY 2020 the Contractor will provide the remaining sections previously incomplete and/or not submitted for review and acceptance by the Office of Construction Safety prior to the commencement of the construction activities. The Office of Construction Safety reserves the right to withdraw the initial "Conditional Acceptance" if the Contractor fails to provide the remaining sections of a Site Safety Plan. Failure by the Contractor to submit an acceptable Site Safety Plan will be grounds for default.

<u>Site Safety Plan requirements</u>: The Site Safety Plan will be a written document and will apply to all project specific Contractor and subcontractor operations, and will have at a minimum, the following elements with each 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). All Site Safety Plan sections will be numbered in the order listed below. For sections, which are not applicable for the type of the work being performed by the Contractor on DDC project, the Contractor will in writing indicate "Not applicable based on the project work scope." The Site Safety Plan will include Contractor's name, DDC project ID, project location (s), and development and revision dates. The Site Safety Plan will include the sections, attachments, and appendixes provided in the Site Safety Plan. All pages of the Site Safety Plan will be numbered. If requested by the Office of Construction Safety, the Site Safety Plan must be developed and submitted for approval using a web-based system, the Site Safety Plan Application (SSP App).

- 1. Project Work Scope Detailed information regarding work tasks that will be performed by Contractor and subcontractors under the project.
- 2. Responsibility and Organization Contractor's organization chart with responsible personnel for the project, including titles, names, contact information, roles, and responsibilities. All Contractor's personnel required by the DDC Safety Requirements will be identified.
- 3. 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.
- 4. Job Hazard Analysis (JHA) Project specific Job Hazard Analysis including work tasks, identified hazards, hazard control methods (administrative, engineering, PPE) to protect workers, property and general public, Contractor's name, project id, location, name and signature of a certifying person, hazard assessment date.
- 5. Protection of Public Project specific procedures covering safety of the general public during all project construction activities.
- 6. Hazard Corrective Actions Procedures for hazard identification, including responsible person(s), frequency of safety inspections, implementation of corrective actions, safety inspection checklist.
- 7. Accident/Exposure Investigation Project specific procedures for accident/incident/near miss investigation and implementation of corrective actions. Accident/incident/near miss notification procedure of DDC project staff (timer frame and responsible personnel).
- 8. Recording and Reporting Injuries Procedures to meet 29 CFR 1904 requirements.
- 9. First Aid and Medical Attention Responsible staff, location and inspection of First Aid kit, directions to local hospitals; emergency telephone numbers.
- 10. Project Specific Fire Protection and Prevention Program Project specific procedures, including responsible staff, fire alarm system/methods, hot work procedures, etc.
- 11. Housekeeping Procedure.
- 12. Project Specific Illumination Procedure.
- 13. Project Specific Sanitation Procedure.
- 14. Personal Protective Equipment (PPE), including Respiratory Protection Program and Hearing Conservation Program, if required.
- 15. Hazard Communication Program Contractor's Hazard Communication Program, responsible staff; training; SDS records, project specific list of chemicals; location of the program and SDS records.
- 16. 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.
- 17. Employee Emergency Action Plan Project specific: responsible staff, emergency alarm system/devices, evacuation procedure, procedure to account for employees after evacuation, etc.
- 18. Evacuation Plan Project specific evacuation plan (drawing/scheme) with exists and evacuation routes.
- 19. Ionizing/Nonionizing Radiation Competent person, license and qualification requirements, type of radiation, employee's exposure and protection, safety procedures, etc.

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- 20. Material Handling, Storage, Use and Disposal Project specific information regarding material storage, disposal, and handling: procedures, plan/drawings, etc.
- 21. Signs, Signals, and Barricades Use of danger/warning signs, safety instruction signs, sidewalk closure and pedestrian fencing and barricades (if not included in the MPT plan), etc.
- 22. Tools Hand and Power Safety procedures for the type of tools to be used.
- 23. Scaffold Project specific scaffold types, procedures, training requirements, scaffold drawings, designed, sealed, and signed by NYS Licensed Professional Engineer, or as otherwise directed; competent person, criteria for project specific scaffold, falling object protection, procedures for aerial lifts/scissor lifts.
- 24. 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 (if not covered by Contractor's Fire Prevention and Protection program, FDNY certificate requirements).
- 25. Electrical Safety Project specific procedures, including lock out-tag out.
- 26. Fall Protection Project specific information regarding selected fall protection systems, fall protection plan, responsible staff.
- 27. 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.
- 28. Excavation Safety Competent person; excavation procedures; project specific protective system, including drawings, designed, sealed, and signed by NYS Licensed Professional Engineer, or as otherwise directed.
- 29. Protection of Underground Facilities and Utilities Procedure, including responsible staff and responsibilities.
- 30. Concrete and Masonry Construction Procedures
- 31. Maintenance and Protection of Traffic Plan Project specific MPT plan, designed, sealed, and signed by NYS Licensed Professional Engineer, or as otherwise directed; flagmen training, public safety, etc.
- 32. Steel Erection Site specific erection plan, requirements for applicable written notifications, competent person, fall protection plan, training requirements, etc.
- 33. 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.
- 34. Blasting and the Use of Explosives Project specific safety procedures, warning signs, training/qualification, transportation, storage and use of explosives, inspection.
- 35. Stairways and Ladders Types of stairs and ladders, safety procedures, training requirements.
- 36. Alcohol and Drug Abuse Policy
- 37. Rodents and Vermin Controls
- 38. Toxic and Hazardous Substances Safety procedures for substances that Contractor's and subcontractor's employees can be exposed on project.
- 39. Noise Mitigation Plan Completed project specific Noise Mitigation Plan, and noise mitigation procedures.
- 40. Confined Space Program Project specific Confined Space Program, responsible staff, training records, equipment information, rescue procedure, list of project specific confined spaces, forms.
- 41. Construction Vehicles/Heavy Equipment Type of construction vehicles/heavy equipment to be used on site, procedures
- 42. Dust Mitigation Plan Completed project specific Dust Mitigation Plan, and dust mitigation procedures.
- 43. Working Over and Near Water. Diving Operations safety procedures including personal protective equipment, fall protection, rescue services, etc.

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 will conduct a site and task assessment to identify the tasks 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 will be communicated to all Contractor/subcontractor personnel on site. The JHA will include safety hazard identification and controls to protect employees, general public, and property.

The initial JHA will be included in the Contractor's Site Safety Plan and the current JHA form will be available at the construction site for reference. A JHA is a living document that will be re-evaluated and revised to address new hazards and tasks that may develop and will be present at the worksite and produced upon request.

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

Prior to the start of construction activities on all DDC projects, RE will invite the Office of Construction Safety to the construction kick-off meeting. The Office of Construction Safety representative(s) will participate in this meeting with the Contractor and RE for the purpose of:

- A. Reviewing DDC Contract Safety Requirements
- B. Reviewing site-specific safety issues based on a project work scope, location, and any other factors which may impact safety of workers and general public.
- C. Reviewing the Site Safety Plan and JHA requirements.
- D. Reviewing Accident/Incident reporting and investigation procedures.
- E. Reviewing designated safety contacts, roles, and responsibilities.
- F. Discussing planned inspections and audits of the site by the Office of Construction Safety 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 Office of Construction Safety (or other designated DDC representative) and the RE during regular inspections and comprehensive audits of the job site. Field Exit Conferences will be held with the RE and Contractor Project Safety Representatives.
- B. The RE will continually monitor the safety and environmental performance of the Contractor's employees and work methods. Deficiencies will be brought to the attention of the Contractor's Project Safety Representative on site for immediate correction. The RE will maintain a written record of these deficiencies and have these records available upon request. Any critical deficiencies will be immediately reported to the Office of Construction Safety via telephone (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 Office of Construction Safety, or his/her designee will meet with the Contractor's Project Safety Representative and other representatives, the RE, 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, the Commissioner may, without limitation, declare the Contractor in default.
- E. The Contractor will within 1 hour inform the RE of all accidents/incidents/near misses 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 will notify the Office of Construction Safety as per DDC's Construction Safety Emergency and Accident Notification and Response Procedure and will maintain a record of all Contractor accidents/incidents for the project.
- F. The Contractor and the RE will notify the Office of Construction Safety 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 will be a reason to rate a Contractor unsatisfactory which may be reflected in the City's PASSPort system and will be considered for future procurement actions as set forth in the City's Procurement Policy Board Rules.

NOTICE TO BIDDERS

Please be advised that a Rider to the March 2017 New York City Standard Construction Contract regarding Non-Compensable Delays and Grounds for Extension has been attached and incorporated in this Invitation for Bid. Other than provisions specifically delineated in the Rider, all other terms of the March 2017 New York City Standard Construction Contract continue to apply in full force and effect.

RIDER TO NEW YORK CITY STANDARD CONSTRUCTION CONTRACT (MARCH 2017) REGARDING NON-COMPENSABLE DELAYS AND GROUNDS FOR EXTENSION

The following provisions supersede the corresponding provisions in the March 2017 version of the New York City Standard Construction Contract:

1. Section **11.5.1** provides as follows:

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

2. Section **11.5.6** provides as follows:

11.5.6 Climatic conditions, storms, floods, droughts, tidal waves, fires, hurricanes, earthquakes, landslides or other catastrophes or acts of God; acts of war or of the public enemy or terrorist acts; disruption, outage or power failure caused by a utility's inability or failure to provide service, pandemics, epidemics, outbreaks of infectious disease or any other public health emergency; other states of emergency declared by the City, State or Federal government , quarantine restrictions, and freight embargoes; including the **City's** reasonable responses to any of the above; and

3. Section 13.3 provides as follows:

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 any of the acts or omissions of the **City**, its officials, agents or employees set forth in Articles **11.4.1.1** through **11.4.1.9**; or

13.3.2 By or attributable to any of the items set forth in Articles 11.5.1 through 11.5.7.

13.3.3 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.

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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 <u>ARTICLE 1. THE CONTRACT</u>

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 maybe 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.

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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, impactdrills, 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, orhis/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 rightto 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 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 by the **City** Department of Environmental Protection Noise Mitigation Plan or approved Alternative Noise Mitigation Plan in place. In addition, the **Contractor** shall create and implement a 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:

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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, or abatement of any building, structure, to any final work involved in the completion of any construction program or project involving the construction, or abatement of any building, structure, tunnel, excavation, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, to 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, 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 pt) 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 diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty parts per diesel fuel that has a sulfur content of no more than thirty par

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 <u>www.dep.nyc.gov</u> 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)(i) 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:

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

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

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

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

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

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

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

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

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

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

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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 anyappropriate 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

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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 Methodin the form of
a bar graph or in such other form as specified by the **Engineer**, and monthly cash flow requirements, showing:

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

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

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

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

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

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

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

ARTICLE 10. REQUESTS FOR INFORMATION OR APPROVAL

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

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

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

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

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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 delayin 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 neitherknown nor reasonably ascertainable on a pre-bid inspection of the **Site**or review

of the bid documents or other publicly available sources, and that are not ordinarily encountered in the **Project**'s geographical area or neighborhood or in the type of **Work** to be performed.

- 11.4.1.6 Delays caused by the **City's** bad faith or its willful, malicious, or grossly negligent conduct;
- 11.4.1.7 Delays not contemplated by the parties;
- 11.4.1.8 Delays so unreasonable that they constitute an intentional abandonment of the **Contract** by the **City**; and
- 11.4.1.9 Delays resulting from the **City's** breach of a fundamental obligation of the **Contract**.
- 11.4.2 No claim may be made for any alleged delay in **Substantial Completion** of the **Work** if the **Work** will be or is substantially completed by the date of **Substantial Completion** provided for in Schedule A unless acceleration has been directed by the **Commissioner** to meet the date of **Substantial Completion** set forth in Schedule A, or unless there is a provision in the **Contract** providing for additional compensation for early completion.

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

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

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

11.5.2 Any situation which was within the contemplation of the parties at the time of entering into the **Contract**, including any delay indicated or disclosed in the **Contract Documents** or that would be generally recognized by a reasonably prudent contractor as related to the nature of the **Work**, and/or the existence of any facility or appurtenance owned, operated or maintained by any third party, as indicated or disclosed in the **Contract Documents** or ordinarily encountered or generally recognized as related to the nature of the **Work**;

11.5.3 Restraining orders, injunctions or judgments issued by a court which were caused by a Contractor's submission, action or inaction or by a Contractor's **Means and Methods of Construction**, or by third parties, unless such order, injunction or judgment was the result of an act or omission by the **City**;

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

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

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

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

11.6 Required Content of Submission of Statement of Delay Damages

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

- 11.6.1.1 For each delay, the start and end dates of the claimed periods of delay and, in addition, a description of the operations that were delayed, an explanation of how they were delayed, and the reasons for the delay, including identifying the applicable act or omission of the City listed in Article 11.4.
- 11.6.1.2 A detailed factual statement of the claim providing all necessary dates, locations and items of **Work** affected by the claim.
- 11.6.1.3 The estimated amount of additional compensation sought and a breakdown of that amount into categories as described in Article 11.7.
- 11.6.1.4 Any additional information requested by the **Commissioner**.

11.7 Recoverable Costs

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

- 11.7.1.1 Direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits, based on time and materials records;
- 11.7.1.2 Necessary materials (including transportation to the **Site**), based on time and material records;
- 11.7.1.3 Reasonable rental value of necessary plant and equipment other than small tools, plus fuel/energy costs according to the applicable formula set forth in Articles 26.2.4 and/or 26.2.8, based on time and material records;
- 11.7.1.4 Additional insurance and bond costs;
- 11.7.1.5 Extended Site overhead, field office rental, salaries of field office staff, onsite project managers and superintendents, field office staff vehicles, Project-specific storage, field office utilities and telephone, and field office consumables;
- 11.7.1.6 Labor escalation costs based on actual costs;

- 11.7.1.7 Materials and equipment escalation costs based on applicable industry indices unless documentation of actual increased cost is provided;
- 11.7.1.8 Additional material and equipment storage costs based on actual documented costs and additional costs necessitated by extended manufacturer warranty periods; and
- 11.7.1.9 Extended home office overhead calculated based on the following formula:
 - (1) Subtract from the original **Contract** amount the amount earned by original contractual **Substantial Completion** date (not

including change orders);

- (2) Remove 15% overhead and profit from the calculation in item(1) by dividing the results of item (1) by 1.15;
- (3) Multiply the result of item (2) by 7.25% for the total home office overhead;
- (4) Multiply the result of item (3) by 7.25% for the total profit; and
- (5) The total extended home office overhead will be the total of items (3) and (4).

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

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

- 11.7.3.1Profit, or loss of anticipated or unanticipated profit, except as provided in Article 11.7.1.9;
- 11.7.3.2Consequential 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, hasnot 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 coordinate its work, or thedefault 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** 12.5 **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

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 judgmentor 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

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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;

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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 multipleof 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 or, if 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 **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 <u>www.nyc.gov/pip</u>.¹For 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

¹ In order to use the new system, a PIP account will be required. Detailed instructions on creating a PIP account and using the new system are also available at <u>www.nyc.gov/pip</u>. Additional assistance with PIP may be obtained by emailing the Financial Information Services Agency Help Desk at <u>pip@fisa.nyc.gov</u>.

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 **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**.

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17.11 The **Contractor** shall promptly, upon request, file with the **Engineer** a conformed copy of the subcontract and its cost. The subcontract shall provide the following:

17.11.1 Payment to **Subcontractors**: The agreement between the **Contractor** and its **Subcontractor** shall contain the same terms and conditions as to method of payment for **Work**, labor, and materials, and as to retained percentages, as are contained in this **Contract**.

17.11.2 Prevailing Rate of Wages: The agreement between the **Contractor** and its **Subcontractor** shall include the prevailing wage rates and supplemental benefits to be paid in accordance with Labor Law Section 220.

17.11.3 Section 6-123 of the Administrative Code: Pursuant to the requirements of Section 6-123 of the Administrative Code, every agreement between the **Contractor** and a **Subcontractor** in excess of fifty thousand (\$50,000) dollars shall include a provision that the **Subcontractor** shall not engage in any unlawful discriminatory practice as defined in Title VIII of the Administrative Code (Section 8-101 *et seq.*).

17.11.4 All requirements required pursuant to federal and/or state grant agreement(s), if applicable to the **Work**.

17.12 The **Commissioner** may deduct from the amounts certified under this **Contract** to be due to the **Contractor**, the sum or sums due and owing from the **Contractor** to the **Subcontractors** according to the terms of the said subcontracts, and in case of dispute between the **Contractor** and its **Subcontractor**, or **Subcontractors**, as to the amount due and owing, the **Commissioner** may deduct and withhold from the amounts certified under this **Contract** to be due to the **Contractor** such sum or sumsas 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.

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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 aSubcontractor 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.

20.3.10

20.4 Upon the receipt by the **City** of a demand pursuant to this Article 20, the **City** may withhold from any payment otherwise due and owing to the **Contractor** under this **Contract** an amount sufficient to satisfy the demand.

20.4.1 In the event the **City** determines that the demand is valid, the **City** shall notify the **Contractor** of such determination and the amount thereof and direct the **Contractor** to immediately pay such amount to the beneficiary. In the event the **Contractor**, within seven (7) **Days** of receipt of such notification from the **City**, fails to pay the beneficiary, such failure shall constitute an automatic and irrevocable assignment of payment by the **Contractor** to the beneficiary for the amount of the demand determined by the **City** to be valid. The **Contractor**, without further notification or other process, hereby gives its unconditional consent to such assignment of payment to the beneficiary and authorizes the **City**, on its behalf, to take all necessary actions to implement such assignment of payment, including without limitation the execution of any instrument or documentation necessary to effectuate such assignment.

20.4.2 In the event that the amount otherwise due and owing to the **Contractor** by the **City** is insufficient to satisfy such demand, the **City** may, at its option, require payment from the **Contractor** of an amount sufficient to cover such demand and exercise any other right to require or recover payment which the **City** may have under **Law** or **Contract**.

20.4.3 In the event the **City** determines that the demand is invalid, any amount withheld pending the **City**'s review of such demand shall be paid to the **Contractor**; provided, however, no lien has been filed. In the event a claim or an action has been filed, the terms and conditions set forth in Article 23 shall apply. In the event a lien has been filed, the parties will be governed by the provisions of the Lien Law of the State of New York.

20.5 The provisions of this Article 20 shall not prevent the **City** and the **Contractor** from resolving disputes in accordance with the **PPB** Rules, where applicable.

20.6 In the event the **City** determines that the beneficiary is entitled to payment pursuant to this Article 20, such determination and any defenses and counterclaims raised by the **Contractor** shall be taken into account in evaluating the **Contractor's** performance.

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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, thenas 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, 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 Insuredand 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 toreal 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 noncontributing 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.

For policies provided pursuant to all of Article 22.1 other than Article 22.1.2, the 22.3.3 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 todo 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 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.

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23.2 If an action on such claim is timely commenced and the liability of the City, or the Contractor,

or both, shall have been established therein by a final judgment of a court of competent jurisdiction, or if such claim shall have been admitted by the **Contractor** to be valid, the **Comptroller** shall pay such judgment or admitted claim out of the monies retained by the **Comptroller** under the provisions of this Article 23, and return the balance, if any, without interest, to the **Contractor**.

ARTICLE 24. MAINTENANCE AND GUARANTY

24.1 The **Contractor** shall promptly repair, replace, restore or rebuild, as the **Commissioner** may determine, any finished **Work** in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of **Substantial Completion** (or use and occupancy in accordance with Article 16), except where other periods of maintenance and guaranty are provided for in Schedule A.

24.2 As security for the faithful performance of its obligations hereunder, the **Contractor**, upon filing its requisition for payment on **Substantial Completion**, shall deposit with the **Commissioner** a sum equal to one (1%) percent of the price (or the amount fixed in Schedule A of the General Conditions) in cash or certified check upon a state or national bank and trust company or a check of such bank and trust company signed by a duly authorized officer thereof and drawn to the order of the **Comptroller**, or obligations of the **City**, which the **Comptroller** may approve as of equal value with the sum so required.

24.3 In lieu of the above, the **Contractor** may make such security payment to the **City** by authorizing the **Commissioner** in writing to deduct the amount from the **Substantial Completion** payment which shall be deemed the deposit required above.

24.4 If the **Contractor** has faithfully performed all of its obligations hereunder the **Commissioner** shall so certify to the **Comptroller** within five (5) **Days** after the expiration of one (1) year from the date of **Substantial Completion** and acceptance of the **Work** or within thirty (30) **Days** after the expiration of the guarantee period fixed in the **Specifications**. The security payment shall be repaid to the **Contractor** without interest within thirty (30) **Days** after certification by the **Commissioner** to the **Comptroller** that the **Contractor** has faithfully performed all of its obligations hereunder.

24.5 Notice by the **Commissioner** to the **Contractor** to repair, replace, rebuild or restore such defective or damaged **Work** shall be timely, pursuant to this article, if given not later than ten (10) **Days** subsequent to the expiration of the one (1) year period or other periods provided for herein.

24.6 If the **Contractor** shall fail to repair, replace, rebuild or restore such defective or damaged **Work** promptly after receiving such notice, the **Commissioner** shall have the right to have the **Work** done by others in the same manner as provided for in the completion of a defaulted **Contract**, under Article 51.

24.7 If the security payment so deposited is insufficient to cover the cost of such **Work**, the **Contractor** shall be liable to pay such deficiency on demand by the **Commissioner**.

24.8 The **Engineer's** certificate setting forth the fair and reasonable cost of repairing, replacing, rebuilding or restoring any damaged or defective **Work** when performed by one other than the **Contractor**, shall be binding and conclusive upon the **Contractor** as to the amount thereof.

24.9 The **Contractor** shall obtain all manufacturers' warranties and guaranties of all equipment and materials required by this **Contract** in the name of the **City** and shall deliver same to the **Commissioner**. All of the **City's** rights and title and interest in and to said manufacturers' warranties and guaranties may be assigned by the **City** to any subsequent purchasers of such equipment and materials or lessees of the

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 toa 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 forthat item, and for any reason it appears that the actual 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) x (HP rating) x (Fuel cost/gallon). Reasonable rental value is defined as the lower of either seventy-five percent of the monthly prorated rental rates established in "The AED Green Book, Rental Rates and Specifications for Construction Equipment" published by 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 nonoperating Contractor-owned (or Subcontractor-owned, as applicable) equipment (scaffolding, sheeting systems, road plates, etc.), the City may restrict reimbursement to a purchasesalvage/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) x (HP rating) x (Fuel cost/gallon). In lieu of renting, the **City** reserves the right to direct the purchase of non-operating equipment (scaffolding, sheeting systems, road plates, etc.), with payment on a purchase-salvage/life cycle basis, if less than the projected rental costs; plus

26.2.9 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 bya **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 **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 DisputeResolution 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 disputewas 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** presentatives, and any other personnel desired by the **Comptroller**.

27.5.4 Opportunity of **Comptroller** to Compromise or Adjust Claim. The **Comptroller** shall have forty-five (45) **Days** from his or her receipt of all materials referred to in Article 27.5.3 to investigate the disputed claim. The period for investigation and compromise may be further extended by agreement between the **Contractor** and the **Comptroller**, to a maximum of ninety (90) **Days** from the **Comptroller's** receipt of all materials. The **Contractor** may not present its petition to the Contract Dispute Resolution Board until the period for investigation and compromise delineated in this Article 27.5.4 has expired. In compromising or adjusting any claim hereunder, the **Comptroller** may not revise or disregard the terms of the **Contract** between the parties.

27.6 Contract Dispute Resolution Board. There shall be a Contract Dispute Resolution Board composed of:

27.6.1 The chief administrative law judge of the Office of Administrative Trials and Hearings (OATH) or his/her designated OATH administrative law judge, who shall act as chairperson, and may adopt operational procedures and issue such orders consistent with this Article 27 as may be necessary in the execution of the Contract Dispute Resolution Board's functions, including, but not limited to, granting extensions of time to present or respond to submissions;

27.6.2 The **CCPO** or his/her designee; any designee shall have the requisitebackground 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 orreport 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

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 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 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 ATIME & 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 noncancelable 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**, 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 resolutionprocedure.

CHAPTER VII: POWERS OF THE RESIDENT ENGINEER, THE ENGINEER ORARCHITECT 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 bythe **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** for thwith, 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 outof or in connection with the **Contract**; and

35.3.3(b) the rights and remedies afforded to its employees under Administrative Code sections 7-805 (the New York City False Claims Act) and 12-113 (the Whistleblower Protection Expansion Act) for lawful acts taken in connection with the

reporting of allegations of fraud, false claims, criminality or corruption in connection with the **Contract**.

35.3.4 For the purposes of this Article 35.3, "adverse personnel action" includes dismissal, demotion, suspension, disciplinary action, negative performance evaluation, any action resulting in loss of staff, office space, equipment or other benefit, failure to appoint, failure to promote, or any transfer or assignment or failure to transfer or assign against the wishes of the affected officer or employee.

35.3.5 This Article 35.3 is applicable to all of the **Contractor's Subcontractors** having subcontracts with a value in excess of \$100,000; accordingly, the **Contractor** shall include this rider in all subcontracts with a value a value in excess of \$100,000.

35.4 Article 35.3 is not applicable to this **Contract** if it is valued at \$100,000 or less. Articles 35.3.1, 35.3.2, 35.3.4, and 35.3.5 are not applicable to this **Contract** if it was solicited pursuant to a finding of an emergency.

35.5 Paid Sick Leave Law.

35.5.1 Introduction and General Provisions.

35.5.1(a) The Earned Sick Time Act, also known as the Paid Sick Leave Law ("PSLL"), requires covered employees who annually perform more than 80 hours of work in New York City to be provided with paid sick time². 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 Title20, 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").

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 receiptof 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

² Pursuant to the PSLL, if fewer than five employees work for the same employer, as determined pursuant to New York City Administrative Code § 20-912(g), such employer has the option of providing such employees uncompensated sick time.

website www.nyc.gov/PaidSickLeave there are links to the PSLL and the associated Rules as well as additional resources for employers, such as Frequently Asked Questions, timekeeping tools and model forms, and an event calendar of upcoming presentations and webinars at which the **Contractor** can get more information about how to comply with the PSLL. The **Contractor** acknowledges that it is responsible for compliance with the PSLL notwithstanding any inconsistent language contained herein.

35.5.2 Pursuant to the PSLL and the Rules: Applicability, Accrual, and Use.

35.5.2(a) An employee who works within the City of New York for more than eighty hours in any consecutive 12-month period designated by the employer as its "calendar year" pursuant to the PSLL ("Year") must be provided sick time. Employers must provide a minimum of one hour of sick time for every 30 hours worked by an employee and compensation for such sick time must be provided at the greater of the employee's regular hourly rate or the minimum wage. Employers are not required to provide more than 40 hours of sick time to an employee in any Year.

35.5.2(b) An employee has the right to determine how much sick time he or she will use, provided that employers may set a reasonable minimum increment for the use of sick time not to exceed four hours per **Day**. In addition, an employee may carry over up to 40 hours of unused sick time to the following Year, provided that no employer is required to allow the use of more than forty hours of sick time in a Year or carry over unused paid sick time if the employee is paid for such unused sick time and the employer provides the employee with at least the legally required amount of paid sick time for such employee for the immediately subsequent Year on the first **Day** of such Year.

35.5.2(c) An employee entitled to sick time pursuant to the PSLL may use sick time for any of the following:

- i. such employee's mental illness, physical illness, injury, or health condition or the care of such illness, injury, or condition or such employee's need for medical diagnosis or preventive medical care;
- ii. such employee's care of a family member (an employee's child, spouse, domestic partner, parent, sibling, grandchild or grandparent, or the child or parent of an employee's spouse or domestic partner) who has a mental illness, physical illness, injury or health condition or who has a need for medical diagnosis or preventive medical care;
- iii. closure of such employee's place of business by order of a public official due to a public health emergency; or
- iv. such employee's need to care for a child whose school or childcare providerhas been closed due to a public health emergency.

35.5.2(d) An employer must not require an employee, as a condition of taking sick time, to search for a replacement. However, an employer may require an employee to provide: reasonable notice of the need to use sick time; reasonable documentation that the use of sick time was needed for a reason above if for an absence of more than three consecutive work days; and/or written confirmation that an employee used sick time pursuant to the PSLL. However, an employer may not require documentation specifying the nature of a medical condition or otherwise require disclosure of the details of a medical condition as a condition of providing sick time and health information obtained solely due to an employee's use of sick time pursuant to the PSLL must be treated by the

employer as confidential.

35.5.2(e) If an employer chooses to impose any permissible discretionary requirement as a condition of using sick time, it must provide to all employees a written policy containing those requirements, using a delivery method that reasonably ensures that employees receive the policy. If such employer has not provided its written policy, it may not deny sick time to an employee because of non-compliance with such a policy.

35.5.2(f) Sick time to which an employee is entitled must be paid no later than the payday for the next regular payroll period beginning after the sick time was used.

35.5.3 Exemptions and Exceptions. Notwithstanding the above, the PSLL does not apply to any of the following:

35.5.3(a) an independent contractor who does not meet the definition of employee under section 190(2) of the New York State Labor Law;

35.5.3(b) an employee covered by a valid collective bargaining agreement in effect on April 1, 2014, until the termination of such agreement;

35.5.3(c) an employee in the construction or grocery industry covered by a valid collective bargaining agreement if the provisions of the PSLL are expressly waived in such collective bargaining agreement;

35.5.3(d) an employee covered by another valid collective bargaining agreement if such provisions are expressly waived in such agreement and such agreement provides a benefit comparable to that provided by the PSLL for such employee;

35.5.3(e) an audiologist, occupational therapist, physical therapist, or speech language pathologist who is licensed by the New York State Department of Education and who calls in for work assignments at will, determines his or her own schedule, has the ability to reject or accept any assignment referred to him or her, and is paid an average hourly wage that is at least four times the federal minimum wage;

35.5.3(f) an employee in a work study program under Section 2753 of Chapter42 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 Chapter20 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

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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 Polices 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, 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 **ContrSact** 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. For all other events 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 amonthly 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 repairof 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 applicantfor 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, ratesof 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 AdministrativeCode, 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

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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 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 fixedpursuant 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 breachof 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 byLaw.

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 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 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 **City** for a period of five (5) years from the **City** for a period of five (5) years from the **City** for a period of five (5) years from 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 Noticeof 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 orshe is If the total cost of the Work under this Contract is at least two hundred fifty working. 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 acondition 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**). 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 priceor 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 submitto 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.

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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 44and 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; orif

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** shallbe 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 forthin 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

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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 thefacts 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 employeeof 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** 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 property that the **Contractor** is required to consumable supplies and tangible personal property that the **Contractor** is required to consumable supplies and tangible personal property that the **Contractor** is required to consumable supplies and tangible personal property that the **Contractor** is required to 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 forthe 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 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

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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 interestin, 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 inassessing 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 thathas 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 this64.1.5 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

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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 willbe 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**.

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 asses, identify, and actively recruit employees from under-represented religious groups with potential for further advancement; and

69.3.1(i) appoint a senior management staff member to oversee affirmative actionefforts 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 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**, the **Contractor** shall be liable for such difference in price for the entire amount of supplies required by the **Agency** for the uncompleted term of **Contractor's Contract**. In the case of a construction **Contract**, the **Agency** shall also have the right to hold the **Contractor** in partial or total default in

accordance with the default provisions of this **Contract**, and/or may seek debarment or suspension of the **Contractor**. The rights and remedies of the **Agency** hereunder shall be in addition to, and not in lieu of, any rights and remedies the **Agency** has pursuant to this **Contract** or by operation of **Law**.

ARTICLE 70. ELECTRONIC FILING/NYC DEVELOPMENT HUB

70.1 The **Contractor** shall electronically file all alteration type-2 and alteration type-3 applications via the New York City Development Hub Web site, except applications for the following types of minor alterations: enlargements, curb cuts, legalizations, fire alarms, builders pavement plans, and jobs filed on Landmark Preservation Commission calendared properties. All such filings must be professionally certified. Information about electronic filing via the New York City Development Hub is available on the **City** Department of Buildings Web site at www.nyc.gov/buildings.

ARTICLE 71. PROHIBITION OF TROPICAL HARDWOODS

71.1 Tropical hardwoods, as defined in Section 165 of the New York State Finance Law (Finance Law), shall not be utilized in the performance of this **Contract** except as expressly permitted by Section 165 of the Finance Law.

ARTICLE 72. CONFLICTS OF INTEREST

72.1 Section 2604 of the **City** Charter and other related provisions of the **City** Charter, the Administrative Code, and the Penal Law are applicable under the terms of this **Contract** in relation to conflicts of interest and shall be extended to **Subcontractors** authorized to perform **Work**, labor and services pursuant to this **Contract** and further, it shall be the duty and responsibility of the **Contractor** so inform its respective **Subcontractors**. Notice is hereby given that, under certain circumstances, penalties may be invoked against the donor as well as the recipient of any form of valuable gift.

ARTICLE 73. MERGER CLAUSE

73.1 The written **Contract** herein, contains all the terms and conditions agreed upon by the parties hereto, and no other agreement, oral or otherwise, regarding the subject matter of this **Contract** shall be deemed to exist or to bind any of the parties hereto, or to vary any of the terms contained herein.

ARTICLE 74. STATEMENT OF WORK

74.1 The **Contractor** shall furnish all labor and materials and perform all **Work** in strictaccordance 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 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, aboutor 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 reasonablyhave 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

ARTICLE I. M/WBE PROGRAM

Section 6-129 of the Administrative Code of the City of New York ("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.

References to MBEs or WBEs shall also include such businesses certified pursuant to the executive law where credit is required by section 311 of the New York City Charter or other provision of law.

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 1 to this Contract (see Page 1, Line 1 Total Participation Goals) or will be set forth on Schedule B, Part 1 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 DSBS 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 2 (see Pages1-2) 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; (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; as well as the name, addresses, and telephone numbers of the M/WBE subcontractors if required by the solicitation; and (d) the prospective contractor's required certification and affirmations. 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 2 (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 2 (see Pages 1-2) 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; (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; as well as the name, addresses, and telephone numbers of the M/WBE subcontractors if required by the solicitation; and (d) the prospective contractor's required certification and affirmations. 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 2). A SCHEDULE B SUBMITTED BY THE BIDDER/PROPOSER WHICH DOES NOT INCLUDE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE PARTICIPATION GOALS IS GRANTED (SCHEDULE B, PART 3). IN THE EVENT THAT THE CITY **DETERMINES** THAT THE BIDDER/PROPOSER HAS SUBMITTED A SCHEDULE B WHERE THE VENDOR CERTIFICATION AND REOUIRED 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 city-certified MBE and WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6451, or by visiting or writing DSBS at One Liberty Plaza ., New York, New York, 10006, 11th floor. Eligible firms that have not yet

been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311. A firm that is certified as both an MBE and a WBE may be counted either toward the goal for MBEs or the goal for WBEs, but not both. No credit shall be given for participation by a graduate MBE or graduate WBE, as defined in Section 6-129(c)(20).

7. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, with each voucher for payment, and/or periodically as Agency may require, submit statements, certified under penalty of perjury, which shall include, but not be limited to,: the total amount the Contractor paid to its direct subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount direct subcontractors paid to indirect subcontractor; 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 3 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 by email at MWBEModification@ddc.nyc.gov. Full or partial waiver requests that are received later than seven (7) calendar days prior to the date and time the bids, proposals, or Task Orders are due may be rejected as untimely. Bidders, proposers, or contractors, as applicable, who have submitted timely 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

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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, 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 the Contractor was required to identify in its bid or proposal the MBEs and/or WBEs they intended to use in connection with the performance of the Contract or Task Order, substitutions to the identified firms may only be made with the approval of the Agency, which shall only be given when the Contractor has proposed to use a firm that would satisfy the Participation Goals to the same extent as the firm previously identified, unless the Agency determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts. In making such determination, the Agency shall require evidence of the

efforts listed in Section 11(a) above, as applicable, along with any other relevant factors.

13. 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.

14. 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.

15. 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

The Contractor shall take notice that, if this solicitation requires the establishment of a 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.

1. Pursuant to DSBS rules, construction contracts that include a requirement for a 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.

2. 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.

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

4. 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 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

97

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 PASSPort as caution data.

CONTRACT SIGNATURE PAGE

This Contract is entered by and between the City of New York ("City"), acting by and through the **DEPARTMENT OF DESIGN AND CONSTRUCTION**, and **CDE AIR CONDITIONING CO INC** ("Contractor").

This Contract consists of this contract signature page as well as the following documents ("Contract Documents") which are located in the Documents tab of the PASSPort record titled **85022B0083-LQQBHHVAC -**.

- 1. (Bid) 02 Subcontractor_ID_Form_HVAC_.pdf Jan 27 2023 4:00PM
- 2. (Question answer) 01 QUALIFICATION_FORM.pdf Jan 27 2023 4:00PM
- 3. (Question answer) 01.a QUALIFICATION_FORM.pdf Jan 27 2023 4:00PM
- 4. (Question answer) 01.b QUALIFICATION_FORM.pdf Jan 27 2023 4:00PM
- 5. (Question answer) 04 Bid Bond.LQQBHHVAC.CDEAirConditioningCo.,Inc..pdf Jan 27 2023 4:00PM
- 6. Brokers Certification Jan 31 2023 7:38PM
- 7. Budget Detail Jan 30 2023 7:56PM
- 8. Disability Insurance Jan 30 2023 1:39PM
- 9. General Liability Jan 30 2023 1:40PM
- 10. LQQBHHVAC Addendum 4 Jan 27 2023 4:00PM
- 11. LQQBHHVAC Bid Drawings_Addendum 1 Jan 27 2023 4:00PM
- 12. LQQBHHVAC Proprietary Items Jan 27 2023 4:00PM
- 13. LQQBHHVAC Volume 2 Jan 27 2023 4:00PM
- 14. LQQBHHVAC Volume 3_Addendum6 Jan 27 2023 4:00PM
- 15. LQQBHHVAC_Addendum1 Jan 27 2023 4:00PM
- 16. LQQBHHVAC_Addendum2 Jan 27 2023 4:00PM
- 17. LQQBHHVAC_Addendum3 Jan 27 2023 4:00PM
- 18. LQQBHHVAC_Addendum5 Jan 27 2023 4:00PM
- 19. LQQBHHVAC_Addendum6 Jan 27 2023 4:00PM
- 20. MWBE_ScheduleB_LQQBHHVAC - Jan 30 2023 8:01PM
- 21. NOTICE TO BIDDERS COVID19 Jan 27 2023 4:00PM
- 22. Payment & Performance Bond Jan 30 2023 1:41PM
- 23. Proposal/Bid Jan 27 2023 4:00PM
- 24. Volume 1 Jan 27 2023 4:00PM
- 25. Worker's Compensation Jan 30 2023 1:41PM

The above order does not represent an order of precedence. The Contract shall be governed by the order of precedence, if any, in the Contract Documents or by ordinary contract principles if no such order of precedence exists.

Each party is signing this Contract electronically on the date stated in that party's electronic signature.

The City of New York By: DEPART MENT OF DESIGN AND CONSTRUCTION

FEOABB939FF24BO...

(Signature)

Name: _____ Thomas Foley

	Commissionan
l'ifle:	COMMITSSTORE

Date: ____ 2/6/2023 | 06:23:24 PST

Contractor By: CDE AJB GOONDITIONING CO INC Brian J Agens (Signature) Name: ______Brian J Azara

Title: _____ Corporate Secretary

Date: ____ 2/6/2023 | 06:15:24 PST

PERFORMANCE BOND #1

Performance Bond #1 (4 Pages): 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 Number: 015212892

KNOW ALL PERSONS BY THESE PRESENTS:. That we, C.D.E. Air Conditioning Co., Inc.

321 39th Street

Brooklyn, NY 11232

hereinafter referred to as the "Principal," Liberty Mutual Insurance Company and.

175 Berkeley Street

Boston, MA 02116

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

One Million Nine Hundred Ninety-Five Thousand Two Hundred Thirty-Three Dollars and 00/100

_____) Dollars, lawful money of the United States for the payment of whichsaid 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

Queensboro Hill Public Library - HVAC Replacement - Project ID: LQQBHHVAC/EPIN: 85022B0083

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

^{(\$ 1,995,233.00}

PERFORMANCE BOND #1 (Page 2)

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the Citythat 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 thecost of completion plus any applicable damages and costs under option (1) above, or to commence anddiligently 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 timeas 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 Workto 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 doneand 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 abasis 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 (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

	26th	day of	January	, 20 <u>2</u> 3	(Seal)
121	- S.IS		C.D.E. Air (Conditioning Co., Inc.	(L.S.)
1.15	67.255		0	Principal	
			By: Mul	al 2	<u> </u>
12	(Seal)		Liberty Mut	ual Insurance Company	
				Surety	
	NICONCE		By:		
-Tr	(Seal)		Nysiai L.	Shavalo, Alloney-III-Fact	· · ·
	() () () () () () () () () () () () () (By <u>:</u>		
	(Seal)			Surety	4
			By <u>:</u>		
	(Seal)		2	Surety	<u> </u>
			By <u>:</u>		
	(Seal)			Surety	<u>.</u>
			By <u>:</u>		
	Bond Pramium Poto	\$8.34 Sliding Pate			
	Bonu Fremium Rate			<u> </u>	
	Bond Premium Cost	\$12,902.00		<u>a</u> , I. ;	

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 aduly 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.

	PERFC	ORMANCE B	OND #1 (Page 4)		
	ACKNOWLEDGM	IENT OF PR	INCIPAL IF A C	ORPORATION	
State of New	York	County of_	Kings	6	ss:
On this 26t	hday of	January	, 20 23	before me pers	onally
came Mitchel	1J. Merdinger	,	e kon Garradaryan		
to me known, who	o, being by me duly s	worn did dep	ose and say that he that he/she is the _	Vice - President	
of the corporation name to the foreg	described in and wh going instrument by	ich executed order of the d	the foregoing instr lirectors of said co	ument; and that he/she signed proration as the duly autho	ed his/l rized a
binding act thereo	of.		PAULA BRAVO		
(X) and	N.	NOTA	Y PUBLIC, STATE OF NI	EW YORK	
Wanner	Man	R	egistration No. 01BR6367 Qualified in KINGS Court	/980 htv	
Notary Public or (Commissioner of Dee	eds. c	ommission Expires 12/04/	2025	
V	ACKNOWLEDGN	AENT OF PH	RINCIPAL IF A F	PARTNERSHIP	
State of		County of_			ss:
On this	day of		20	before me pers	sonally
came	duj 01	1	, 20		onany
to me known, who	o, being by me duly s	worn did disp	bose and say that he	e/she residesat	ner of
	, a limited/g	eneral partner	ship existing under	r the laws of the State of	
	, the partnersh	ip described i	n and which execu	ited the foregoing instrumen	t; and
that he/she signed partnership.	his/her name to the	foregoing inst	rument as the duly	authorized and binding act	ofsaid
otary Public or Co	ommissioner of Deed	5			
oury rubite of ex	ACKNOWLEDG	9. MENT OF PI	RINCIPAL IF AN	INDIVIDUAL	
State of		County of_			ss:
On this	day of		20	before me pers	sonally
came	uuy 01		, 20	Oerore me pere	onuny
to me known, wh	o, being by me duly s	worn did dep	ose and say that he	e/she residesat	
		,	and that he/she is t	the individual whose name i	S
subscribed to the instrument, said in	within instrument and ndividual executed th	d acknowledg e instrument.	ed to me that by hi	s/her signature on the	
		1.14			
Notary Public or	Commissioner of Dee	eds			
			and a state of the second s	1 1	at the second

Affix Acknowledgments and Justification of Sureties.

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. ******

ACKNOWLEDGEMENT OF SURETY COMPANY

STATE OF New Jersey

COUNTY OF Morris

ON THE 26th DAY OF January, 2023 BEFORE ME PERSONALLY APPEARED <u>Jaclyn Thomas</u> TO ME KNOWN, WHO BEING BY ME DULY SWORN, DID DEPOSE AND SAY; THAT (S)HE IS THE ATTORNEY-IN-FACT OF <u>Liberty Mutual Insurance Company</u>, THE CORPORATION THAT EXECUTED THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT SUCH CORPORATION EXECUTED THE SAME.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND AFFIXED MY OFFICIAL SEAL, AT MY OFFICE IN THE ABOVE COUNTY, THE DAY AND YEAR WRITTEN ABOVE.

Notary Public

William A. Drayton Jr. Notary Public State of New Jersey My commission expires April 9, 2026



quarantees

value

3

for mortgage, note, loan, rate, interest rate or residi

valid 1 Not valid currency

credi

đ letter (This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

> Liberty Mutual Insurance Company The Ohio Casualty Insurance Company West American Insurance Company

Certificate No: 8207604-985316

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Edward Reilly; Jaclyn Thomas; Kevin T. Walsh, Jr.; Krystal L. Stravato; Marisol Mojica; Michael Marino; Thomas MacDonald

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

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 6th day of April 2022 .



On this <u>6th</u> day of <u>April</u>, <u>2022</u> before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Sea Teresa Pastella, Notary Public Montgomery County My commission expires March 28, 2025 Commission number 1126044 Member, Pennsylvania Association of Notaries

eresa Pastella, Notary Public

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

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

bond and/or Power of Attorney (POA) verification inquiries, ise call 610-832-8240 or email HOSUR@libertymutual.com Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall For bon please have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.

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

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

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

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

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 26th day of January 2023



LMS-12873 LMIC OCIC WAIC Multi Co 02/21



LIBERTY MUTUAL INSURANCE COMPANY

FINANCIAL STATEMENT — DECEMBER 31, 2021

Reserve for Commissions, Taxes and

Special Surplus Funds

Capital Stock

Assets

Liabilities	
Unearned Premiums	\$9,106,965,847

Reserve for Claims and Claims Expense...... 25,279,158,493

Total \$43,481,129,334

\$178,192,363

10,000,075

315,537,902

139,634,000

8,638,106,801

1,726,291

Funds Held Under Reinsurance Treaties

Reserve for Dividends to Policyholders

Additional Statutory Reserve

Paid in Surplus 11,804,736,755 Unassigned Surplus 10,056,686,874

Other Liabilities

Cash and Bank Deposits	\$2,234,770,744
*Bonds — U.S Government	4,250,615,811
*Other Bonds	16,983,165,862
*Stocks	20,075,458,019
Real Estate	182,250,567
Agents' Balances or Uncollected Premiums	7,607,687,836
Accrued Interest and Rents	120,173,987
Other Admitted Assets	14,076,622,575



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

I, TIM MIKOLAJEWSKI, Assistant Secretary of Liberty Mutual Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2021, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 8th day of March, 2022.

Ambolajewski.

Assistant Secretary

PERFORMANCE BOND #2

Performance Bond #2 (4 pages): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 1) PERFORMANCE BOND #2KNOW ALL PERSONS BY THESE PRESENTS:,

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 infull;

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 Cityfrom all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making

good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents orwhich 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 nulland void, otherwise to remain in full force and effect.

That we,

PERFORMANCE BOND #2 (Page 2)

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the Citythat 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 theContract, 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 theContract, 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 (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)				
			Principal	(L.S.)
			Ĩ	
(Seal)				
(Beal)	Bv			
	Dy.		•	
		Surety		
		By <u>:</u>		·
(Scal)			Suraty	<u> </u>
(Seal)			Surety	
		By <u>:</u>		·
(Seal)			Surety	<u>.</u>
			,	
		Ву <u>:</u>		·
(Seal)			Surety	
		Bv		
		<u> </u>		·
(Seal)			Surety	
		By:		
Dond Dramium Data				
Donu Fremium Kale	-		<u>.</u>	
Bond Premium Cost			<u>.</u>	

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 aduly 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 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL IF A CORPORATION

State of	Cc	ounty of	ss:
On this	day of	, 20	before me personally
came	,		
to me known, v	vho, being by me duly sworr	n did depose and say that he	residesat
		; that he/she is the	

of the corporation described in and which executed the foregoing instrument; that he/she signed his/her name to theforegoing 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	Cc	unty of	SS:
On this came	day of,	, 20	before me personally
to me known, v	who, being by me duly sworr	did depose and say that he	/she residesat
	, a limited/ , the partnershi	; that he/she is; general partnership existing p described in and which ex	partner of under the laws of the State of accuted the foregoing instrument; and
that he/she sign partnership.	ned his/her name to the foreg	oing instrument as the duly	authorized and binding act of said

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL IF AN INDIVIDUAL

State of	Cou	inty of	ss:
On thisd	ay of	, 20	before me personally
came	,		
to me known, who, being	by me duly sworn	did depose and say that he	/she residesat
		, and that he/she is the	individual whose name is
subscribed to the within in	strument and ackn	owledged to me that by hi	s/her signature on the instrument,
said individual executed th	he 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.

* * * * * * * *

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Affix Acknowledgments and Justification of Sureties.

PAYMENT BOND

Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 1) Bond Number: 015212892

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

C.D.E. Air Conditioning Co., Inc.

321 39th Street

Brooklyn, NY 11232

hereinafter referred to as the "Principal", and Liberty Mutual Insurance Company

175 Berkeley Street

Boston, MA 02116

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

One Million Nine Hundred Ninety-Five Thousand Two Hundred Thirty-Three Dollars and 00/100

(\$1,995,233.00) 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

Queensboro Hill Public Library - HVAC Replacement - Project ID: LQQBHHVAC/EPIN: 85022B0083

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

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

PAYMENT BOND (Page 2)

(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 infull 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.

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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 <u>26th</u> day of January , 2023.

(Seal)	C.D.E. Air Conditioning Co., Inc. (L.S.)Prince By:
(Seal)	Liberty Mutual Insurance Company By: Krystar L. Stravato, Aftorney-in-Fact
(Seal)	Surety
(Seal)	Surety By:
(Seal)	Surety

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 aduly 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 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

On this 26th day of	f_January <u>,</u> 2023 , t	before me person	nally came	Mitchell J	. Merdinge
to me known, who, t	being by me duly sworn	did depose and s	say that he res	ides at	J
the corporation desc	ribed in and which exec	that he is the	ing instrumer	t that he know	0I ws the seal of said
corporation: that one	e of the seals affixed to	said instrument	is such seal: 1	that it was so a	affixed by order of
the directors of said	corporation, and that he	signed his name	thereto by lik	e order.	
PAULA BRA	VO	A A			
NOTARY PUBLIC, STATE (OF NEW YORK	(D , D)			
Registration No. 01BI	R6367980	Vanla V	ant		
Commission Expires 1	2/04/2025 Not	ary Public or Oc	mmissioner o	f Deeds	
		V			
OWLEDGMENT	OF PRINCIPAL, IF A	PARTNERSH	IP		
State of	Country of				
	County of		55.		
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On this day of	, t	petore me person	hally appeared	·	
to me known, and kn	lown to me to be one of	the members of	the firm of		
	Net	ny Dublic on Co		fDeede	
	Not	ary Public or Co	ommissioner o	f Deeds	
IOWLEDGMENT	Not.	ary Public or Co N INDIVIDUA	ommissioner o L	f Deeds	
NOWLEDGMENT	Not	ary Public or Co N INDIVIDUA	ommissioner o L	f Deeds	
NOWLEDGMENT	Not OF PRINCIPAL, IF AI County of	ary Public or Co N INDIVIDUA	ommissioner o Lss:	f Deeds	
OWLEDGMENT State of	Not. OF PRINCIPAL, IF AN County of	ary Public or Cc N INDIVIDUA	ommissioner o Lss:	f Deeds	
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NOWLEDGMENT State of day o to me known, and ki and acknowledged th Each execute parties; (b) appropri bond is executed by from By-Laws or re- its agent, officer or p	Not. OF PRINCIPAL, IF AI County of fCounty of f, t nown to me to be the penat he executed the same nat he executed the same Not. ed bond should be accont ate duly certified copy agent, officer or other re solutions of Surety under representative was issued	ary Public or Constant of the person of the person described of the person described of the person described of the person of the person of the person of the person the power of the person the perso	ommissioner o L ss: hally appeared in and who ex- ommissioner o appropriate ac torney or oth Principal or S of Attorney of ed copy of lat	f Deeds f Deeds f Deeds f Deeds knowledgmen er certificate of urety; (c) a du r other certific	egoing instrumen ts of the respectiv of authority when ily certified extrac- cate of authority of financial statemen

* * * * * * * *

Affix Acknowledgments and Justification of Sureties.

ACKNOWLEDGEMENT OF SURETY COMPANY

STATE OF New Jersey

COUNTY OF Morris

ON THE 26th DAY OF January, 2023 BEFORE ME PERSONALLY APPEARED <u>Jaclyn Thomas</u> TO ME KNOWN, WHO BEING BY ME DULY SWORN, DID DEPOSE AND SAY; THAT (S)HE IS THE ATTORNEY-IN-FACT OF <u>Liberty Mutual Insurance Company</u>, THE CORPORATION THAT EXECUTED THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT SUCH CORPORATION EXECUTED THE SAME.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND AFFIXED MY OFFICIAL SEAL, AT MY OFFICE IN THE ABOVE COUNTY, THE DAY AND YEAR WRITTEN ABOVE.

Notary Public

William A. Drayton Jr. Notary Public State of New Jersey My commission expires April 9, 2026



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

> Liberty Mutual Insurance Company The Ohio Casualty Insurance Company West American Insurance Company

Certificate No: 8207604-985316

and/or Power of Attorney (POA) verification inquiries, II 610-832-8240 or email HOSUR@libertymutual.com

bond ar ase call

For bon please

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint. Edward Reilly; Jaclyn Thomas; Kevin T. Walsh, Jr.; Krystal L. Stravato; Marisol Mojica; Michael Marino; Thomas MacDonald

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

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 6th day of April 2022 .



provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.

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

instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the

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

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

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

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 26th day of January 2023



LMS-12873 LMIC OCIC WAIC Multi Co 02/21



LIBERTY MUTUAL INSURANCE COMPANY

FINANCIAL STATEMENT — DECEMBER 31, 2021

Assets

L	ia	bi	li	ti	es

CO 100 005 047

Cash and Bank Deposits	\$2,234,770,744
*Bonds — U.S Government	4,250,615,811
*Other Bonds	16,983,165,862
*Stocks	20,075,458,019
Real Estate	182,250,567
Agents' Balances or Uncollected Premiums	7,607,687,836
Accrued Interest and Rents	120,173,987
Other Admitted Assets	14,076,622,575

Unearned Premiums		\$9,100,905,847
Reserve for Claims and Claims Ex	25,279,158,493	
Funds Held Under Reinsurance Tr	315,537,902	
Reserve for Dividends to Policyho	1,726,291	
Additional Statutory Reserve		139,634,000
Reserve for Commissions, Taxes a	ind	
Other Liabilities		8,638,106,801
Total		\$43,481,129,334
Special Surplus Funds	\$178,192,363	
Capital Stock	10,000,075	
Paid in Surplus	11,804,736,755	
Unassigned Surplus	10,056,686,874	
Surplus to Policyholders		22,049,616,067
Total Liabilities and Surplus		\$65,530,745,401



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

I, TIM MIKOLAJEWSKI, Assistant Secretary of Liberty Mutual Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2021, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 8th day of March, 2022.

Amerolajewski.

Assistant Secretary

		Client	#• AS	2400	7			CDEA	IR		
	۸ (.#. 40 ICI	∩ ∧						DATE (M	M/DD/YYYY)
	40			C P			1 11130	JRAN		1/25/	2023
Т	IIS	CERTIFICATE IS ISSUED AS A M	ATTE	R OF	INFORMATION ONLY AN	ID CON	IFERS NO R	IGHTS UPON	N THE CERTIFICATE HO	LDER.	THIS
C B	ERT FL O	IFICATE DOES NOT AFFIRMATIV		OR N F DO	IEGATIVELY AMEND, EXT DES NOT CONSTITUTE A (ACT BETW	HE COVERA	GE AFFORDED BY THE UING INSURFR(S), AUT	POLIC	IES FD
R	EPR	RESENTATIVE OR PRODUCER, A		HE C	ERTIFICATE HOLDER.						
IN	IPO	RTANT: If the certificate holder is	an A	DDIT	IONAL INSURED, the poli	icy(ies)	must have	ADDITIONAL	. INSURED provisions o	r be er	dorsed.
lf th	SUE	BROGATION IS WAIVED, subject	to the hts to	e tern	ns and conditions of the p	oolicy, o f such	certain polic endorsemer	ties may requ	ire an endorsement. A	statem	ent on
PRO	DUCE	ER				CONTAC	T Matthew	/ Anderson			
US	Ins	surance Services LLC			-	PHONE (A/C, No.	Ext): 914 45	9-6200	FAX (A/C. No):	610 5	37-4220
333	We	estchester Ave, Suite 102				E-MAIL	s: matthew	v.anderson	@usi.com		-
Wh	ite	Plains, NY 10604			_			INSURER(S) AF	FORDING COVERAGE		NAIC #
914	45	9-6200				INSURE	RA: Travelers	s Property Ca	s. Co. of America		25674
INSU	RED	C.D.F. Air Conditioning C	o., In	C.	-	INSURE	RB: Traveler	s Indemnity C	ompany		25658
		321 39th St.	.,	•.	-	INSURE	R C : Navigato	ors Insurance	Company		42307
		Brooklyn, NY 11232			-	INSURE	RD: Travelers	s indemnity C	o of America		2000
		-			-	INSURE					
CO	/ER	AGES CER	TIFIC	ATE	NUMBER:	INSURE	ν Γ:		REVISION NUMBER:		
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INSR LTR		TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER		POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMIT	s	
Α	Х	COMMERCIAL GENERAL LIABILITY			DTCO0L936869TIL22	0	09/13/2022	09/13/2023	EACH OCCURRENCE	\$2,00	0,000
		CLAIMS-MADE X OCCUR							PREMISES (Ea occurrence)	\$300,	000
	Х	BI/PD Ded:15000							MED EXP (Any one person)	\$5,00	0
	CE								PERSONAL & ADV INJURY	\$2,00	0,000
	GEI									\$4,00 ¢4 00	0,000
									FRODUCTS - COMF/OF AGG	\$ - ,00	0,000
D	AU	TOMOBILE LIABILITY			BA4N1759542226G	(09/13/2022	09/13/2023	COMBINED SINGLE LIMIT	_{\$} 1,00	0,000
	Х	ANY AUTO							BODILY INJURY (Per person)	\$	
		OWNED SCHEDULED AUTOS							BODILY INJURY (Per accident)	\$	
	X	AUTOS ONLY X NON-OWNED AUTOS ONLY							PROPERTY DAMAGE (Per accident)	\$	
_										\$	
в	X	UMBRELLA LIAB X OCCUR			CUP1L5916152226	0	09/13/2022	09/13/2023	EACH OCCURRENCE	\$3,00	0,000
		CLAIMS-MADE	-						AGGREGATE	\$3,00	0,000
	wo	RKERS COMPENSATION		-					PER OTH-	\$	
	ANC ANY	D EMPLOYERS' LIABILITY (PROPRIETOR/PARTNER/EXECUTIVE								\$	
	OFF (Ma	ICER/MEMBER EXCLUDED?	N/A						E.L. DISEASE - EA EMPLOYEE	\$	
	İf ye DES	es, describe under SCRIPTION OF OPERATIONS below							E.L. DISEASE - POLICY LIMIT	\$	
С	Ex	cess Liability			NY22EXCZ08ZJKQN	C	09/13/2022	09/13/2023	\$8,000,000 OCC/AG	G	
С	Ро	llution Liab.			NY22ECPX00303NV	0	09/13/2022	09/13/2023	\$5,000,000 EACH PC	OL/AG	G
			<u> </u>			_					
DES RF		TION OF OPERATIONS / LOCATIONS / VEHIC	CLES (A	ACORI	0 101, Additional Remarks Schedu	ile, may b	e attached if mo	ore space is requ	ired) 0083		
The	Ge	eneral Liability, Automobile Li	abili	ty, a	nd Umbrella/Excess Lia	ability	policies in	cludes an a	utomatic		
Ad	ditic	onal Insured endorsement that	t pro	vide	s Additional Insured st	tatus t	o City of N	ew York, in	cluding its		
offi	cial	Is and employees and Queens	s Puk	olic L	ibrary on a primary an	nd non	-contribute	ory basis, w	aiver of		
subrogation is included in favor of the additional insureds.											
CE	RTIF	FICATE HOLDER				CANC	ELLATION				
	New York City Department of				SHOL THE	EXPIRATION	HE ABOVE DE	SCRIBED POLICIES BE CA REOF, NOTICE WILL B	NCELL	ED BEFORE	

ACCORDANCE	WITH	THE	POLICY	PROVISIONS.	

AUTHORIZED REPRESENTATIVE

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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.

USI Insurance Services LLC

[Name of broker or agent (typewritten)]

333 Westchester Avenue, Suite 102 White Plains, NY 10604

[Address of broker or agent (typewritten)]

bryan.mcelwain@usi.com

[Email address of broker or agent (typewritten)]

917-551-8545

[Phone number/Fax number of broker or agent (typewritten)]

[Signature of authorized official or broker or agent]

Bryan McElwain, Senior Account Manager

[Name and title of authorized official, broker or agent (typewritten)]

New York State of)) ss: Westchester County of .

Sworn to before me this

31st day of January , 2023

NOTARY PUBLIC FOR THE STATE OF New

MARNIE GINSBURG NOTARY PUBLIC, STATE OF NEW YORK NO. 01GI6196136 QUALIFIED IN WESTCHESTER COUNTY COMMISSION EXPIRES NOV. 3, 2024



CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

^ ^ ^ ^ ^ 112217107

C. D. E. AIR-CONDITIONING CO., INC. 321 39TH STREET BROOKLYN NY 11232

G 1101 202-8



SCAN TO VALIDATE AND SUBSCRIBE

04/06/2022

POLICYHOLDER C. D. E. AIR-CONDITIONING CO.,INC. 321 39TH STREET BROOKLYN NY 11232	CERTIFICATE HOLDER NYC DEPARTMENT OF DESIGN AND CONSTRUCTION 30-30 THOMSON AVENUE LONG ISLAND CITY NY 11101	
POLICY NUMBER CERTIFICATE NUMBER	POLICY PERIOD	DATE

THIS IS TO CERTIFY THAT THE POLICYHOLDER NAMED ABOVE IS INSURED WITH THE NEW YORK STATE INSURANCE FUND UNDER POLICY NO. 1101 202-8, COVERING THE ENTIRE OBLIGATION OF THIS POLICYHOLDER FOR WORKERS' COMPENSATION UNDER THE NEW YORK WORKERS' COMPENSATION LAW WITH RESPECT TO ALL OPERATIONS IN THE STATE OF NEW YORK, EXCEPT AS INDICATED BELOW.

787169

05/01/2022 TO 05/01/2023

IF YOU WISH TO RECEIVE NOTIFICATIONS REGARDING SAID POLICY, INCLUDING ANY NOTIFICATION OF CANCELLATIONS, OR TO VALIDATE THIS CERTIFICATE, VISIT OUR WEBSITE AT HTTPS://WWW.NYSIF.COM/CERT/ CERTVAL.ASP. THE NEW YORK STATE INSURANCE FUND IS NOT LIABLE IN THE EVENT OF FAILURE TO GIVE SUCH NOTIFICATIONS.

THIS CERTIFICATE DOES NOT APPLY TO THOSE JOB SITES WHICH ARE COVERED BY OTHER INSURANCE AND ARE SPECIFICALLY EXCLUDED BY ENDORSEMENT.

THE POLICY INCLUDES A WAIVER OF SUBROGATION ENDORSEMENT UNDER WHICH NYSIF AGREES TO WAIVE ITS RIGHT OF SUBROGATION TO BRING AN ACTION AGAINST THE CERTIFICATE HOLDER TO RECOVER AMOUNTS WE PAID IN WORKERS' COMPENSATION AND/OR MEDICAL BENEFITS TO OR ON BEHALF OF AN EMPLOYEE OF OUR INSURED IN THE EVENT THAT, PRIOR TO THE DATE OF THE ACCIDENT, THE CERTIFICATE HOLDER HAS ENTERED INTO A WRITTEN CONTRACT WITH OUR INSURED THAT REQUIRES THAT SUCH RIGHT OF SUBROGATION BE WAIVED.

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS NOR INSURANCE COVERAGE UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICY.

NEW YORK STATE INSURANCE FUND

DIRECTOR, INSURANCE FUND UNDERWRITING

VALIDATION NUMBER: 907414107



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						
1a. Legal Name & Address of Insured (use street address only)	1b. Business Telephone Number of Insured					
CDE AIR CONDITIONING CO., INC. 321 39TH ST BROOKLYN, NY 11232	718-788-1040					
Work Location of Incurred (Only required if coverage is apositively	1c. Federal Employer Identification Number of Insured or Social Security Number					
limited to certain locations in New York State, i.e., Wrap-Up Policy)	112217107					
2. Name and Address of Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)	3a Name of Insurance Carrier					
	HARTFORD LIFE AND ACCIDENT					
CONSTRUCTION	3b Policy Number of Entity Listed in Box "1a"					
	0DB099080					
	3c Policy effective period					
	10-01-2022 to 09-30-2023					
 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 of insured has NYS Disability and/or Paid Family Leave Benefits insurance of the second	r licensed agent of the insurance carrier referenced above and that the named coverage as described above.					
Date Signed 09-08-2022 Elizabeth Tello						
(Signature of insurance	carrier's authorized representative or NYS Licensed Insurance Agent of that insurance carrier)					
Telephone Number (212) 553-8074 Name and Title: Eli	zabeth Tello – Assistant Director, Statutory Services					
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.						
	(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.



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

ADDENDUM

List of Amended Classifications

- 1. BOILERMAKER
- 2. HAZARDOUS MATERIAL HANDLER
- 3. HOUSE WRECKER
- 4. IRON WORKER ORNAMENTAL
- 5. IRON WORKER STRUCTURAL
- 6. MASON TENDER
- 7. PAINTER LINE STRIPING (ROADWAY)
- 8. PLASTERER TENDER
- 9. ROOFER
- **10. SHEET METAL WORKER**
- **11. SIGN ERECTOR**
- **12. STEAMFITTER REFRIGERATION & AIR CONDITIONER**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK CONSTRUCTION APPRENTICE PREVAILING WAGE SCHEDULE

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BOILERMAKER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Boilermaker (First Year)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$33.12

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$33.57

Boilermaker (Second Year: 1st Six Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$35.05

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$35.54

Boilermaker (Second Year: 2nd Six Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$37.01

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$37.51

Boilermaker (Third Year: 1st Six Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$38.92

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$39.48

Boilermaker (Third Year: 2nd Six Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 85% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$40.87

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 85% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$41.45

Boilermaker (Fourth Year: 1st Six Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 90% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$42.82

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 90% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$43.42

Boilermaker (Fourth Year: 2nd Six Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 95% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$44.74

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 95% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$45.39

(Local #5)

BRICKLAYER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Bricklayer (First 750 Hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$22.95

Bricklayer (Second 750 Hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 60% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$22.95

Bricklayer (Third 750 Hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$22.95

Bricklayer (Fourth 750 Hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$22.95

Bricklayer (Fifth 750 Hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 90% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$22.95

Bricklayer (Sixth 750 Hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 95% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$22.95

(Bricklayer District Council)

CARPENTER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Carpenter (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour For Building Apprentice: \$19.55 Supplemental Benefit Rate Per Hour For Building Apprentice: \$16.35

Wage Rate Per Hour For Heavy Apprentice: \$23.37 Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$35.49

Carpenter (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour For Building Apprentice: \$22.55 Supplemental Benefit Rate Per Hour For Building Apprentice: \$17.85

Wage Rate Per Hour For Heavy Apprentice: \$28.97 Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$35.49

Carpenter (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour For Building Apprentice: \$26.80 Supplemental Benefit Rate Per Hour For Building Apprentice: \$21.45

Wage Rate Per Hour For Heavy Apprentice: \$37.35 Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$35.49

Carpenter (Fourth Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour For Building Apprentice: \$34.68 Supplemental Benefit Rate Per Hour For Building Apprentice: \$23.45

Wage Rate Per Hour For Heavy Apprentice: \$45.74 Supplemental Benefit Rate Per Hour For Heavy Apprentice: \$35.49

(Carpenters District Council)

CARPENTER - HIGH RISE CONCRETE FORMS (Ratio of Apprentice to Journeyperson: 1 to 1, 2 to 5)

Carpenter - High Rise (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$18.27 Supplemental Benefit Rate per Hour: \$16.55

Carpenter - High Rise (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$24.70** Supplemental Benefit Rate per Hour: **\$16.73**

Carpenter - High Rise (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$31.28 Supplemental Benefit Rate per Hour: \$16.95

Carpenter - High Rise (Fourth Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$38.90 Supplemental Benefit Rate per Hour: \$17.20

(Carpenters District Council)

CEMENT AND CONCRETE WORKER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Cement & Concrete Worker (First 1333 hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 53% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$14.79

Cement & Concrete Worker (Second 1333 hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 69% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$19.72

Cement & Concrete Worker (Last 1334 hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 85% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$21.30

(Cement Concrete Workers District Council)

CEMENT MASON (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Cement Mason (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$19.57 Supplemental Benefit Rate per Hour: \$15.61

Cement Mason (Second Year)

Effective Period: 7/1/2021 - 6/30/2022

Wage Rate per Hour: **\$24.40** Supplemental Benefit Rate per Hour: **\$15.91**

Cement Mason (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$29.68** Supplemental Benefit Rate per Hour: **\$16.02**

(Local #780)

DERRICKPERSON & RIGGER (STONE) (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Derrickperson & Rigger (stone) - First Year

Effective Period: 7/1/2021 - 6/30/2022 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: 7/1/2021 - 6/30/2022 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: 7/1/2021 - 6/30/2022 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: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 90% of Journeyperson's rate Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

(Local #197)

DOCKBUILDER/PILE DRIVER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Dockbuilder/Pile Driver (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: \$23.37 Supplemental Benefit Rate Per Hour: \$35.49

Dockbuilder/Pile Driver (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: \$28.97 Supplemental Benefit Rate Per Hour: \$35.49

Dockbuilder/Pile Driver (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: \$37.35 Supplemental Benefit Rate Per Hour: \$35.49

Dockbuilder/Pile Driver (Fourth Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: \$45.74 Supplemental Benefit Rate Per Hour: \$35.49

(Carpenters District Council)

ELECTRICIAN (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Electrician (First Term: 0-6 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$17.25** Supplemental Benefit Rate per Hour: **\$14.93** Overtime Supplemental Rate Per Hour: **\$16.07**

Electrician (First Term: 7-12 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$17.75

Supplemental Benefit Rate per Hour: \$15.19 Overtime Supplemental Rate Per Hour: \$16.36

Electrician (Second Term: 0-6 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$18.75** Supplemental Benefit Rate per Hour: **\$15.70** Overtime Supplemental Rate Per Hour: **\$16.95**

Electrician (Second Term: 7-12 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$19.75** Supplemental Benefit Rate per Hour: **\$16.22** Overtime Supplemental Rate Per Hour: **\$17.53**

Electrician (Third Term: 0-6 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$20.75** Supplemental Benefit Rate per Hour: **\$16.74** Overtime Supplemental Rate Per Hour: **\$18.11**

Electrician (Third Term: 7-12 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$21.75** Supplemental Benefit Rate per Hour: **\$17.26** Overtime Supplemental Rate Per Hour: **\$18.70**

Electrician (Fourth Term: 0-6 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$22.75** Supplemental Benefit Rate per Hour: **\$17.77** Overtime Supplemental Rate Per Hour: **\$19.28**

Electrician (Fourth Term: 7-12 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$24.75** Supplemental Benefit Rate per Hour: **\$18.81** Overtime Supplemental Rate Per Hour: **\$20.45**

Electrician (Fifth Term: 0-12 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$26.00**

Supplemental Benefit Rate per Hour: **\$22.06** Overtime Supplemental Rate Per Hour: **\$23.70**

Electrician (Fifth Term: 13-18 Months)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$30.50** Supplemental Benefit Rate per Hour: **\$24.45** Overtime Supplemental Rate Per Hour: **\$26.38**

Overtime Description

Overtime Wage paid at time and one half the regular rate

(Local #3)

ELEVATOR CONSTRUCTOR

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Elevator (Constructor) - First Year

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Rate Per Hour: \$32.76

Effective Period: 3/17/2022 - 6/30/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Rate Per Hour: \$33.38

Elevator (Constructor) - Second Year

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Rate Per Hour: \$33.31

Effective Period: 3/17/2022 - 6/30/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Rate Per Hour: \$33.96

Elevator (Constructor) - Third Year

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Rate Per Hour: \$34.42

Effective Period: 3/17/2022 - 6/30/2022

Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Rate Per Hour: \$35.10

Elevator (Constructor) - Fourth Year

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Rate Per Hour: \$35.52

Effective Period: 3/17/2022 - 6/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Rate Per Hour: \$36.24

(Local #1)

ELEVATOR REPAIR & MAINTENANCE (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Elevator Service/Modernization Mechanic (First Year)

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Benefit Per Hour: \$32.71

Effective Period: 3/17/2022 - 6/30/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Benefit Per Hour: \$33.33

Elevator Service/Modernization Mechanic (Second Year)

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Benefit Per Hour: \$33.26

Effective Period: 3/17/2022 - 6/30/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Benefit Per Hour: \$33.90

Elevator Service/Modernization Mechanic (Third Year)

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Benefit Per Hour: \$34.35

Effective Period: 3/17/2022 - 6/30/2022 Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Benefit Per Hour: \$35.03

Elevator Service/Modernization Mechanic (Fourth Year)

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Benefit Per Hour: \$35.45

Effective Period: 3/17/2022 - 6/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Benefit Per Hour: \$36.17

(Local #1)

ENGINEER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 5)

Engineer - First Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$25.38** Supplemental Benefit Rate per Hour: **\$28.51**

Engineer - Second Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$31.72 Supplemental Benefit Rate per Hour: \$28.51

Engineer - Third Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$34.89** Supplemental Benefit Rate per Hour: **\$28.51**

Engineer - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$38.06 Supplemental Benefit Rate per Hour: \$28.51

(Local #15)

ENGINEER - OPERATING (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 5)

Operating Engineer - First Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 40% of Operating Engineer - Road & Heavy Construction V's Rate Supplemental Benefit Per Hour: \$24.05

Operating Engineer - Second Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 50% of Operating Engineer - Road & Heavy Construction V's Rate Supplemental Benefit Per Hour: \$24.05

Operating Engineer - Third Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 60% of Operating Engineer - Road & Heavy Construction V's Rate Supplemental Benefit Per Hour: \$24.05

(Local #14)

FLOOR COVERER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Floor Coverer (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$24.55** Supplemental Benefit Rate per Hour: **\$16.35**

Floor Coverer (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$27.55** Supplemental Benefit Rate per Hour: **\$17.85**

Floor Coverer (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$31.80** Supplemental Benefit Rate per Hour: **\$21.45**

Floor Coverer (Fourth Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$39.68 Supplemental Benefit Rate per Hour: \$23.45

(Carpenters District Council)

GLAZIER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Glazier (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Glazier (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Glazier (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Glazier (Fourth Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #1281)

HAZARDOUS MATERIAL HANDLER (Ratio of Apprentice Journeyperson: 1 to 1, 1 to 3)

Handler (First 1000 Hours)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 78% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$14.25

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: \$20.00 of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$14.25

Handler (Second 1000 Hours)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$14.25

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: \$21.00 of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$14.25

Handler (Third 1000 Hours)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 83% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$14.25

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: \$24.00 of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$14.25

Handler (Fourth 1000 Hours)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 89% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$14.25

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: \$26.00 of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$14.25

(Local #78)

HEAT & FROST INSULATOR (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Heat & Frost Insulator (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Heat & Frost Insulator (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Heat & Frost Insulator (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Heat & Frost Insulator (Fourth Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 70% of Journeyperson's rate

(Local #12)

HOUSE WRECKER (TOTAL DEMOLITION) (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

House Wrecker - First Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$20.20** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$20.80** Supplemental Benefit Rate per Hour: **\$10.67**

House Wrecker - Second Year

Effective Period: 7/1/2021 - 1/30/2022

Wage Rate per Hour: \$22.15 Supplemental Benefit Rate per Hour: \$10.07

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$22.75** Supplemental Benefit Rate per Hour: **\$10.67**

House Wrecker - Third Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$23.65 Supplemental Benefit Rate per Hour: \$10.07

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$24.25** Supplemental Benefit Rate per Hour: **\$10.67**

House Wrecker - Fourth Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$26.15** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$26.75** Supplemental Benefit Rate per Hour: **\$10.67**

(Mason Tenders District Council)

IRON WORKER - ORNAMENTAL (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Iron Worker (Ornamental) - First Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$20.63** Supplemental Benefit Rate per Hour: **\$17.61**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$21.13** Supplemental Benefit Rate per Hour: **\$17.61**

Iron Worker (Ornamental) - Second Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$24.22** Supplemental Benefit Rate per Hour: **\$18.86**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$24.77** Supplemental Benefit Rate per Hour: **\$18.86**

Iron Worker (Ornamental) - Third Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$27.80** Supplemental Benefit Rate per Hour: **\$20.12**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$28.40** Supplemental Benefit Rate per Hour: **\$20.12**

Iron Worker (Ornamental) - Fourth Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$31.38 Supplemental Benefit Rate per Hour: \$21.38

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$32.06** Supplemental Benefit Rate per Hour: **\$21.38**

(Local #580)

IRON WORKER - STRUCTURAL (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Iron Worker (Structural) - 1st Six Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$28.21** Supplemental Benefit Rate per Hour: **\$57.12**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$28.59** Supplemental Benefit Rate per Hour: **\$57.87**

Iron Worker (Structural) - 7-18 Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$28.81 Supplemental Benefit Rate per Hour: \$57.12

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: \$29.19 Supplemental Benefit Rate per Hour: \$57.87

Iron Worker (Structural) - 19 - 36 months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$29.42 Supplemental Benefit Rate per Hour: \$57.12

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: \$29.80 Supplemental Benefit Rate per Hour: \$57.87

(Local #40 and #361)

LABORER (FOUNDATION, CONCRETE, EXCAVATING, STREET PIPE LAYER & COMMON)

(Ratio Apprentice to Journeyperson: 1 to 1, 1 to 3)

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - First 1000 hours

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Rate Per Hour: \$48.63

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) -Second 1000 hours

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 60% of Journeyperson's rate Supplemental Rate Per Hour: \$48.63

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) -Third 1000 hours

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Rate Per Hour: \$48.63

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) -Fourth 1000 hours

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 90% of Journeyperson's rate Supplemental Rate Per Hour: \$48.63

(Local #731)

MARBLE MECHANICS (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Cutters & Setters - First 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Cutters & Setters - Second 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 45% of Journeyperson's rate

Cutters & Setters - Third 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Cutters & Setters - Fourth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

Cutters & Setters - Fifth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022

Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Cutters & Setters - Sixth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

Cutters & Setters - Seventh 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 70% of Journeyperson's rate

Cutters & Setters - Eighth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Cutters & Setters - Ninth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

Cutters & Setters - Tenth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 95% of Journeyperson's rate

Polishers & Finishers - First 900 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 70% of Journeyperson's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Polishers & Finishers - Second 900 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

Polishers & Finishers - Third 900 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 90% of Journeyperson's rate

(Local #7)

MASON TENDER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Mason Tender - First Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$20.20** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$20.95** Supplemental Benefit Rate per Hour: **\$10.82**

Mason Tender - Second Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$22.15** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$22.90** Supplemental Benefit Rate per Hour: **\$10.82**

Mason Tender - Third Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$23.65** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$24.40** Supplemental Benefit Rate per Hour: **\$10.82**

Mason Tender - Fourth Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$26.15** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$26.90** Supplemental Benefit Rate per Hour: **\$10.82**

(Local #79)

METALLIC LATHER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Metallic Lather (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$21.00** Supplemental Benefit Rate per Hour: **\$17.87**

Metallic Lather (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$22.00** Supplemental Benefit Rate per Hour: **\$16.87**

Metallic Lather (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$33.10 Supplemental Benefit Rate per Hour: \$21.32

Metallic Lather (Fourth Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$35.60** Supplemental Benefit Rate per Hour: **\$21.82**

(Local #46)

MILLWRIGHT (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Millwright (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$30.74** Supplemental Benefit Rate per Hour: **\$35.19**

Millwright (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$36.19** Supplemental Benefit Rate per Hour: **\$38.89**

Millwright (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$41.64 Supplemental Benefit Rate per Hour: \$43.24

Millwright (Fourth Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$52.54** Supplemental Benefit Rate per Hour: **\$50.00**

(Local #740)

PAINTER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Painter - Brush & Roller - First Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$17.20 Supplemental Benefit Rate per Hour: \$16.67

Painter - Brush & Roller - Second Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$21.50** Supplemental Benefit Rate per Hour: **\$21.44**

Painter - Brush & Roller - Third Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$25.80** Supplemental Benefit Rate per Hour: **\$25.27**

Painter - Brush & Roller - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022

Wage Rate per Hour: \$34.40 Supplemental Benefit Rate per Hour: \$32.51

(District Council of Painters)

PAINTER - LINE STRIPING (ROADWAY) (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Painter - Line Striping (Roadway) - First Year (Minimum 1000 hours)

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$29.86** Supplemental Benefit Rate per Hour: **\$14.37**

Painter - Line Striping (Roadway) - Second Year (Minimum 1000 hours)

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$31.50** Supplemental Benefit Rate per Hour: **\$14.37**

(Local #1010)

PAINTER - METAL POLISHER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Metal Polisher (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$16.00** Supplemental Benefit Rate per Hour: **\$7.36** New Construction - Wage Rate Per Hour: **\$16.39** Scaffold Over 34 Feet - Wage Rate Per Hour: **\$18.50**

Metal Polisher (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$17.00**

Supplemental Benefit Rate per Hour: \$7.36 New Construction - Wage Rate Per Hour: \$17.44 Scaffold Over 34 Feet - Wage Rate Per Hour: \$19.50

Metal Polisher (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$18.00 Supplemental Benefit Rate per Hour: \$7.36 New Construction - Wage Rate Per Hour: \$18.54 Scaffold Over 34 Feet - Wage Rate Per Hour: \$20.50

(Local 8A-28)

PAINTER - STRUCTURAL STEEL (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Painters - Structural Steel (First Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Painters - Structural Steel (Second Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Painters - Structural Steel (Third Year)

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #806)

PAVER AND ROADBUILDER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Paver and Roadbuilder - First Year (Minimum 1000 hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$29.86** Supplemental Benefit Rate per Hour: **\$23.55**

Paver and Roadbuilder - Second Year (Minimum 1000 hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$31.50** Supplemental Benefit Rate per Hour: **\$23.55**

(Local #1010)

PLASTERER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3) (Each Term is 800 Hours.)

Plasterer - First Term

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Rate Per Hour: \$17.48

Plasterer - Second Term

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 60% of Journeyperson's rate Supplemental Rate Per Hour: \$18.63

Plasterer - Third Term

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Rate Per Hour: \$20.93

Plasterer - Fourth Term

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Rate Per Hour: \$22.10

(Local #262)

PLASTERER - TENDER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Plasterer Tender - First Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$20.20** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$21.45** Supplemental Benefit Rate per Hour: **\$10.32**

Plasterer Tender - Second Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$22.15** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$23.40** Supplemental Benefit Rate per Hour: **\$10.32**

Plasterer Tender - Third Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$23.65** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$24.90** Supplemental Benefit Rate per Hour: **\$10.32**

Plasterer Tender - Fourth Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$26.15** Supplemental Benefit Rate per Hour: **\$10.07**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$27.40** Supplemental Benefit Rate per Hour: **\$10.32**

(Local #79)

PLUMBER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Plumber - First Year: 1st Six Months

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$16.78** Supplemental Benefit Rate per Hour: **\$5.43**

Plumber - First Year: 2nd Six Months

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$19.78** Supplemental Benefit Rate per Hour: **\$6.43**

Plumber - Second Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$28.36** Supplemental Benefit Rate per Hour: **\$21.19**

Plumber - Third Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$30.46** Supplemental Benefit Rate per Hour: **\$21.19**

Plumber - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$33.31 Supplemental Benefit Rate per Hour: \$21.19

Plumber - Fifth Year: 1st Six Months

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$34.71 Supplemental Benefit Rate per Hour: \$21.19

Plumber - Fifth Year: 2nd Six Months

Effective Period: 7/1/2021 - 6/30/2022

Wage Rate per Hour: \$46.78 Supplemental Benefit Rate per Hour: \$21.19

(Plumbers Local #1)

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$28.92** Supplemental Benefit Rate per Hour: **\$14.81**

Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - Second Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$32.58 Supplemental Benefit Rate per Hour: \$19.86

Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - Third Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$37.63 Supplemental Benefit Rate per Hour: \$23.61

Pointer, Waterproofer, Caulker, Sandblaster, Steamblaster - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$45.44 Supplemental Benefit Rate per Hour: \$24.61

(Bricklayer District Council)

ROOFER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Roofer - First Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 35% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$3.51

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 35% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$3.66

Roofer - Second Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$17.54

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$17.91

<u> Roofer - Third Year</u>

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 60% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$20.99

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 60% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$21.44

Roofer - Fourth Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$26.18

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$26.75

(Local #8)

SHEET METAL WORKER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Sheet Metal Worker (0-6 Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 25% of Journeyperson's rate Supplemental Rate Per Hour: \$6.76

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 25% of Journeyperson's rate Supplemental Rate Per Hour: \$6.84

Sheet Metal Worker (7-18 Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 35% of Journeyperson's rate Supplemental Rate Per Hour: \$19.55

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 35% of Journeyperson's rate Supplemental Rate Per Hour: \$20.20

Sheet Metal Worker (19-30 Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 45% of Journeyperson's rate Supplemental Rate Per Hour: \$26.65

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 45% of Journeyperson's rate Supplemental Rate Per Hour: \$27.48

Sheet Metal Worker (31-36 Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Rate Per Hour: \$31.50

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Rate Per Hour: \$32.52

Sheet Metal Worker (37-42 Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Rate Per Hour: \$31.50

Effective Period: 1/31/2022 - 6/30/2022

Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Rate Per Hour: \$32.52

Sheet Metal Worker (43-48 Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Rate Per Hour: \$38.78

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Rate Per Hour: \$40.08

Sheet Metal Worker (49-54 Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Rate Per Hour: \$38.78

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Rate Per Hour: \$40.08

Sheet Metal Worker (55-60 Months)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Rate Per Hour: \$43.65

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Rate Per Hour: \$45.12

(Local #28)

SIGN ERECTOR (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Sign Erector - First Year: 1st Six Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 35% of Journeyperson's rate Supplemental Rate Per Hour: \$16.51

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 35% of Journeyperson's rate

Supplemental Rate Per Hour: \$17.09

Sign Erector - First Year: 2nd Six Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 40% of Journeyperson's rate Supplemental Rate Per Hour: \$18.74

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 40% of Journeyperson's rate Supplemental Rate Per Hour: \$19.39

Sign Erector - Second Year: 1st Six Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 45% of Journeyperson's rate Supplemental Rate Per Hour: \$20.96

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 45% of Journeyperson's rate Supplemental Rate Per Hour: \$21.70

Sign Erector - Second Year: 2nd Six Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Rate Per Hour: \$23.21

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Rate Per Hour: \$24.02

Sign Erector - Third Year: 1st Six Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Rate Per Hour: \$31.44

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 55% of Journeyperson's rate Supplemental Rate Per Hour: \$32.50

Sign Erector - Third Year: 2nd Six Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 60% of Journeyperson's rate Supplemental Rate Per Hour: \$34.20

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 60% of Journeyperson's rate Supplemental Rate Per Hour: \$35.35

Sign Erector - Fourth Year: 1st Six Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Rate Per Hour: \$37.76

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Rate Per Hour: \$39.00

Sign Erector - Fourth Year: 2nd Six Months

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Rate Per Hour: \$40.62

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Rate Per Hour: \$41.95

Sign Erector - Fifth Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Rate Per Hour: \$43.44

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Rate Per Hour: \$44.89

Sign Erector - Sixth Year

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Rate Per Hour: \$46.27

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Rate Per Hour: \$47.80

(Local #137)

STEAMFITTER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Steamfitter - First Year

PUBLISH DATE: 1/31/2022 EFFECTIVE PERIOD: JULY 1, 2021 THROUGH JUNE 30, 2022 Page 37 of 43

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate and Supplemental Per Hour: 40% of Journeyperson's rate

Steamfitter - Second Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate and Supplemental Rate Per Hour: 50% of Journeyperson's rate.

<u> Steamfitter - Third Year</u>

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate and Supplemental Rate per Hour: 65% of Journeyperson's rate.

<u> Steamfitter - Fourth Year</u>

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate and Supplemental Rate Per Hour: 80% of Journeyperson's rate.

Steamfitter - Fifth Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate and Supplemental Rate Per Hour: 85% of Journeyperson's rate.

(Local #638)

STEAMFITTER - REFRIGERATION & AIR CONDITIONER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Refrigeration & Air Conditioner (First Year)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$20.75** Supplemental Benefit Rate per Hour: **\$12.99**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$21.11** Supplemental Benefit Rate per Hour: **\$13.15**

Refrigeration & Air Conditioner (Second Year)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$25.04** Supplemental Benefit Rate per Hour: **\$14.23**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$25.48** Supplemental Benefit Rate per Hour: **\$14.41**

Refrigeration & Air Conditioner (Third Year)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$29.17** Supplemental Benefit Rate per Hour: **\$15.53**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$29.68** Supplemental Benefit Rate per Hour: **\$15.73**

Refrigeration & Air Conditioner (Fourth Year)

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$35.22 Supplemental Benefit Rate per Hour: \$17.29

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: \$35.84 Supplemental Benefit Rate per Hour: \$17.51

(Local #638-B)

STONE MASON - SETTER (Ratio Apprentice of Journeyperson: 1 to 1, 1 to 2)

Stone Mason - Setters - First 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Second 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 60% of Journeyperson's rate Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Third 750 Hours

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Fourth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Fifth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 90% of Journeyperson's rate Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Sixth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: 100% of Journeyperson's rate Supplemental Rate Per Hour: 50% of Journeyperson's rate

(Bricklayers District Council)

TAPER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Drywall Taper - First Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$20.97** Supplemental Benefit Rate per Hour: **\$13.55**

Drywall Taper - Second Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$24.24** Supplemental Benefit Rate per Hour: **\$20.31**

Drywall Taper - Third Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$29.08** Supplemental Benefit Rate per Hour: **\$22.06**

Drywall Taper - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$38.78 Supplemental Benefit Rate per Hour: \$25.56

(Local #1974)

TILE LAYER - SETTER (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Tile Layer - Setter - First 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour:35% of Journeyperson's rate

Tile Layer - Setter - Second 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour 40% of Journeyperson's rate

Tile Layer - Setter - Third 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Tile Layer - Setter - Fourth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

Tile Layer - Setter - Fifth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Tile Layer - Setter - Sixth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

Tile Layer - Setter - Seventh 750 Hours

Effective Period: 7/1/2021 - 6/30/2022

Wage and Supplemental Rate Per Hour: 70% of Journeyperson's rate

Tile Layer - Setter - Eighth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Tile Layer - Setter - Ninth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour:80% of Journeyperson's rate

Tile Layer - Setter - Tenth 750 Hours

Effective Period: 7/1/2021 - 6/30/2022 Wage and Supplemental Rate Per Hour: 90% of Journeyperson's rate

(Local #7)

TIMBERPERSON (Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Timberperson - First Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: \$21.42 Supplemental Rate Per Hour: \$35.22

Timberperson - Second Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: \$26.53 Supplemental Rate Per Hour: \$35.22

Timberperson - Third Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: \$34.18 Supplemental Rate Per Hour: \$35.22

Timberperson - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate Per Hour: \$41.84 Supplemental Rate Per Hour: \$35.22

(Local #1536)

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 New York 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 Labor Law section 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 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.

Pursuant to Labor Law § 220 (3-a) (a), the appropriate schedule of prevailing wages and benefits must be posted in a prominent and accessible place at all public work sites along with the Construction Poster provided on our web site at <u>comptroller.nyc.gov/wages</u>. In addition, covered employees must be given the appropriate schedule of prevailing wages and benefits along with the Worker Notice provided on our web site at the time the public work project begins, and with the first paycheck to each such employee after July first of each year.

This schedule is applicable to work performed during the effective period, unless otherwise noted. Changes to this schedule are published on our web site <u>comptroller.nyc.gov/wages</u>. 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 <u>comptroller.nyc.gov/wages</u>.

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/legal-forms/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 <u>comptroller.nyc.gov/wages</u>.

Wasyl Kinach, P.E. Director of Classifications Bureau of Labor Law

ADDENDUM

List of Amended Classifications

- 1. BOILERMAKER
- 2. CORE DRILLER
- 3. DERRICKPERSON AND RIGGER
- 4. ELECTRICIAN ALARM TECHNICIAN
- 5. GLAZIER
- 6. HAZARDOUS MATERIAL HANDLER
- 7. HOUSE WRECKER
- 8. IRON WORKER ORNAMENTAL
- 9. IRON WORKER STRUCTURAL
- **10. MARBLE MECHANIC**
- **11. MASON TENDER**
- **12. MOSAIC MECHANIC**
- **13. PLASTERER TENDER**
- 14. PLUMBER (MECHNICAL EQUIPMENT AND SERVICE)
- 15. PLUMBER: PUMP & TANK
- **16. SHEET METAL WORKER**
- **17. SHEET METAL WORKER SPECIALTY**
- **18. SIGN ERECTOR**
- **19. STEAMFITTER**
- 20. STEAMFITTER REFRIGERATION AND AIR CONDITIONER
- **21. TILE FINISHER**
- 22. TILE LAYER SETTER

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ASBESTOS HANDLER SEE HAZARDOUS MATERIAL HANDLER

BLASTER

<u>Blaster</u>

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$56.71** Supplemental Benefit Rate per Hour: **\$48.63**

Blaster - Hydraulic Trac Drill

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$50.85** Supplemental Benefit Rate per Hour: **\$48.63**

Blaster - Wagon: Air Trac: Quarry Bar: Drillrunners

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$50.02** Supplemental Benefit Rate per Hour: **\$48.63**

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$43.50 Supplemental Benefit Rate per Hour: \$48.63

Blaster - Magazine Keepers: (Watch Person)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$21.75** Supplemental Benefit Rate per Hour: **\$48.63**

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 $\frac{1}{2}$), but shall be paid for eight (8) hours of labor, and be permitted one half hour for lunch.

(Local #731)

BOILERMAKER

Boilermaker

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$63.38 Supplemental Benefit Rate per Hour: \$46.67 Supplemental Note: For time and one half overtime - \$69.56 For double overtime - \$92.44

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$64.38** Supplemental Benefit Rate per Hour: **\$47.35** Supplemental Note: For time and one half overtime - \$70.58 For double overtime - \$93.80

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 Saturday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Columbus Day Election Day Veteran's Day Thanksgiving Day Christmas Day

Quadruple time the regular rate for work on the following holiday(s). Labor Day

Paid Holidays

Good Friday Day after Thanksgiving Day before Christmas Day before New Year's Day

Shift Rates

On jobs requiring two (2) or three (3) shifts, the first shift shall work eight (8) hours at the regular straight-time hourly rate. The second shift shall work eight (8) hours and receive eight hours at the regular straight time hourly rate plus two dollars (\$2.00) per hour. The third shift shall work eight (8) hours and receive eight hours at the regular straight time hourly rate plus two dollars and twenty-five cents (\$2.25) per hour.

(Local #5)

BRICKLAYER

Bricklayer

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$57.64** Supplemental Benefit Rate per Hour: **\$35.95**

Overtime Description

Time and one half the regular rate after a 7 hour day. If working on a job that is predominately Pointer, Cleaner, Caulker work, then Time and one half the regular rate after an 8 hour day.

Overtime

Time and one half the regular rate for Saturday. Double time the regular rate for Sunday. Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day Thanksgiving Day Christmas Day

Paid Holidays

None

Shift Rates

The second shift wage rate shall be a 15% wage premium with no premium for supplemental benefits. There must be a first shift in order to work a second shift. When it is not possible to conduct alteration or repair work during regular working hours in a building occupied by tenants, eight hours will be paid at straight time rate for seven hours of work.

(Bricklayer District Council)

CARPENTER - BUILDING COMMERCIAL

Building Commercial

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$54.75 Supplemental Benefit Rate per Hour: \$47.13

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. When it is not possible to conduct alteration or repair work during regular working hours in a building occupied by tenants, the rule for the second shift will apply.

(Carpenters District Council)

CARPENTER - HEAVY CONSTRUCTION WORK

(Construction of Engineered Structures and Building Foundations including all form work)

Heavy Construction Work

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$56.93** Supplemental Benefit Rate per Hour: **\$53.49**

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

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. When two (2) or more shifts of Carpenters are employed, single time will be paid for each shift.

(Carpenters District Council)

CARPENTER - HIGH RISE CONCRETE FORMS (Excludes Engineered Structures and Building Foundations)

Carpenter High Rise A

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$50.78** Supplemental Benefit Rate per Hour: **\$44.44**

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$40.19** Supplemental Benefit Rate per Hour: **\$17.75**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday. 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. However, any shift beginning after 5:00 P.M. shall be paid at time and one half the regular hourly rate. There must be a first shift in order to work a second shift. When it is not possible to conduct alteration or repair work during regular working hours in a building occupied by tenants, the rule for the second shift will apply.

(Carpenters District Council)

CARPENTER - SIDEWALK SHED, SCAFFOLD AND HOIST

Carpenter - Hod Hoist

(Assisted by Mason Tender)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$52.00** Supplemental Benefit Rate per Hour: **\$47.40**

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

Shift Rates

The second shift will receive 112% of the straight time hourly rate. Benefit fund contributions shall be paid at the straight time rate. There must be a first shift in order to work a second shift. When it is not possible to conduct alteration or repair work during regular working hours in a building occupied by tenants, the rule for the second shift will apply.

(Carpenters District Council)

CARPENTER - WOOD WATER STORAGE TANK

Tank Mechanic

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$35.69 Supplemental Benefit Rate per Hour: \$22.24

Tank Helper

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$28.23** Supplemental Benefit Rate per Hour: **\$22.24**

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 President's Day Good Friday Memorial Day Independence Day Labor Day Columbus Day Thanksgiving Day Day after Thanksgiving 1/2 day on Christmas Eve if work is performed in the A.M. Christmas Day 1/2 day on New Year's Eve if work is performed in the A.M.

Vacation

Employed for one (1) year.....one (1) week vacation (40 hours) Employed for three (3) years.....two (2) weeks vacation (80 hours) Employed for more than twenty (20) years.....three (3) weeks vacation (120 hours)

SICK LEAVE:

Two (2) sick days after being employed for twenty (20) years.

(Carpenters District Council)

CEMENT & CONCRETE WORKER

Cement & Concrete Worker

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$45.28** Supplemental Benefit Rate per Hour: **\$30.20** Supplemental Note: \$34.20 on Saturdays; \$38.20 on Sundays & Holidays

Cement & Concrete Worker - (Hired after 2/6/2016)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$34.80** Supplemental Benefit Rate per Hour: **\$22.20** Supplemental Note: **\$24.20** on Saturdays; **\$26.20** 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 16)

CEMENT MASON

Cement Mason

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$45.77 Supplemental Benefit Rate per Hour: \$41.01 Supplemental Note: Supplemental benefit time and one half rate: \$71.97; Double time rate: double the base supplemental benefit rate.

Overtime Description

Time and one-half the regular rate after an 8 hour day, double time the regular rate after 10 hours. Time and onehalf the regular rate on Saturday, double time the regular rate after 10 hours. Double time the regular rate on Sunday. Four Days a week at Ten (10) hours straight time is allowed.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Good Friday Memorial Day Independence Day Labor Day Columbus Day Presidential Election Day Thanksgiving Day Christmas Day

Paid Holidays

Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

Shift Rates

For off shift work, (at times other than the regular 7:00 A.M. to 3:30 P.M. work day) a cement mason shall be paid at the regular hourly rate plus a 25% per hour differential.

(Local #780) (BCA)

CORE DRILLER

Core Driller

Effective Period: 7/1/2021 - 10/17/2021 Wage Rate per Hour: \$41.74 Supplemental Benefit Rate per Hour: \$29.40

Effective Period: 10/18/2021 - 1/30/2022 Wage Rate per Hour: \$42.27 Supplemental Benefit Rate per Hour: \$30.60

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$42.54** Supplemental Benefit Rate per Hour: **\$30.60**

Core Driller Helper

Effective Period: 7/1/2021 - 10/17/2021 Wage Rate per Hour: **\$32.92** Supplemental Benefit Rate per Hour: **\$29.40**

Effective Period: 10/18/2021 - 6/30/2022 Wage Rate per Hour: \$33.47 Supplemental Benefit Rate per Hour: \$30.60

Core Driller Helper(Third year in the industry)

Effective Period: 7/1/2021 - 10/17/2021 Wage Rate per Hour: **\$29.63** Supplemental Benefit Rate per Hour: **\$29.40**

Effective Period: 10/18/2021 - 6/30/2022 Wage Rate per Hour: \$30.12 Supplemental Benefit Rate per Hour: \$30.60

Core Driller Helper (Second year in the industry)

Effective Period: 7/1/2021 - 10/17/2021 Wage Rate per Hour: **\$26.34** Supplemental Benefit Rate per Hour: **\$29.40**

Effective Period: 10/18/2021 - 6/30/2022 Wage Rate per Hour: **\$26.78** Supplemental Benefit Rate per Hour: **\$30.60**

Core Driller Helper (First year in the industry)

Effective Period: 7/1/2021 - 10/17/2021 Wage Rate per Hour: \$23.04 Supplemental Benefit Rate per Hour: \$29.40

Effective Period: 10/18/2021 - 6/30/2022 Wage Rate per Hour: **\$23.43** Supplemental Benefit Rate per Hour: **\$30.60**

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

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 two dollars (\$2.00) per hour differential for each hour worked. When three (3) shifts are needed, each shift shall work seven and one-half (7 $\frac{1}{2}$) hours paid for eight (8) hours of labor and be permitted one-half ($\frac{1}{2}$) hour for mealtime.

(Carpenters District Council)

DERRICKPERSON AND RIGGER

Derrick Person & Rigger

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$53.99** Supplemental Benefit Rate per Hour: **\$55.10** Supplemental Note: The above supplemental rate applies for work performed in Manhattan, Bronx, Brooklyn and Queens. **\$56.52** - For work performed in Staten Island.

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$54.50** Supplemental Benefit Rate per Hour: **\$56.24**

Derrick Person & Rigger - Site Work

Assists the Stone Mason-Setter in the setting of stone and paving stone.

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$44.86 Supplemental Benefit Rate per Hour: \$43.37

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$45.42** Supplemental Benefit Rate per Hour: **\$43.86**

Overtime Description

The first two hours of overtime on weekdays and the first seven hours of work on Saturdays are paid at time and one half for wages and supplemental benefits. All additional overtimes is paid at double time for wages and supplemental benefits. Deduct \$1.42 from the Staten Island hourly benefits rate before computing overtime.

Overtime

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Washington's Birthday Good Friday Memorial Day Independence Day Labor Day Thanksgiving Day Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

(Local #197)

DIVER

Diver (Marine)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$71.80 Supplemental Benefit Rate per Hour: \$53.49

Diver Tender (Marine)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$51.34** Supplemental Benefit Rate per Hour: **\$53.49**

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

Shift Rates

When three shifts are utilized each shift shall work seven and one half-hours (7 1/2 hours) and paid for 8 hours, allowing for one half hour for lunch.

(Carpenters District Council)

DOCKBUILDER - PILE DRIVER

Dockbuilder - Pile Driver

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$56.93** Supplemental Benefit Rate per Hour: **\$53.49**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day Columbus Day Presidential Election Day Thanksgiving Day Christmas Day

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Carpenters District Council)

DRIVER: TRUCK (TEAMSTER)

Driver - Dump Truck

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$43.83 Supplemental Benefit Rate per Hour: \$51.55 Supplemental Note: Over 40 hours worked: at time and one half rate - \$22.50; at double time rate - \$30.00

Driver - Tractor Trailer

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$46.12** Supplemental Benefit Rate per Hour: **\$51.50** Supplemental Note: Over 40 hours worked: at time and one half rate - \$22.50; at double time rate - \$30.00

Driver - Euclid & Turnapull Operator

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$46.68** Supplemental Benefit Rate per Hour: **\$51.50** Supplemental Note: Over 40 hours worked: at time and one half rate - \$22.50; at double time rate - \$30.00

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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 shift work commencing between 6:00 P.M. and 4:30 A.M. shall work eight and one half (8 1/2) hours allowing for one half hour for lunch and receive 9 hours pay for 8 hours of work.

Driver Redi-Mix (Sand & Gravel)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$40.89 Supplemental Benefit Rate per Hour: \$47.01 Supplemental Note: Over 40 hours worked: time and one half rate \$18.01; double time rate \$24.01

Overtime Description

For Paid Holidays: Employees who do not work on a contractual holiday shall be compensated two (2) hours extra pay in straight time wages and benefits for every day on which the Employee does not pass up a day's work during the calendar week (Sunday through Saturday) of the holiday, up to a maximum of ten (10) hours in wages and eight (8) hours in benefit contributions for the holiday

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). President's Day Columbus Day Veteran's Day

Triple time the regular rate for work on the following holiday(s). New Year's Day Memorial Day Independence Day Labor Day Thanksgiving Day Christmas Day

Paid Holidays

New Year's Day President's Day Memorial Day Independence Day Labor Day Columbus Day Election Day Thanksgiving Day Christmas Day

(Local #282)

ELECTRICIAN

(Including installation of low voltage cabling carrying data, video and/or voice on building construction/alteration/renovation projects.)

Electrician "A" (Regular Day / Day Shift)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$58.00** Supplemental Benefit Rate per Hour: **\$54.86**

* Supplemental Note: See Supplemental Benefit Rate per Hour Note below

Electrician "A" (Regular Day Overtime after 7 hrs / Day Shift Overtime after 8 hrs)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$87.00 Supplemental Benefit Rate per Hour: \$56.73 * Supplemental Note: See Supplemental Benefit Rate per Hour Note below

Electrician "A" (Swing Shift)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$68.05** Supplemental Benefit Rate per Hour: **\$62.39** * Supplemental Note: See Supplemental Benefit Rate per Hour Note below

Electrician "A" (Swing Shift Overtime after 7.5 hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$102.08 Supplemental Benefit Rate per Hour: \$64.58 * Supplemental Note: See Supplemental Benefit Rate per Hour Note below

Electrician "A" (Graveyard Shift)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$76.23 Supplemental Benefit Rate per Hour: \$68.74 * Supplemental Note: See Supplemental Benefit Rate per Hour Note below

Electrician "A" (Graveyard Shift Overtime after 7 hours)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$114.35 Supplemental Benefit Rate per Hour: \$71.19 * Supplemental Note: See Supplemental Benefit Rate per Hour Note below

* Supplemental Benefit Rate per Hour Note

In addition to the Supplemental Benefit Rates per Hour listed above, the employer must provide an additional 6.2% of taxable gross pay earned on covered work only. This additional Supplemental Benefit Rate will terminate when the employee has contributed the maximum annual Social Security tax required by law, on all work performed.

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on a holiday.

New Year's Day Martin Luther King Jr. Day President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Paid Holidays

None

Shift Rates

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 \$21.86 - See * Supplemental Benefit Rate per Hour Note above.

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$30.50** Supplemental Benefit Rate per Hour: **\$24.45** First and Second Year "M" Wage Rate Per Hour: **\$26.00** First and Second Year "M" Supplemental Rate: **\$22.06**

Electrician "M" (Overtime After First 8 hours)

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$45.75** Supplemental Benefit Rate per Hour: **\$26.38** First and Second Year "M" Wage Rate Per Hour: **\$39.00** First and Second Year "M" Supplemental Rate: **\$23.70**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day Martin Luther King Jr. Day President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Paid Holidays

(Local #3)

ELECTRICIAN - ALARM TECHNICIAN

(Scope of Work - Inspect, test, repair, and replace defective, malfunctioning, or broken devices, components and controls of Fire, Burglar and Security Systems)

Alarm Technician

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$33.90 Supplemental Benefit Rate per Hour: \$18.43 Supplemental Note: \$16.80 only after 8 hours worked in a day

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$34.40** Supplemental Benefit Rate per Hour: **\$19.32** Supplemental Note: **\$17.57** 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

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Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Paid Holidays

New Year's Day 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 8:30 A.M.

Vacation

At least 1 year of employment	ten (10) days
5 years or more of employment	fifteen (15) days
10 years of employment	twenty (20) days
Plus one Personal Day per year	

Sick Days: One day per Year. Up to 4 vacation days may be used as sick days.

(Local #3)

ELECTRICIAN-STREET LIGHTING WORKER

Electrician - Electro Pole Electrician

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$58.00 Supplemental Benefit Rate per Hour: \$56.83 * Supplemental Note: See Supplemental Benefit Rate per Hour Note below

Electrician - Electro Pole Foundation Installer

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$43.16** Supplemental Benefit Rate per Hour: **\$42.15** * Supplemental Note: See Supplemental Benefit Rate per Hour Note below

Electrician - Electro Pole Maintainer

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$37.11 Supplemental Benefit Rate per Hour: \$38.04 * Supplemental Note: See Supplemental Benefit Rate per Hour Note below

* Supplemental Benefit Rate per Hour Note

In addition to the Supplemental Benefit Rates per Hour listed above, the employer must provide an additional 6.2% of taxable gross pay earned on covered work only. This additional Supplemental Benefit Rate will terminate when the employee has contributed the maximum annual Social Security tax required by law, on all work performed.

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

(Local #3)

ELEVATOR CONSTRUCTOR

Elevator Constructor

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate per Hour: **\$72.29**

Supplemental Benefit Rate per Hour: \$38.29

Effective Period: 3/17/2022 - 6/30/2022 Wage Rate per Hour: \$75.14 Supplemental Benefit Rate per Hour: \$39.10

Overtime Description

For New Construction: work performed after an 8 hour day, Saturday, Sunday or between 4:30pm and 7:00am shall be paid at double time rate.

Existing buildings: work performed after an 8 hour day, Saturday, Sunday or between 5:30pm and 7:00 am shall be paid time and one half.

Overtime

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day President's Day Good Friday Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Vacation

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ELEVATOR REPAIR & MAINTENANCE

Elevator Service/Modernization Mechanic

Effective Period: 7/1/2021 - 3/16/2022 Wage Rate per Hour: **\$56.77** Supplemental Benefit Rate per Hour: **\$38.19**

Effective Period: 3/17/2022 - 6/30/2022 Wage Rate per Hour: **\$59.09** Supplemental Benefit Rate per Hour: **\$39.00**

Overtime Description

For Scheduled Service Work: Double time - work scheduled in advance by two or more workers performed on Sundays, Holidays, and between midnight and 7:00am.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday. Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays

New Year's Day President's Day Good Friday Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Shift Rates

Afternoon shift - regularly hourly rate plus a (15%) fifteen percent differential. Graveyard shift - time and one half the regular rate.

Vacation

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ENGINEER

Engineer - Heavy Construction Operating Engineer I

Cherrypickers 20 tons and over and Loaders (rubber tired and/or tractor type with a manufacturer's minimum rated capacity of six cubic yards and over).

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$74.65** Supplemental Benefit Rate per Hour: **\$42.06** Supplemental Note: \$76.72 on overtime Shift Wage Rate: **\$119.44**

Engineer - Heavy Construction Operating Engineer II

Backhoes, Basin Machines, Groover, Mechanical Sweepers, Bobcat, Boom Truck, Barrier Transport (Barrier Mover) & machines of similar nature. Operation of Churn Drills and machines of a similar nature, Stetco Silent Hoist and machines of similar nature, Vac-Alls, Meyers Machines, John Beam and machines of a similar nature, Ross Carriers and Travel Lifts and machines of a similar nature, Bulldozers, Scrapers and Turn-a-Pulls: Tugger Hoists (Used exclusively for handling excavated material); Tractors with attachments, Hyster and Roustabout Cranes, Cherrypickers. Austin Western, Grove and machines of a similar nature, Scoopmobiles, Monorails, Conveyors, Trenchers: Loaders-Rubber Tired and Tractor: Barber Greene and Eimco Loaders and Eimco Backhoes; Mighty Midget and similar breakers and Tampers, Curb and Gutter Pavers and Motor Patrol, Motor Graders and all machines of a similar nature. Locomotives 10 Tons or under. Mini-Max, Break-Tech and machines of a similar nature; Milling machines, robotic and demolition machines and machines of a similar nature, shot blaster, skid steer machines and machines of a similar nature including bobcat, pile rig rubber-tired excavator (37,000 lbs. and under), 2 man auger.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$72.40** Supplemental Benefit Rate per Hour: **\$42.06** Supplemental Note: \$76.72 on overtime Shift Wage Rate: **\$115.84**

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$68.62** Supplemental Benefit Rate per Hour: **\$42.06** Supplemental Note: **\$76.72** on overtime Shift Wage Rate: **\$109.79**

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$72.05** Supplemental Benefit Rate per Hour: **\$42.06** Supplemental Note: \$76.72 on overtime Shift Wage Rate: **\$115.28**

Engineer - Heavy Construction Maintenance Engineer II

On Base Mounted Tower Cranes

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$95.02** Supplemental Benefit Rate per Hour: **\$42.06** Supplemental Note: \$76.72 on overtime Shift Wage Rate: **\$152.03**

Engineer - Heavy Construction Maintenance Engineer III

On Generators, Light Towers

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$47.10 Supplemental Benefit Rate per Hour: \$42.06 Supplemental Note: \$76.72 on overtime Shift Wage Rate: \$75.36

Engineer - Heavy Construction Maintenance Engineer IV

On Pumps and Mixers including mud sucking

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$48.35 Supplemental Benefit Rate per Hour: \$42.06 Supplemental Note: \$76.72 on overtime Shift Wage Rate: \$77.36

Engineer - Heavy Construction Service Engineer

Gradalls: Concrete Pumps: Power Houses: Driving Truck Cranes: Driving and Operating Fuel and Grease Trucks.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$64.82** Supplemental Benefit Rate per Hour: **\$42.06** Supplemental Note: \$76.72 on overtime Shift Wage Rate: **\$103.71**

Engineer - Heavy Construction Service Mechanic

Shovels: Cranes: Draglines: Backhoes: Keystones: Pavers: Trenching Machines: Gunite Machines: Compressors (three (3) or more in Battery): Crawler Cranes- having a straight lattice boom with no attachment or luffing boom, no jib and no auxiliary attachment.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$44.45** Supplemental Benefit Rate per Hour: **\$42.06**

Supplemental Note: \$76.72 on overtime Shift Wage Rate: \$71.12

Engineer - Steel Erection Maintenance Engineers

Derrick, Travelers, Tower, Crawler Tower and Climbing Cranes

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$68.93** Supplemental Benefit Rate per Hour: **\$42.06** Supplemental Note: \$76.72 on overtime Shift Wage Rate: **\$110.29**

Engineer - Steel Erection Oiler I

On a Truck Crane

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$64.43** Supplemental Benefit Rate per Hour: **\$42.06** Supplemental Note: \$76.72 on overtime Shift Wage Rate: **\$103.09**

Engineer - Steel Erection Oiler II

On a Crawler Crane

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$48.72 Supplemental Benefit Rate per Hour: \$42.06 Supplemental Note: \$76.72 on overtime Shift Wage Rate: \$77.95

Overtime Description

On jobs of more than one shift, if the next shift employee fails to report for work through any cause over which the employer has no control, the employee on duty who works the next shift continues to work at the single time rate.

Overtime

Double time the regular rate after an 8 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday. Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day Lincoln's Birthday President's Day Memorial Day Independence Day
Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Engineer - Building Work Maintenance Engineers I

Installing, repairing, maintaining, dismantling (of all equipment including: Steel Cutting and Bending Machines, Mechanical Heaters, Mine Hoists, Climbing Cranes, Tower Cranes, Linden Peine, Lorain, Liebherr, Mannes, or machines of a similar nature, Well Point Systems, Deep Well Pumps, Concrete Mixers with loading Device, Concrete Plants, Motor Generators when used for temporary power and lights), skid steer machines of a similar nature including bobcat.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$64.11** Supplemental Benefit Rate per Hour: **\$41.15** Supplemental Note: **\$74.90** on overtime

Engineer - Building Work Maintenance Engineers II

On Pumps, Generators, Mixers and Heaters

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$49.49** Supplemental Benefit Rate per Hour: **\$41.15** Supplemental Note: **\$74.90** 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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$60.89** Supplemental Benefit Rate per Hour: **\$41.15** Supplemental Note: **\$74.90** on overtime

Engineer - Building Work Oilers II

Oilers on Crawler Cranes, Backhoes, Trenching Machines, Gunite Machines, Compressors (three or more in Battery).

Effective Period: 7/1/2021 - 6/30/2022

Wage Rate per Hour: \$44.88 Supplemental Benefit Rate per Hour: \$41.15 Supplemental Note: \$74.90 on overtime

Overtime Description

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

Overtime

Double time the regular rate after an 8 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday. Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day Lincoln's Birthday President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day 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

When two (2) or more shifts are employed, single time will be paid for each shift.

(Local #15)

ENGINEER - CITY SURVEYOR AND CONSULTANT

Party Chief

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$41.98** Supplemental Benefit Rate per Hour: **\$24.40** Supplemental Note: Overtime Benefit Rate - \$29.35 per hour (time & one half) \$34.30 per hour (double time).

Instrument Person

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$34.32 Supplemental Benefit Rate per Hour: \$24.40

Supplemental Note: Overtime Benefit Rate - \$29.35 per hour (time & one half) \$34.30 per hour (double time).

Rodperson

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$29.49** Supplemental Benefit Rate per Hour: **\$24.40** Supplemental Note: Overtime Benefit Rate - \$29.35 per hour (time & one half) \$34.30 per hour (double time).

Overtime Description

Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day Lincoln's Birthday President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (BUILDING CONSTRUCTION)

(Construction of Building Projects, Concrete Superstructures, etc.)

Field Engineer - BC Party Chief

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$66.42** Supplemental Benefit Rate per Hour: **\$37.16** Supplemental Note: Overtime Benefit Rate - \$52.27 per hour (time & one half) \$67.37 per hour (double time).

Field Engineer - BC Instrument Person

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$51.37** Supplemental Benefit Rate per Hour: **\$37.16**

Supplemental Note: Overtime Benefit Rate - \$52.27 per hour (time & one half) \$67.37 per hour (double time).

Field Engineer - BC Rodperson

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$32.84 Supplemental Benefit Rate per Hour: \$37.16 Supplemental Note: Overtime Benefit Rate - \$52.27 per hour (time & one half) \$67.37 per hour (double time).

Overtime Description

Time and one half the regular rate after a 7 hour work and time and one half the regular rate for Saturday for the first seven hours worked, Double time the regular time rate for Saturday for work performed in excess of seven hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day President's Day Good Friday Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Veteran's Day Thanksgiving Day Christmas Day Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (HEAVY CONSTRUCTION)

(Construction of Roads, Tunnels, Bridges, Sewers, Building Foundations, Engineering Structures etc.)

Field Engineer - HC Party Chief

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$77.31** Supplemental Benefit Rate per Hour: **\$39.64** Supplemental Note: Overtime benefit rate - \$55.86 per hour (time & one half), \$72.08 per hour (double time).

Field Engineer - HC Instrument Person

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$56.50**

Supplemental Benefit Rate per Hour: \$39.64 Supplemental Note: Overtime benefit rate - \$55.86 per hour (time & one half), \$72.08 per hour (double time).

Field Engineer - HC Rodperson

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$47.23 Supplemental Benefit Rate per Hour: \$39.64 Supplemental Note: Overtime benefit rate - \$55.86 per hour (time & one half), \$72.08 per hour (double time).

Overtime Description

Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day Lincoln's Birthday President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Veteran's Day Thanksgiving Day Christmas Day Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (STEEL ERECTION)

Field Engineer - Steel Erection Party Chief

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$71.98 Supplemental Benefit Rate per Hour: \$39.14 Supplemental Note: Overtime benefit rate - \$55.11 per hour (time & one half), \$71.08 per hour (double time).

Field Engineer - Steel Erection Instrument Person

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$55.85 Supplemental Benefit Rate per Hour: \$39.14 Supplemental Note: Overtime benefit rate - \$55.11 per hour (time & one half), \$71.08 per hour (double time).

Field Engineer - Steel Erection Rodperson

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$36.99** Supplemental Benefit Rate per Hour: **\$39.14** Supplemental Note: Overtime benefit rate - \$55.11 per hour (time & one half), \$71.08 per hour (double time).

Overtime Description

Time and one half the regular rate for Saturday for the first eight hours worked. Double time the regular rate for Saturday for work performed in excess of eight hours.

Overtime

Time and one half the regular rate after an 8 hour day. Double time the regular rate for Sunday. Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day Lincoln's Birthday President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Christmas Day Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - OPERATING

Operating Engineer - Road & Heavy Construction I

Back Filling Machines, Cranes, Mucking Machines and Dual Drum Paver.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$86.05** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$137.68**

Operating Engineer - Road & Heavy Construction II

Backhoes, Power Shovels, Hydraulic Clam Shells, Steel Erection, Moles and machines of a similar nature.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$89.05** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$142.48**

Operating Engineer - Road & Heavy Construction III

Mine Hoists (Cranes, etc. when used as Mine Hoists)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$91.89** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$147.02**

Operating Engineer - Road & Heavy Construction IV

Gradealls, Keystones, Cranes on land or water (with digging buckets), Bridge Cranes, Vermeer Cutter and machines of a similar nature, Trenching Machines.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$89.70** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$143.52**

Operating Engineer - Road & Heavy Construction V

Pile Drivers & Rigs (working alongside Dock Builder foreperson): Derrick Boats, Tunnel Shovels.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$87.94** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$140.70**

Operating Engineer - Road & Heavy Construction VI

Mixers (Concrete with loading attachment), Concrete Pavers, Cableways, Land Derricks, Power Houses (Low Air Pressure Units).

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$83.59** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: \$63.15 overtime hours Shift Wage Rate: **\$133.74**

Operating Engineer - Road & Heavy Construction VII

Barrier Movers, Barrier Transport and Machines of a Similar Nature.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$67.71 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$108.34

Operating Engineer - Road & Heavy Construction VIII

Utility Compressors

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$52.77 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$66.26

Operating Engineer - Road & Heavy Construction IX

Horizontal Boring Rig

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$79.56** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$127.30**

Operating Engineer - Road & Heavy Construction X

Elevators (manually operated as personnel hoist).

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$73.21 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$117.14

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$57.06** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$91.30**

Operating Engineer - Road & Heavy Construction XII

All Drills and Machines of a similar nature.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$84.48** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$135.17**

Operating Engineer - Road & Heavy Construction XIII

Concrete Pumps, Concrete Plant, Stone Crushers, Double Drum Hoist, Power Houses (other than above).

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$81.85** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$130.96**

Operating Engineer - Road & Heavy Construction XIV

Concrete Mixer

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$78.28 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$125.25

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$53.11 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$84.98

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$74.81 Supplemental Benefit Rate per Hour: \$34.55

Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$119.70

Operating Engineer - Road & Heavy Construction XVII

On-Site concrete plant engineer, On-site Asphalt Plant Engineer, and Vibratory console.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$75.36 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$120.58

Operating Engineer - Road & Heavy Construction XVIII

Tower Crane

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$107.75 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$172.40

Operating Engineer - Paving I

Asphalt Spreaders, Autogrades (C.M.I.), Roto/Mil

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$83.59** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$133.74**

Operating Engineer - Paving II

Asphalt Roller

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$81.47** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$130.35**

Operating Engineer - Paving III

Asphalt Plants

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$69.04**

Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$110.46

Operating Engineer - Concrete I

Cranes

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$89.31 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours

Operating Engineer - Concrete II

Compressors

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$53.51 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours

Operating Engineer - Concrete III

Micro-traps (Negative Air Machines), Vac-All Remediation System.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$71.55 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours

Operating Engineer - Steel Erection I

Three Drum Derricks

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$92.36** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$147.78**

Operating Engineer - Steel Erection II

Cranes, 2 Drum Derricks, Hydraulic Cranes, Fork Lifts and Boom Trucks.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$88.77 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$142.03

Operating Engineer - Steel Erection III

Compressors, Welding Machines.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$53.07 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours Shift Wage Rate: \$84.91

Operating Engineer - Steel Erection IV

Compressors - Not Combined with Welding Machine. (Public Works Only)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$50.56** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours Shift Wage Rate: **\$80.90**

Operating Engineer - Building Work I

Forklifts, Plaster (Platform machine), Plaster Bucket, Concrete Pump and all other equipment used for hoisting material.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$70.94** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** 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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$53.12 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours

Operating Engineer - Building Work III

Double Drum

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$84.16** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours

Operating Engineer - Building Work IV

Stone Derrick, Cranes, Hydraulic Cranes Boom Trucks.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$89.10** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours

Operating Engineer - Building Work V

Dismantling and Erection of Cranes, Relief Engineer.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$78.81 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours

Operating Engineer - Building Work VI

4 Pole Hoist, Single Drum Hoists.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$77.98 Supplemental Benefit Rate per Hour: \$34.55 Supplemental Note: \$63.15 overtime hours

Operating Engineer - Building Work VII

Rack & Pinion and House Cars

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$62.01** Supplemental Benefit Rate per Hour: **\$34.55** Supplemental Note: **\$63.15** overtime hours For New House Car projects Wage Rate per Hour **\$49.50** For New House Car projects: Supplemental Benefit overtime hours: **\$48.85**

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 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 Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Shift Rates

When two (2) or more shifts are employed, single time will be paid for each shift. For Steel Erection Only: Shifts may be worked at the single time rate at other than the regular working hours (8:00 A.M. to 4:30 P.M.) on the following work ONLY: Heavy construction jobs on work below the street level, over railroad tracks and on building jobs.

(Operating Engineer Local #14)

FLOOR COVERER

(Interior vinyl composition tile, sheath vinyl linoleum and wood parquet tile including site preparation and synthetic turf not including site preparation)

Floor Coverer

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$54.75 Supplemental Benefit Rate per Hour: \$47.13

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 Day before Christmas Christmas Day Day before New Year's Day

Shift Rates

Two shifts may be utilized with the first shift working 8 a.m. to the end of the shift at straight time rate of pay. The wage rate for the second shift consisting of 7 hours shall be paid at 114.29% of straight time wage rate. The wage rate for the second shift consisting of 8 hours shall be paid 112.5% of the straight time wage rate. When it is not possible to conduct alteration or repair work during regular working hours in a building occupied by tenants, the rule for the second shift will apply.

(Carpenters District Council)

GLAZIER (New Construction, Remodeling, and Alteration)

Glazier

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$46.55** Supplemental Benefit Rate per Hour: **\$47.74** Supplemental Note: Supplemental Benefit Overtime Rate: **\$71.62**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$46.55** Supplemental Benefit Rate per Hour: **\$48.94** Supplemental Note: Supplemental Benefit Overtime Rate: **\$73.43**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

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

Shift Rates

Shifts shall be any 8 consecutive hours after the normal working day for which the Glazier shall receive 9 hours pay for 8 hours worked.

(Local #1281)

GLAZIER - REPAIR & MAINTENANCE

(For the Installation of Glass - All repair and maintenance work on a particular building.)

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$26.40** Supplemental Benefit Rate per Hour: **\$24.09**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Sunday. Time and one half the regular rate for work on the following holiday(s). Time and one half the regular hourly rate after 40 straight time 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 Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Local #1281)

HAZARDOUS MATERIAL HANDLER

(Removal, abatement, encapsulation or decontamination of asbestos, lead, mold, or other toxic or hazardous waste/materials)

<u>Handler</u>

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$38.05** Supplemental Benefit Rate per Hour: **\$17.75**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: \$38.05 Supplemental Benefit Rate per Hour: \$19.10

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Sunday. Time and one half the regular hourly rate after 40 straight time 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

(Local #78 and Local #12A)

HEAT AND FROST INSULATOR

Heat & Frost Insulator

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$62.21** Supplemental Benefit Rate per Hour: **\$41.91**

Overtime Description

Double time shall be paid for supplemental benefits during overtime work. 8th hour paid at time and one half.

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Martin Luther King Jr. Day President's Day Memorial Day Independence Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Triple time the regular rate for work on the following holiday(s). Labor Day

Paid Holidays

None

Shift Rates

The first shift shall work seven hours at the regular straight time rate. The second and third shift shall work seven hours the regular straight time hourly rate plus a fourteen percent wage and benefit premium. There must be a first shift to work the second shift, and a second shift to work the third shift. Off-hour jobs in occupied buildings may be worked on weekdays with an increment of one-dollar (\$1.00) per hour and eight (8) hours pay for seven (7) hours worked.

(Local #12) (BCA)

HOUSE WRECKER (TOTAL DEMOLITION)

<u> House Wrecker - Tier A</u>

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: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$37.63 Supplemental Benefit Rate per Hour: \$30.37

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: \$38.23 Supplemental Benefit Rate per Hour: \$30.97

House Wrecker - Tier B

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$26.86** Supplemental Benefit Rate per Hour: **\$22.78**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$27.46** Supplemental Benefit Rate per Hour: **\$23.38**

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

(Mason Tenders District Council)

IRON WORKER - ORNAMENTAL

Iron Worker - Ornamental

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$46.15 Supplemental Benefit Rate per Hour: \$59.62 Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$46.40** Supplemental Benefit Rate per Hour: **\$60.62** 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

When two or three shifts are employed on a job, Monday through Friday, the second and third shift are paid eight and one half (8 ½) hours at the straight time rate for seven (7) hours of work, and ten (10) hours at the straight time rate for eight (8) hours of work. When it is not possible to conduct alteration or repair work during regular working hours in a building occupied by tenants, eight hours will be paid at straight time rate for seven hours of work, and all overtime shall be paid at time and one-half the regular straight time rates but on Sundays and Holidays, time and one-half the regular straight time rate shall be paid for all work up to seven (7) hours and double time shall be paid for all work thereafter.

(Local #580)

IRON WORKER - STRUCTURAL

Iron Worker - Structural

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$54.20** Supplemental Benefit Rate per Hour: **\$82.81** Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$54.95** Supplemental Benefit Rate per Hour: **\$83.80** 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. Four Days a week at Ten (10) hours straight time is allowed.

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.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday.

(Local #40 & #361)

LABORER (Foundation, Concrete, Excavating, Street Pipe Layer and Common)

<u>Laborer</u>

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$43.50 Supplemental Benefit Rate per Hour: \$48.63

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 $\frac{1}{2}$), but shall be paid for eight (8) hours of labor, and be permitted one half hour for lunch.

(Local #731)

LANDSCAPING

(Landscaping tasks, such as tree pruning, tree removing and spraying in connection with Green Infrastructure maintenance and the planting of street trees and trees in City parks, but not when such activities are performed as part of construction or reconstruction projects.)

Landscaper (Year 6 and above)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$33.90 Supplemental Benefit Rate per Hour: \$17.05

Landscaper (Year 3 - 5)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$32.81 Supplemental Benefit Rate per Hour: \$17.05

Landscaper (up to 3 years)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$30.06** Supplemental Benefit Rate per Hour: **\$17.05**

Groundperson

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$30.06** Supplemental Benefit Rate per Hour: **\$17.05**

Tree Remover / Pruner

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$39.42** Supplemental Benefit Rate per Hour: **\$17.05**

Landscaper Sprayer (Pesticide Applicator)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$28.41** Supplemental Benefit Rate per Hour: **\$17.05**

Watering - Plant Maintainer

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$22.88**

Supplemental Benefit Rate per Hour: \$17.05

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)

MARBLE MECHANIC

Marble Setter

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$56.73 Supplemental Benefit Rate per Hour: \$41.76

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: \$57.17 Supplemental Benefit Rate per Hour: \$42.26

Marble Finisher

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$44.32** Supplemental Benefit Rate per Hour: **\$38.96**

Effective Period: 1/31/2022 - 6/30/2022

Wage Rate per Hour: \$44.42 Supplemental Benefit Rate per Hour: \$39.46

Marble Polisher

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$42.91 Supplemental Benefit Rate per Hour: \$31.61

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: \$43.35 Supplemental Benefit Rate per Hour: \$32.26

Marble Maintenance Finisher

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$26.73** Supplemental Benefit Rate per Hour: **\$13.59**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$27.01** Supplemental Benefit Rate per Hour: **\$13.99**

Overtime Description

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 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

(Local #7)

MASON TENDER

Mason Tender

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$39.20** Supplemental Benefit Rate per Hour: **\$31.24**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$39.95** Supplemental Benefit Rate per Hour: **\$31.99**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday. Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day 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)

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$37.29 Supplemental Benefit Rate per Hour: \$25.75

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$26.48** Supplemental Benefit Rate per Hour: **\$20.07**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day Thanksgiving Day Christmas Day

Paid Holidays

(Local #79)

METALLIC LATHER

Metallic Lather

Effective Period: 7/1/2021 - 6/30/2022

Wage Rate per Hour: \$46.40 Supplemental Benefit Rate per Hour: \$49.80 Supplemental Note: For time and one half overtime - \$61.55 For double overtime - \$77.10

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day 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

Off-shift work outside of normal working hours shall receive straight time rate plus \$12 per hour for the first eight (8) hours.

(Local #46)

MILLWRIGHT

Millwright

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$57.00** Supplemental Benefit Rate per Hour: **\$54.76**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday. 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 Veteran's 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

Second and third shifts receives the straight time rate of pay plus fifteen (15%) percent allowing for one half hour for a meal. There must be a first shift to work a second and third shift. All additional hours worked shall be paid at the time and one-half rate of pay plus fifteen (15%) percent for weekday hours.

(Local #740)

MOSAIC MECHANIC

Mosaic Mechanic - Mosaic & Terrazzo Mechanic

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$51.66** Supplemental Benefit Rate per Hour: **\$43.67**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$52.21** Supplemental Benefit Rate per Hour: **\$43.97**

Mosaic Mechanic - Mosaic & Terrazzo Finisher

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$50.06** Supplemental Benefit Rate per Hour: **\$43.67**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$50.60** Supplemental Benefit Rate per Hour: **\$43.97**

Mosaic Mechanic - Machine Operator Grinder

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$50.06** Supplemental Benefit Rate per Hour: **\$43.67**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$50.60** Supplemental Benefit Rate per Hour: **\$43.97**

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Washington's Birthday Good Friday Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Paid Holidays

None

(Local #7)

PAINTER

Painter - Brush & Roller

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$43.00** Supplemental Benefit Rate per Hour: **\$36.70** Supplemental Note: **\$43.79** on overtime

Spray & Scaffold / Decorative / Sandblast

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$46.00**

Supplemental Benefit Rate per Hour: \$36.70 Supplemental Note: \$43.79 on overtime

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day Columbus Day Thanksgiving Day Christmas Day

Paid Holidays

None

(District Council of Painters #9)

PAINTER - LINE STRIPING (ROADWAY)

Striping - Machine Operator

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$37.00** Supplemental Benefit Rate per Hour: **\$14.37** Supplemental Note: Overtime Supplemental Benefit rate - \$16.25

Lineperson (Thermoplastic)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$41.00** Supplemental Benefit Rate per Hour: **\$14.37** Supplemental Note: Overtime Supplemental Benefit rate - \$16.25

Striping Assistant & Traffic Safety

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$36.75** Supplemental Benefit Rate per Hour: **\$14.37** Supplemental Note: Overtime Supplemental Benefit rate - \$16.25

Overtime Description

Time and one half the regular rate for all work in excess of ten (10) straight time hours per day and in excess of forty (40) straight time hours per week.

For Paid Holidays: Employees will only receive Holiday Pay for holidays not worked if said employee worked both the regularly scheduled workday before and after the holiday.

Overtime

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 Good Friday Memorial Day Independence Day Labor Day Columbus Day Presidential Election Day Thanksgiving Day Christmas Day

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.

(Local #1010)

PAINTER - METAL POLISHER

METAL POLISHER

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$31.88 Supplemental Benefit Rate per Hour: \$10.29

METAL POLISHER - NEW CONSTRUCTION

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$32.83 Supplemental Benefit Rate per Hour: \$10.29

METAL POLISHER - SCAFFOLD OVER 34 FEET

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$35.38 Supplemental Benefit Rate per Hour: \$10.29

ASSISTANT METAL POLISHER

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$24.66** Supplemental Benefit Rate per Hour: **\$9.81**

ASSISTANT METAL POLISHER - NEW CONSTRUCTION

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$25.41 Supplemental Benefit Rate per Hour: \$9.81

ASSISTANT METAL POLISHER - SCAFFOLD OVER 34 FEET

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$27.16** Supplemental Benefit Rate per Hour: **\$9.81**

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 President's Day Memorial Day Independence Day Labor Day Columbus Day Election 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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$44.32** Supplemental Benefit Rate per Hour: **\$21.70**

Assistant Sign Painter

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$37.66 Supplemental Benefit Rate per Hour: \$19.93

Overtime Description

If any employee is required to work on any of the paid holidays then the employee shall receive double time rate of wages as well as the holiday pay for that day.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Paid Holidays

New Year's Day 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

PAINTER - STRUCTURAL STEEL

Painters on Structural Steel

Effective Period: 7/1/2021 - 9/30/2021 Wage Rate per Hour: **\$51.50** Supplemental Benefit Rate per Hour: **\$48.28**

Effective Period: 10/1/2021 - 6/30/2022 Wage Rate per Hour: \$53.00 Supplemental Benefit Rate per Hour: \$49.83

Painter - Power Tool

Effective Period: 7/1/2021 - 9/30/2021 Wage Rate per Hour: **\$57.50** Supplemental Benefit Rate per Hour: **\$48.28** Overtime Wage Rate: \$6.00 above the "Painters on Structural Steel" overtime rate.

Effective Period: 10/1/2021 - 6/30/2022 Wage Rate per Hour: **\$59.50** Supplemental Benefit Rate per Hour: **\$49.83** Overtime Wage Rate: \$6.50 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

Shift Rates

Second shift is paid at regular hourly wage rates plus a ten percent (10%) differential. There must be a first shift in order to work a second shift.

(Local #806)

PAPERHANGER

Paperhanger

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$46.87** Supplemental Benefit Rate per Hour: **\$37.49** Supplemental Note: Supplemental benefits are to be paid at the appropriate straight time and overtime rate.

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day Thanksgiving Day Day after Thanksgiving Christmas Day

Paid Holidays

None

Shift Rates

Evening shift - 4:30 P.M. to 12:00 Midnight (regular rate of pay); any work performed before 7:00 A.M. shall be at time and one half the regular base rate of pay.

(District Council of Painters #9)
PAVER AND ROADBUILDER

Paver & Roadbuilder - Formsetter

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$47.85 Supplemental Benefit Rate per Hour: \$48.51 Supplemental Note: For time and one half overtime - \$52.64 For double overtime - \$56.76

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 for installation of rubberized materials and similar surfaces; installation and repair of temporary construction fencing; slurry/seal coating, paving stones, maintenance of safety surfaces; play equipment installation, and other related work.

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$43.98 Supplemental Benefit Rate per Hour: \$48.51 Supplemental Note: For time and one half overtime - \$52.64 For double overtime - \$56.76

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$48.45** Supplemental Benefit Rate per Hour: **\$48.51** Supplemental Note: For time and one half overtime - \$52.64 For double overtime - \$56.76

Production Paver & Roadbuilder - Raker

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$47.85 Supplemental Benefit Rate per Hour: \$48.51 Supplemental Note: For time and one half overtime - \$52.64 For double overtime - \$56.76

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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$43.98** Supplemental Benefit Rate per Hour: **\$48.51**

Supplemental Note: For time and one half overtime - \$52.64 For double overtime - \$56.76

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

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 $\frac{1}{2}$) hours but will be paid for eight (8) hours at the straight time rate 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)

PLASTERER

<u>Plasterer</u>

Effective Period: 7/1/2021 - 7/31/2021 Wage Rate per Hour: \$45.73

Supplemental Benefit Rate per Hour: \$30.37

Effective Period: 8/1/2021 - 6/30/2022 Wage Rate per Hour: **\$46.00** Supplemental Benefit Rate per Hour: **\$28.20**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday. Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day Thanksgiving Day Christmas Day

Paid Holidays

None

Shift Rates

When it is not possible to conduct 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 percent (12%) per hour differential. Workers on shift work shall be allowed a paid one-half hour meal break.

(Local #262)

PLASTERER - TENDER

Plasterer - Tender

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$39.20 Supplemental Benefit Rate per Hour: \$31.24

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$39.95** Supplemental Benefit Rate per Hour: **\$31.99**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday. Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Washington's Birthday Memorial Day Independence Day Labor Day Presidential Election Day Thanksgiving Day Christmas Day

Paid Holidays

None

Shift Rates

When work commences outside regular work hours, workers receive an hour additional (differential) wage and supplement payment. Eight hours pay for seven hours work or nine hours pay for eight hours work.

(Mason Tenders District Council)

PLUMBER

Plumber

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$71.25** Supplemental Benefit Rate per Hour: **\$39.95** 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: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$57.08** Supplemental Benefit Rate per Hour: **\$31.88**

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

Shift Rates

30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

PLUMBER (MECHNICAL EQUIPMENT AND SERVICE) (Mechanical Equipment and Service work shall include any repair and/or replacement of the present plumbing system.)

Plumber

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$44.37 Supplemental Benefit Rate per Hour: \$18.31

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$46.60** Supplemental Benefit Rate per Hour: **\$19.96**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Thanksgiving Day Day after Thanksgiving Christmas Day

Paid Holidays

None

(Plumbers Local # 1)

PLUMBER (RESIDENTIAL RATES FOR 1, 2 AND 3 FAMILY HOME CONSTRUCTION)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$49.47 Supplemental Benefit Rate per Hour: \$28.68

Overtime

Double time the regular rate after an 8 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Paid Holidays

None

Shift Rates

30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

PLUMBER: PUMP & TANK Oil Trades (Installation and Maintenance)

Plumber - Pump & Tank

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$69.33** Supplemental Benefit Rate per Hour: **\$27.98**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$69.73** Supplemental Benefit Rate per Hour: **\$28.48**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Paid Holidays

None

Shift Rates

All work outside the regular workday (8:00 A.M. to 3:30 P.M.) is to be paid at time and one half the regular hourly rate

(Plumbers Local #1)

POINTER, WATERPROOFER, CAULKER, SANDBLASTER, STEAMBLASTER (Exterior Building Renovation)

<u>Journeyperson</u>

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$56.77** Supplemental Benefit Rate per Hour: **\$29.91**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday. Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day Martin Luther King Jr. Day President's Day Memorial Day Independence Day Labor Day Thanksgiving Day Christmas Day

Paid Holidays

None

Shift Rates

All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:00 P.M.) is to be paid at time and one half the regular rate. However, the employer may establish one (1) or two (2) shifts starting at or after 4:00 P.M. to be paid at the regular hourly rate plus a 10% differential.

(Bricklayer District Council)

ROOFER

<u>Roofer</u>

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$44.25**

Supplemental Benefit Rate per Hour: \$34.81

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$45.25** Supplemental Benefit Rate per Hour: **\$35.56**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day 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. There must be a first shift to work the second shift, and a second shift to work the third shift. All other work outside the regular work day (an eight hour workday between the hours of 5:00 A.M. and 4:00 P.M.) is to be paid at time and one half the regular rate.

(Local #8)

SHEET METAL WORKER

Sheet Metal Worker

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$51.36 Supplemental Benefit Rate per Hour: \$53.34 Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$52.10** Supplemental Benefit Rate per Hour: **\$55.18** Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Sheet Metal Worker - Fan Maintenance

PUBLISH DATE: 1/31/2022 EFFECTIVE PERIOD: JULY 1, 2021 THROUGH JUNE 30, 2022 Page 77 of 93

(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: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$41.09 Supplemental Benefit Rate per Hour: \$53.34

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$41.68** Supplemental Benefit Rate per Hour: **\$55.18**

Sheet Metal Worker - Duct Cleaner

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$18.49 Supplemental Benefit Rate per Hour: \$11.94

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$19.12** Supplemental Benefit Rate per Hour: **\$12.01**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Martin Luther King Jr. Day President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Paid Holidays

None

Shift Rates

Work that can only be performed outside regular working hours (eight hours of work between 7:30 A.M. and 3:30 P.M.) - First shift (work between 3:30 P.M. and 11:30 P.M.) - 10% differential above the established hourly rate. Second shift (work between 11:30 P.M. and 7:30 A.M.) - 15% differential above the established hourly rate.

For Fan Maintenance: On all full shifts of fan maintenance work the straight time hourly rate of pay will be paid for each shift, including nights, Saturdays, Sundays, and holidays.

(Local #28)

SHEET METAL WORKER - SPECIALTY (Decking & Siding)

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: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$48.18 Supplemental Benefit Rate per Hour: \$26.87 Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$49.05** Supplemental Benefit Rate per Hour: **\$27.76** 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

(Local #28)

SHIPYARD WORKER

Shipyard Mechanic - First Class

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$28.50** Supplemental Benefit Rate per Hour: **\$3.95**

Shipyard Mechanic - Second Class

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$19.07** Supplemental Benefit Rate per Hour: **\$3.59**

Shipyard Laborer - First Class

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$23.40** Supplemental Benefit Rate per Hour: **\$3.75**

Shipyard Laborer - Second Class

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$17.38 Supplemental Benefit Rate per Hour: \$3.52

Shipyard Dockhand - First Class

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$21.57** Supplemental Benefit Rate per Hour: **\$3.68**

Shipyard Dockhand - Second Class

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$17.28 Supplemental Benefit Rate per Hour: \$3.52

Overtime Description

Work performed on holiday is paid double time the regular hourly wage rate plus holiday pay.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Time and one half the regular hourly rate after 40 straight time hours in any work week.

Paid Holidays

New Year's Day Martin Luther King Jr. Day President's Day Good Friday Memorial Day Independence Day Labor Day Thanksgiving Day Day after Thanksgiving Christmas Day

Based on Survey Data

SIGN ERECTOR (Sheet Metal, Plastic, Electric, and Neon)

Sign Erector

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$52.29 Supplemental Benefit Rate per Hour: \$57.49

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: \$53.79 Supplemental Benefit Rate per Hour: \$59.56

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

Time and one half the regular hourly rate is to be paid for all hours worked outside the regular workday either (7:00 A.M. through 2:30 P.M.) or (8:00 A.M. through 3:30 P.M.)

(Local #137)

STEAMFITTER

Steamfitter

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$59.05** Supplemental Benefit Rate per Hour: **\$58.14** Supplemental Note: Overtime supplemental benefit rate: **\$115.54**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$60.80** Supplemental Benefit Rate per Hour: **\$58.14** Supplemental Note: Overtime supplemental benefit rate: **\$115.54**

Steamfitter -Temporary Services

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$44.88 Supplemental Benefit Rate per Hour: \$47.31

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$46.21** Supplemental Benefit Rate per Hour: **\$47.31**

Overtime Description

Double time after a 7 hour day except for Temporary Services.

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

Paid Holidays

None

Shift Rates

May be performed outside of the regular workday except Saturday, Sunday and Holidays. When shift work is performed the wage rate for regular time worked is a 15% percent premium on wage and 15% percent premium on supplemental benefits.

Local 638

STEAMFITTER - REFRIGERATION AND AIR CONDITIONER (Maintenance and Installation Service Person)

Refrigeration and Air Conditioner Mechanic

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$42.85 Supplemental Benefit Rate per Hour: \$19.46

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$43.60** Supplemental Benefit Rate per Hour: **\$19.71**

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Independence Day Labor Day Veteran's Day Thanksgiving Day Christmas Day

Double time and one half the regular rate for work on the following holiday(s).

Martin Luther King Jr. Day President's Day Memorial Day Columbus Day

Paid Holidays

New Year's Day Martin Luther King Jr. Day President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Christmas Day

(Local #638-B)

STONE MASON - SETTER

Stone Mason - Setter

(Assisted by Derrickperson and Rigger)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$56.43** Supplemental Benefit Rate per Hour: **\$48.52**

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Washington's Birthday Good Friday Memorial Day Independence Day Labor Day Thanksgiving Day Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

Shift Rates

For all work outside the regular workday (8:00 A.M. to 3:30 P.M. Monday through Friday), the pay shall be straight time plus a ten percent (10%) differential.

(Bricklayers District Council)

TAPER

Drywall Taper

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$48.47 Supplemental Benefit Rate per Hour: \$29.06

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day Martin Luther King Jr. Day President's Day Good Friday Memorial Day Independence Day Labor Day Columbus Day Thanksgiving Day Christmas Day

Paid Holidays

Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

(Local #1974)

TELECOMMUNICATION WORKER

(Install/maintain/repair telecommunications cables carrying data, video, and/or voice except for installation on building construction/alteration/renovation projects.)

Telecommunication Worker

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$47.03** 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 Independence Day Labor Day Columbus Day Election Day Veteran's Day Thanksgiving Day Christmas Day

Paid Holidays

New Year's Day Lincoln's Birthday Washington's Birthday Memorial Day Independence Day Labor Day Columbus Day Election Day Veteran's Day Thanksgiving Day Christmas Day Employees have the option of observing either Martin Luther King's Birthday or the day after Thanksgiving instead of Lincoln's Birthday

Shift Rates

For any workday that starts before 8A.M. or ends after 6P.M. there is a 10% differential for the applicable worker's hourly rate.

Vacation

After 6 months	one week.
After 12 months but less than 7 years	two weeks.
After 7 or more but less than 15 years	three weeks.
After 15 years or more but less than 25 years	four weeks.

(C.W.A.)

TILE FINISHER

Tile Finisher

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: \$43.71 Supplemental Benefit Rate per Hour: \$35.10

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$44.06** Supplemental Benefit Rate per Hour: **\$35.31**

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Good Friday Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Paid Holidays

None

Shift Rates

Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¹/₄) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TILE LAYER - SETTER

Tile Layer - Setter

Effective Period: 7/1/2021 - 1/30/2022 Wage Rate per Hour: **\$56.42** Supplemental Benefit Rate per Hour: **\$39.75**

Effective Period: 1/31/2022 - 6/30/2022 Wage Rate per Hour: **\$57.04** Supplemental Benefit Rate per Hour: **\$39.76**

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Good Friday Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving Christmas Day

Shift Rates

Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TIMBERPERSON

<u>Timberperson</u>

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$52.05 Supplemental Benefit Rate per Hour: \$52.94

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

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. Benefits for off-shift work shall be paid at the straight time rate.

(Local #1536)

TUNNEL WORKER

Blasters, Mucking Machine Operators (Compressed Air Rates)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$68.58** Supplemental Benefit Rate per Hour: **\$60.19**

Tunnel Workers (Compressed Air Rates)

Includes shield driven liner plate portions or solidification portions work (8 hour shift) during excavation phase.

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Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$66.14** Supplemental Benefit Rate per Hour: **\$58.29**

Top Nipper (Compressed Air Rates)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$65.04** Supplemental Benefit Rate per Hour: **\$57.14**

Outside Lock Tender, Outside Gauge Tender, Muck Lock Tender (Compressed Air Rates)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$63.74** Supplemental Benefit Rate per Hour: **\$56.20**

Bottom Bell & Top Bell Signal Person: Shaft Person (Compressed Air Rates)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$63.74 Supplemental Benefit Rate per Hour: \$56.20

Changehouse Attendant: Powder Watchperson (Compressed Air Rates)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$56.04** Supplemental Benefit Rate per Hour: **\$52.83**

Blasters (Free Air Rates)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$65.41** Supplemental Benefit Rate per Hour: **\$57.80**

Tunnel Workers (Free Air Rates)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$62.58** Supplemental Benefit Rate per Hour: **\$55.38**

All Others (Free Air Rates)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$57.84 Supplemental Benefit Rate per Hour: \$51.26

Microtunneling (Free Air Rates)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$50.06** Supplemental Benefit Rate per Hour: **\$44.30**

Overtime Description

For work performed during excavation and primary concrete tunnel lining phases - Double time the regular rate after an 8 hour day and Saturday, Sunday and on the following holiday(s) listed below.

For Repair-Maintenance Work on Existing Equipment and Facilities - Time and one half the regular rate after a 7 hour day, Saturday, Sunday and double time the regular rate for work on the following holiday(s) listed below. For Small-Bore Micro Tunneling Machines - Time and one-half the regular rate shall be paid for all overtime. For work not listed above - Time and one half the regular rate after an 8 hour day and Saturday and double time the regular rate after an 8 hour day and Saturday and double time the regular rate after an 8 hour day and Saturday and double time the regular rate on Sunday and on the following holiday(s) listed below.

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)

UTILITY LOCATOR (Locate & mark underground utilities for street excavation.)

Utility Locator (Year 7 and above)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$31.56 Supplemental Benefit Rate per Hour: \$1.43

Utility Locator (Year 5 - 6)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$22.85** Supplemental Benefit Rate per Hour: **\$1.43**

Utility Locator (Year 4)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$21.54** Supplemental Benefit Rate per Hour: **\$1.43**

Utility Locator (Year 3)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$20.30** Supplemental Benefit Rate per Hour: **\$1.43**

Utility Locator (Year 2)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$19.13** Supplemental Benefit Rate per Hour: **\$1.43**

Utility Locator (Year 1)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: \$18.04 Supplemental Benefit Rate per Hour: \$1.43

Utility Locator (Up to 1 year)

Effective Period: 7/1/2021 - 6/30/2022 Wage Rate per Hour: **\$17.00** Supplemental Benefit Rate per Hour: **\$1.43** Supplemental Note: No benefits for the first 90 days of employment.

Overtime

Time and one half the regular rate for work on the following holiday(s). Time and one half the regular hourly rate after 40 straight time hours in any work week.

Paid Holidays

New Year's Day Memorial Day Independence Day Thanksgiving Day Christmas Day

Shift Rates

10% shift differential to employees working any shift starting between noon and 5 AM.

Vacation

For up to 1 year0 hoursFor year 1 - 248 hours per yearFor year 3 - 996 hours per year

For year 10 or more 144 hours per year

Sick Days:

For up to 1 year employee receives 40 hours paid sick leave. For year 1 employee earns 2 hours of paid sick leave for every 100 overtime hours worked. For year 2 - 9 years employee earns 4 hours of paid sick leave for every 100 overtime hours worked. For year 10 or more employee earns 6 hours of paid sick leave for every 100 overtime hours worked.

(C.W.A.)

WELDER TO BE PAID AT THE RATE OF THE JOURNEYPERSON IN THE TRADE PERFORMING THE WORK.

Issue Date: January 1, 2022



Department of Design and Construction

DDC STANDARD GENERAL CONDITIONS

FOR SINGLE CONTRACT PROJECTS

Issue Date: January 1, 2022



Department of Design and Construction

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SECTION 01 10 00 SUMMARY

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. 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, (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" means 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 13.03 "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS"; or Section 01 81 13.04 "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 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 must be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS, and/ or Section 01 91 15 GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE and the Addendum to the General Conditions. The Contractor must cooperate with the commissioning agent and provide whatever assistance is required.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.4 D

- D. PROGRESS SCHEDULE: Refer to Section 01 32 16.1 PROGRESS SCHEDULES (METHOD A) or 01 32 16.2 PROGRESS SCHEDULES (METHOD B) or 01 32 16.3 PROGRESS SCHEDULES (METHOD C) and the Addendum to the General Conditions 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 must be performed by the Contractor as though it were originally delineated or described. The cost of such work will 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 must be performed by the Contractor. The cost of such work will 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, will 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 will 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 will be deemed to have estimated the most expensive way of doing the Work unless the Contractor asked for and obtained a decision in writing from the Commissioner before the submission of the bid as to what must 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 will be subject to the terms of the Contract. The Supplementary Drawings will 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 must 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 must 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 must verify all dimensions, quantities and details shown on the Contract Drawings, Schedules, or other data received from the Commissioner, and must notify the Commissioner of all errors, omissions, conflicts and discrepancies found therein. Notice of such errors will be given before the Contractor proceeds with any work. Figures must be used in preference to scale dimensions and large-scale drawings in preference to small-scale drawings.

1.7 SHOP DRAWINGS AND RECORD DRAWINGS:

A. Refer to Section 01 33 00 SUBMITTAL PROCEDURES and Section 01 78 39 CONTRACT RECORD DOCUMENTS for requirements applicable to shop drawings and record drawings.

1.8 TEMPORARY FACILITIES, SERVICES AND CONTROLS:

A. Refer to Section 01 50 00 TEMPORARY FACILITIES SERVICES AND CONTROLS for the responsibilities of the Contractor.

1.9 DUST CONTROL:

A. The Contractor must 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, must 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 ensure 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 must 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 must be accompanied by a schedule of the types and quantities of materials, and must 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 must 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 must set apart and separately store at the place or places of storage all materials and must clearly mark same "PROPERTY OF THE CITY OF NEW YORK", and further, must 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 must be stored at such locations as will 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 must 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 must 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 must be payable to the City of New York. It must be in such terms and amounts as must be approved by the Commissioner and must be placed with a company duly licensed to do business in the State of New York. The Contractor must 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 must 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 must 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, must 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 will have and may exercise any and all other remedies at law for the recovery of such cost, charges and expenses. There will be no increase in the Contract price for such costs, charges and expenses and the Contractor must not make any claim or demand for compensation therefore.



- 6. The Contractor must 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 will 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, must 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 must 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 will 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 must 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 must 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 must 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 must 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 will 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, will preclude the Contractor from payments under the Contract.
- 14. The Contractor must include in each succeeding partial estimate requisition a summary of materials stored which must 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 must 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 must 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 will be deemed included in the total Contract Price. The Detailed Bid Breakdown must reflect, and the Mobilization Payment will be made, in accordance with the following schedule:

Contract Amount Mobilization Amount

 Less than \$50,000
 \$0 (No Mobilization Payment)

 \$50,001 to \$100,000
 Fixed Amount = \$6,000

 \$100,001 to \$500,000
 6% of Contract Amount

 \$500,001 to \$2,500,000
 5% of Contract Amount

 Over \$2,500,000
 Lesser of 4% of Contract Amount or \$300,000

The Contractor may requisition for 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 bond;
- 3. Approval of the Site Safety Plan per the Safety Requirements Section of the Information for Bidders;
- 4. Approval of the Progress Schedule;
- 5. Approval of the Schedule Submittal; and,
- 6. Submission of the Pre-Construction Photographs.
- E. ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING: The Contractor must 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 must 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 must: (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 must 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) must 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 will 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 must 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 must be made as brief as possible, and only at such time stated.
- 2 Under no circumstances will 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 must be avoided at all times and necessary noise must 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 must 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 will be borne by the Contractor.
- 6 The Contractor must 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 must give ample written notice in advance to the Commissioner and personnel at the facility of any required shutdown.


1.13 PAYMENTS TO M/WBE SUBCONTRACTORS:

A. The Department of Design and Construction ("DDC") is committed to supporting the growth and success of Minority and Women-owned Business Enterprises ("M/WBE"). In furtherance of this goal, DDC complies with Local Law 1 / NYC Administrative Code section 6-129, as amended. In order to support the growth and success of M/WBEs on all DDC projects, it is important that M/WBE vendors that are sub-contractors (any tiers) are treated fairly at all times and that their payment requisitions / invoices are handled in accordance with the City's Standard Construction Contract. Pursuant to the Standard Construction Contract, prime contractors are required to pay subcontractors within thirty (30) days of receipt of such funds from DDC. Failure to comply with the Standard Construction Contract and the goals established by DDC as it applies to M/WBEs, may result in financial sanctions and negative performance evaluations, which will be taken into consideration on future procurements.

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 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. 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 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS or Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 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 (City). Commissioning will be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS, and/ or Section 01 91 15 GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE COMMISSIONING. The Contractor must 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:
 - 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:
 - 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 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" must 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 must 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 must 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 access 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 access for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. The Contractor must prepare memoranda for distribution to its subcontractors and other involved entities, outlining special procedures required for coordination. Such memoranda must include required notices, reports, and meeting minutes as applicable.
- C. Administrative Procedures: The Contractor must 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 must 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 must comply with all directions in the Specifications regarding the salvaging and handling of identified items, material or equipment.

- F. Software: The Contractor may be required by the Commissioner to utilize a designated cloud-based Construction Management Tool to streamline and manage activities, including but not limited to the following:
 - 1. Submittals;
 - 2. Drawings, Specifications, and Bulletins;
 - 3. RFI's;
 - 4. Progress Photographs;
 - 5. Letters and Correspondence;
 - 6. Punchlists and Closeout Management;
 - 7. Daily Logs;
 - 8. Meetings and Minutes; and/or,
 - 9. Change Order log memos.

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 must 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 fifteen (15) Days after the Notice to Proceed (NTP), the Contractor must 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 the list in Project meeting room, in temporary field office, and by each temporary telephone. Keep the 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 must have their representatives present to discuss all details relative to the execution of the work. The Resident Engineer will 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 must 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 must 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 Sponsor 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 must 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 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;
 - I. 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. Sponsor 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; and,
- 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 must 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. Sponsor 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; and,
 - 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;
 - I. 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; and,
 - p. Status of Administrative Code reporting requirements related to the Project.

D. PREINSTALLATION CONFERENCES:

- 1. The Contractor will conduct a preinstallation conference at project site before each construction activity when required by other specification Sections and when required for coordination with other construction.
- 2. Attendees:



- a. Contractor and its superintendents
- b. Applicable subcontractor(s)
- c. Representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow.
- 3. Advise the Design Consultant and Commissioner of scheduled preinstallation conference meeting dates.
- 4. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents
 - b. Related RFI's
 - c. Deliveries
 - d. Submittals
 - e. Review of mockups
 - f. Possible conflicts
 - g. Compatibility requirements
 - h. Time schedules
 - i. Weather limitations
 - j. Manufacturer's written instructions
 - k. Warranty requirements
 - I. Compatibility of materials
 - m. Acceptability of substrates
 - n. Temporary facilities and controls
 - o. Space and access limitations
 - p. Testing and inspecting requirements
 - q. Installation procedures
 - r. Coordination with other work
 - s. Required performance results
 - t. Protection of adjacent work

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 must prepare and submit an RFI in the form specified by the Resident Engineer.
 - 1. RFI must 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 must prepare, maintain, and submit a tabular log of RFIs organized by the RFI number monthly to the Resident Engineer, or more frequently if directed by the Resident Engineer.
 - 4. On receipt of responses and action to the RFI, the Contractor must 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:

A. Copies of all correspondence to DDC must be sent directly to the Resident Engineer at the job site.

1.9 CONTRACTOR'S DAILY REPORTS:

- A. The Contractor must 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



(No Text on This Page)



SECTION 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 – GENERAL

1.1 **RELATED DOCUMENTS:**

Α. 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 and revising as necessary, various documents including but not limited to the following:
 - Submittals schedule 1.
 - Daily construction reports 2
 - Material location reports 3.
 - 4. Field condition reports
 - 5. Special reports

RELATED SECTIONS: Β. Section 01 10 00

SUMMARY

- 2. Section 01 32 22 PHOTOGRAPHIC DOCUMENTATION 3. Section 01 32 16.10 PROJECT SCHEDULES (METHOD A)
- Section 01 32 16.20 PROJECT SCHEDULES (METHOD B) 4.
- Section 01 32 16.30 5.
- Section 01 33 00 6.
- Section 01 40 00 7.

PROJECT SCHEDULES (METHOD C) SUBMITTAL PROCEDURES QUALITY REQUIREMENTS

DEFINITIONS: 1.3

1.

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- Β. Design Consultant: "Design Consultant" must 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.



PART II – PRODUCTS

2.1 SUBMITTALS SCHEDULE:

- A. Preparation: The Contractor must 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. The Submittals Schedule must show all of the following types of submittals:
 - 1. Shop and Coordination Drawings
 - 2. Material Samples
 - 3. Catalog Cuts
 - 4. Test and Evaluation Reports
 - 5. Field Test Reports
 - 6. Sample Warranties
 - 7. Certificates
 - 8. Qualification Data
 - 9. Closeout Submittals
- B. Submittals: At the kick-off meeting, the Contractor must have a preliminary Submittals Schedule, and must review this Schedule with the Resident Engineer and the Design Consultant. Within ten (10) Days after the kick-off meeting, the Contractor must complete the Submittals Schedule, including all submission dates, required delivery dates, and fabrication times. The Contractor must include an updated Submittals Schedule with all Progress Payment applications.
- C. Review: The Resident Engineer will review the Submittals Schedule submitted by the Contractor. Upon acceptance, the Resident Engineer will date and sign the schedule as approved and transmit it to the Design Consultant, Contractor, and others within DDC as the Resident Engineer deems appropriate. If so directed by the Commissioner, the Contractor must revise the Submittals Schedule to indicate a submission date for specified shop drawings and/or material samples within sixty (60) Days after the kick-off meeting. The Contractor must resubmit the Submittals Schedule as necessary to include all review comments.

2.2 REPORTS:

A. Daily Construction Reports: The Contractor must submit to the Resident Engineer written Daily Construction Reports at the end of each day that work was performed, 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 must be prepared by the Contractor's Superintendent and must bear the Contractor's Superintendent's signature. Each report must contain the following information:

- 1. List 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 Completion(s) and occupancies; and,
- 18. Substantial Completion(s) 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 must submit a Material Location Report at weekly OR monthly intervals as determined and established by the Resident Engineer. Such report must include a comprehensive list of materials delivered to and stored at Project site. List must 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.

2.3 SPECIAL REPORTS:

A. Accident report, incident report, special condition report for the conditions out of control of any party involved with the Project effecting Project progress, explaining impact on the Project schedule and cost if any.

PART III – EXECUTION (Not Used)

END OF SECTION 01 32 00



(No Text on This Page)



SECTION 01 32 16.10 PROJECT SCHEDULES (METHOD A)

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SECTION 01 32 16.10

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. Methods
 - 2. Definitions
 - 3. Preliminary, Baseline, and Project Schedule Preparation Timeline
 - 4. Preliminary Project Schedule Development
 - 5. Project Schedule
 - 6. Activity and Calendar Coding Structure
 - 7. Work Breakdown Structure (WBS)
 - 8. Major Milestones
 - 9. Short (Three-Week) Interval/Two-Week Look-Ahead
 - 10. Submittals
 - 11. Project Schedule Updating
 - 12. Time Impact Analysis

1.3 METHODS:

- A. The Contractor must comply with Project schedule development and updating requirements as specified herein.
 - 1. The Contractor must employ or retain the services of a Construction Scheduler with verifiable construction scheduling experience, subject to review and acceptance by the City. Upon request, the Contractor must provide the City with details of qualifications and experience of the proposed scheduling staff member(s).
 - 2. The Contractor must prepare, update, and maintain a detailed Project Schedule using a version of scheduling software that is compatible with the City's Oracle Primavera P6 Enterprise Project Portfolio Management (EPPM). All schedule submittals must be developed using Oracle's Primavera P6 EPPM software. Schedules must be developed using accepted CPM techniques using the precedence diagramming method (PDM). The Project Schedule must be developed following Defense Contract Management Agency (DCMA) and American Association of Cost Engineering International (AACE International) guidance. The Contractor will be required to use the Contractor's



own P6 license (whether single-user or Enterprise license), unless otherwise directed by the Commissioner. If directed by the Commissioner prior to the Notice to Proceed (NTP), the Contractor must use the Department's P6 Enterprise license and develop the Progress Schedule within the Department's Enterprise environment.

- 3. Once the Baseline Schedule is accepted by the City, progress updates to the Project Schedule must be submitted monthly, unless otherwise directed by the City, until Substantial Completion. The Data Date for the schedule updates must use the last Friday of the month, or as directed by the City.
- 4. The Contractor will be responsible for providing the monthly schedule updates once the Baseline Schedule is approved. Each monthly schedule update must be accompanied with a schedule narrative that explains the following:
 - a. The progress of work during that particular period of performance,
 - b. Any changes in schedule Logic,
 - c. The physical conditions that were used to update every Activities Percent Complete,
 - d. Any change in actual Start and Finish Dates,
 - e. Any Duration changes,
 - f. Any added and deleted Activities, and
 - g. Any added Extra Work (e.g. change orders).

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.

<u>Term</u>	Definition
Activity	A representation of a discrete portion of the overall scope of Work or an event through Duration and description in a CPM schedule.
Baseline Schedule	The planned and detailed CPM schedule of Activities, including all Logic, Durations, Resource and Cost Loading, and showing the entire scope of Work. The Baseline Schedule must be accepted by the City.
Critical Path	The longest sequence of Activities in a network which establishes the minimum length of time for accomplishment of the end event of the Project.
Critical Path Method (CPM)	A management technique used to plan and control a Project which combines all relevant information into a single plan defining the sequence and Duration of operations and depicting the interrelationship of the Work elements required to complete the Project.
Current Schedule	The most recently updated schedule that captures progress to date and forecasts the dates for each Activity.
Data Date	The date used as a starting point for scheduling calculations. The Data Date is changed to the current end of period date when a schedule is updated for progress.
Duration	The amount of time, in workdays, an Activity will take to perform.



<u>Term</u>	Definition
Finish Date	The earliest estimated date an Activity is calculated to be complete, based on the estimated performance of all prior Activities to which the Activity is logically connected in a progressive relationship.
Free Float	The calculated amount of time that the estimated start or finish of an Activity can be delayed without impacting the start or finish of other downstream Activities logically connected in a progressive relationship. (See Finish Date and Late Finish).
Fragnet	Fragmentary network: a portion of a schedule detailing impacts of an event on specific Activities in the broader schedule.
Inclement Weather	Any weather condition, the duration of which varies in excess of the 3-year average published by the National Oceanic and Atmospheric Administration (NOAA) information for the local area.
Integrated Project Schedule	The Commissioner's overall schedule covering design, procurement and construction. The Commissioner will use the Contractor's Project Schedule to update the Integrated Project Schedule.
Late Finish	An estimate of the latest plausible date an Activity's completion can be postponed without rendering as unachievable the required completion of any downstream Milestones to which the Activity is Logically connected to in a progressive relationship.
Late Start	An estimate of the latest plausible date an Activity's start can be postponed without rendering as unachievable the required completion of any downstream Milestones to which the Activity is Logically connected to in a progressive relationship.
Logic	A direct progressive relationship between Activities where one Activity's performance restricts the performance of another Activity.
Milestone	A key or critical point in time for reference or measurement.
Network Diagram	A graphic diagram of a network schedule, showing Activities and Activity relationships.
Original Duration	The estimated amount of time, in Work Days, an Activity is expected to take to complete at the beginning of a Project as anticipated by the Contractor based on its planned means and methods at time of bid and documented in the Baseline Schedule.
Percent Complete	The percentage of the scope of Work represented by an Activity completed as of the Data Date calculated as physical percent complete for payment purposes.
Project Schedule	The Contractor's schedule used to manage the orderly and expeditious completion of the Work. The Project Schedule is initially the accepted Baseline Schedule, and is updated throughout the Project.
Remaining Duration	The amount of time, in Work Days, the remaining scope of Work represented by an Activity is expected to take to complete, measured from the current Data Date.



<u>Term</u>	Definition
Resource and Cost Loading	Values assigned for estimated dollars, manpower, equipment and/or materials necessary to complete the scope of Work represented by a specific Activity.
Recovery Schedule	A Recovery 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 minimize delays as much as possible and must establish the nature of efforts; for instance, resources and equipment required, 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 to recover the schedule.
Revised and/or Updated Schedule	A Baseline Schedule, Progress Project Schedule, or Recovery 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 Schedule must be reviewed and approved by the City.
Start Date	The earliest estimated date an Activity is calculated to begin, based on the estimated performance of all prior Activities to which the Activity is logically connected in a progressive relationship.
Time Impact Analysis	A forward looking (prospective) schedule analysis used to forecast the impact to the Critical Path and to Milestone Finish Dates caused by a single event or series of events. Time Impact Analysis is not a retrospective (forensic) schedule analysis or a what-if schedule analysis of a potential event.
Total Float	The amount of time the start or finish of an Activity can be delayed without affecting the Project completion date.
Work Breakdown Structure (WBS)	WBS is a deliverable-oriented decomposition of a Project into smaller components. A WBS provides the necessary framework for detailed cost estimating and control along with providing guidance for schedule development and control.
Work Days (WD)	Work Days are every consecutive day in the calendar, excluding weekends (Saturday and Sunday) and holidays.

1.5 PRELIMINARY, BASELINE, AND PROJECT SCHEDULE PREPARATION TIMELINE:

- A. Upon receipt of the NTP, the Contractor must promptly prepare a preliminary Project Schedule and subsequently a Baseline Schedule and must submit for the City's acceptance as follows:
 - 1. The preliminary Project Schedule must be submitted no later than fifteen (15) Days after NTP.
 - 2. The initial submittal of the Baseline Schedule must be provided to the City for review no later than thirty (30) Days after NTP.



- 3. The Contractor must incorporate all corrections and revisions required by the City and provide an updated version of the Baseline Schedule for review and acceptance no later than sixty (60) Days after NTP to ensure that the Baseline Schedule is accepted. The sixty (60) Days must include fourteen (14) Days review times for each submittal of the Baseline Schedule.
- 4. Once accepted, the Baseline Schedule will be the basis of Project Schedule updates.

1.6 PRELIMINARY PROJECT SCHEDULE DEVELOPMENT:

- A. The preliminary Project Schedule must be a detailed plan (division level per Construction Specifications Institute (CSI) MasterFormat) of all operations, including submittals, permitting, testing, and construction Activities, for either the first ninety (90) Days after NTP or to the point where the Contractor plans to mobilize on site (whichever is greater). This submittal will also depict a summary level (section level per CSI MasterFormat) schedule of the major Activities for the remainder of the Work.
 - 1. All Activities for Contractor mobilization, procurement, and construction Activities within the first sixty (60) Days, including permits and submittals. All remaining work forecasted after the first sixty (60) Days must be summarized through the Contract's completion date.
 - 2. All submittal and procurement Activities for long lead items.
 - 3. The Project's Critical Path.
 - 4. An electronic copy of the schedule in either MS Project (.MPP) or Primavera P6 Professional Format (.XER).
- B. The preliminary Project Schedule will be reviewed by the City and returned with comments, as necessary, within fourteen (14) Days of submittal receipt. Information from the preliminary Project Schedule will be the general foundation for development of the Baseline Schedule.

1.7 **PROJECT SCHEDULE**:

- A. The Baseline Schedule must show the sequence in which the Contractor proposes to perform the Work, and account for all major and intermediate Milestone Activities, phasing, restrictions of access, availability of work areas and the availability and use of labor, materials, and equipment.
- B. After the Baseline Schedule is approved, the Project Schedule must be the Contractor's working schedule and must be used to plan, organize, execute, and track the Project. The Project Schedule is the primary vehicle used to report actual performance, progress, and convey the Contractor's execution plan to complete the Work.
- C. The Project Schedule must show the sequence in which the Contractor proposes to perform the Work, and account for all major and intermediate Milestone Activities, phasing, restrictions of access, availability of work areas and the availability and use of labor, materials, and equipment.
- D. The Project Schedule must be the Contractor's working schedule used to plan, organize, execute, and track the Project. The Project Schedule is the primary vehicle used to report actual performance, progress, and convey the Contractor's execution plan to complete all remaining Work.
- E. All delay claims must be based on the current approved updates of the Project Schedule.
- F. The Contractor must confirm in writing that all subcontractors performing any portion of the Work are in agreement with the accepted Baseline Schedule and the monthly updates.
- G. The amount of detail represented in the Baseline and Project Schedule and supporting documents submitted must, at a minimum, include the following items:



- 1. Contract Milestones must be identified and included in the Baseline and Project Schedule.
- 2. All submittal, owner review & approval, purchase, manufacture, and delivery Activities for all major materials and equipment.
- 3. Deliveries of owner-furnished equipment and/or materials.
- 4. Preparation, submittal, and approval of drawings, material samples, and safety plans.
- 5. Preparation, submittal, review, and approval of permits required by all regulatory agencies and other third parties.
- 6. Performance of tests, submission of test reports, and approval of test results.
- 7. Commissioning Activities for all commissioned systems and equipment is to be clearly delineated and scheduled such that they will be completed prior to Substantial Completion. Such Activities must include, at a minimum, Pre-Functional testing and check sheets; Testing, Adjusting, and Balancing (TAB) verification; Functional Testing, including testing of all controls; and Owner's demonstration and orientation.
- 8. Completion dates of all items required for phased completion (if applicable).
- 9. Completion dates of all items required for Substantial Completion.
- 10. Completion dates of all items required to obtain a Temporary Certificate of Occupancy (TCO) and Certificate of Occupancy (CO).
- 11. Completion dates for close-out of regulatory and punch list items prior to Final Acceptance and transfer of the Project.
- 12. Any additional detail requested by the Commissioner.
- H. Activities identified in the Baseline and Project Schedule must have the Duration in units of whole Work Days. Construction Activity Durations must not exceed twenty (20) Work Days unless specifically approved by the City. This is to ensure that Activities are not generalized and that each Activity and sub-Activity are defined as narrowly as reasonable to facilitate schedule tracking. Durations for non-construction Activities such as procurement of materials, delivery of equipment, concrete curing, etc., may exceed twenty (20) Work Days without prior approval; however, these are still subject to review by the City. Durations must be based on the available resources required for performing each Activity and must be the result of definitive labor hours using established production rates, and with consideration of on-site working conditions. If requested by the City, the Contractor must justify the reasonableness of a planned Duration.
- I. Activity descriptions must use plain language that clearly and uniquely defines each Activity. Each description must include a verb or work function (e.g. submit, form, pour, etc.), an object (e.g. slab, foundation, etc.) and, for any construction Activities, a specific location. The Work related to each Activity must be limited to one responsibility and one trade.
- J. Activity relationships must be assigned to clearly establish predecessor and successor relationships to each Activity. Open-ended Activities are not permitted with the exception of the first and last Activity in the network, the first Activity being NTP and the last being Final Acceptance. The use of relationship lag times is discouraged and only permitted with prior approval by the City. The use of negative lag is never permitted.
- K. Activity constraint dates are only to be used to reflect contractual constraints unless specifically authorized by the City.
- L. Float or slack, in any schedule, must not be for the exclusive use or benefit of either the City or the Contractor, but must be available for use by both the City and the Contractor.
- M. Each resubmittal after the Project Schedule is delivered for acceptance must comply with all requirements of this section. Review and response by the City will be given within fourteen (14) Days after resubmission. The Contractor's receipt of the comments within the time specified must not, in any way, affect the Contractor's responsibility to complete the Project within the time fixed in Schedule A.
- N. Failure by the City to return comments or indicate acceptance status will in no way relieve the Contractor's obligation to submit monthly schedule updates.



O. At the request of the City, the Contractor must be required to make a presentation to explain or clarify the intended logical sequence of construction Activities depicted in the detailed Project Schedule. The Contractor and designated scheduler must discuss anticipated challenges and outline construction methodology and flow of work to show how and when major Milestones will be achieved. In addition, the Contractor may, at no cost to the City, be required to participate in additional Project meetings necessary to obtain acceptance of the above-noted submittals.

1.8 ACTIVITY AND CALENDAR CODING STRUCTURE:

- A. The Baseline and Project Schedules must contain a sufficient number of Activities to represent adequate planning and execution of the Work so that it shows an accurate flow of work and demonstrates an understanding of the Project by the Contractor.
- B. Activity ID and Calendar Coding
 - 1. The Contractor's proposed Activity and calendar coding and must be submitted with the preliminary Project Schedule. A meeting may be requested by the City to discuss the scheme and other schedule information prior to the submittal of the Project Schedule. The accepted coding scheme and WBS Structure must be incorporated into the Project Schedule.
- C. Activity ID Coding
 - 1. All Activities/ Resources/ Calendars (Baseline and Project Schedules) must be coded inside the P6 Project Environment / Project Level (NOT the Global Environment/ Enterprise Level) to facilitate selection, sorting and preparation of reports.
 - 2. Activity coding must consist of the Project ID followed by a dash, followed by Activity coding (PROJECT ID-ACTIVITY CODE). Activity codes must be created at the Project level and must utilize the coding scheme outlined in the table below:

Activity Code	Meaning
RESP	<u>Responsibility:</u> Identify the party (e.g. Contractor, subcontractor, City, etc.) responsible for the Activity.
PHAS	<u>Phase:</u> Breakdown of Activities in Milestones, pre-construction, procurement, construction and close-out Activities.
LOCN	Location: Breakdown by floor or elevation.
AREA	<u>Area:</u> Breakdown by room, area, block or wing. May be used as a subdivision of PHAS to include Milestones, permits, subcontractor approvals, submittals, fabrication and delivery, and subdivision of the Site and buildings into Logical modules, such as by blocks, wings, etc.
TRAD	<u>Trade:</u> Breakdown by CSI Code or section number in the Specifications.

- a. Description of schedule Activities must include terminology that represents the scope of work associated with that particular Activity. Terminology used to describe similar actions must be consistent across all segments of work.
- b. Naming convention for schedule Activities must be descriptive and indicate the associated work covered by the Activity. Activities must use a verb, noun, and location of the work in the Activity name.



- 3. Project Calendar Coding
 - a. All calendars created and assigned to Activities must be Project-level calendars. The Calendar Name must consist of the Project ID number followed by a dash, followed by a descriptive Calendar Name (PROJECT ID-CALENDAR NAME).

1.9 WORK BREAKDOWN STRUCTURE:

- A. Structure must be submitted with the preliminary Project Schedule. The levels (nodes) must include, but not be limited to:
 - 1. LEVEL 01 The Project Level.
 - 2. LEVEL 02 Contains a minimum of four (4) nodes: Pre-Construction, Procurement, Construction or Phase of Construction, and Closeout.
 - 3. LEVEL 03 Decomposition of each of the four (4) nodes in Level 02 into its constituent parts. This level must target specific, tangible, deliverable scopes of Project Work.
- B. The Contractor's proposed WBS must be submitted with the preliminary Project Schedule. The accepted WBS Structure must be incorporated into the Baseline and Project Schedule.

1.10 MAJOR MILESTONES:

A. The schedule must include both contractual and non-contractual Milestones that are provided by the City. These Milestones must be properly associated with the related Work and maintained to represent the progress of the Project.

1.11 SHORT (THREE-WEEK) INTERVAL / TWO-WEEK LOOK-AHEAD:

- A. On a bi-weekly basis, the Contractor must provide a three (3) week short interval schedule in a format satisfactory to the City. The purpose of this schedule is to report the actual progress of the past week against the previous short interval look-ahead Activities and add any additional Activities planned for the next two (2) weeks. Electronic files and hard copies must be provided to the City on the first day of each work week with the prior week's actual progress included.
- B. Each task listed on the short interval schedule must be representative of the most current Project Schedule Update and include a reference to an Activity shown on the current update.

1.12 SUBMITTALS:

- A. General
 - 1. Development of the Baseline Schedule and updating of the Project Schedule must follow the DCMA and AACE International guidelines.
 - 2. Each electronic submission of the Project Schedule must be assigned a unique file name consisting of the Project ID (as noted on the NTP followed by a dash followed by a unique file name clearly marked (i.e. ProjID- B000 = B/L rev0, ProjID-B001 = B/L rev01 etc.) to indicate the specific submission. Similarly, update submittals must be named ProjID-Uxxx where xxx is a sequential number, starting with 001, indicating the revision or issue number.
 - 3. The Contractor must provide all submittals in electronic format and two hard copies.
- B. Preliminary Project Schedule



- 1. For acceptance of the preliminary Project Schedule, the Contractor must submit the following:
 - a. Two (2) 11" x 17" hard copies of the proposed preliminary Project Schedule, as well as the native electronic schedule data file, in .XER file format, per the direction of the City.
 - b. A Schedule Narrative Report detailing the Contractor's initial plan for executing the Contract work within the allotted Contract Duration, and include the following explanation of their provided preliminary schedule:
 - i. The proposed WBS;
 - ii. All proposed Project Calendars;
 - iii. All proposed Activity Codes, clearly defined;
 - iv. The proposed Activity ID format; and
 - v. Schedule basis narrative, which must memorialize assumptions made in the development of the schedule.
- C. Baseline Schedule
 - 1. The City will normally return comments within ten (10) Work Days after receipt of the initial Project Schedule Submission. If any of the required submissions are returned to the Contractor for corrections or revisions, they must be resubmitted within five (5) Work Days from receipt of comments. Each resubmittal must comply with the requirements enumerated above. Review and response by the City will be given within ten (10) Work Days after resubmission.
 - 2. At the request of the City, the Contractor will be required to participate in Project meetings necessary to obtain an acceptance of the above noted submittals.
 - 3. Baseline Schedule submittal must contain a Narrative Report. It must include the following, or as directed by the City:
 - a. A description of the Project scope and how the Work is represented in the schedule Activities;
 - b. A description of the overall sequence of major components of Work;
 - c. Planned work week for each definable feature of work;
 - d. Description of the Critical Path and near Critical Paths;
 - e. How weather will be accommodated in the schedule, including a description of the weather calendar and the Activities it is applied to, and the NOAA Inclement Weather data that defined the number of non-work days;
 - f. How regulatory, operational or third-party constraints are accommodated in the schedule;
 - g. Description of key Project coordination points or events;
 - h. Discussion of long lead items and basis of time frames for submittals; and
 - i. Potential opportunities and risks, including quantification of the schedule reduction or expansion.
- D. Project Schedule Updates
 - 1. Every schedule submittal must be provided with a corresponding narrative. These schedule submittals and narratives are to be submitted in hard copy, as well as in the native electronic format, as attachments to emails or other media accepted by the City. When opened, the electronic format must provide flawless restoration of the native files (P6 (.XER) for Primavera and MS Word and/or Adobe Acrobat for Narrative and supporting document submittals).



- 2. For each submittal of the updated Project Schedule, the following layouts, reports, and graphics are required in the specified formats, unless otherwise directed by the City:
 - a. The Contractor must furnish two (2) 11" x 17" color hard copies of the complete progress schedule with each initial schedule update and final update incorporating comments furnished by the City. Additionally, the Contractor must provide the native electronic schedule data file, in .XER file format with the initial and final schedule update submission.
 - b. An Activity bar chart Layout grouped by Activity Code and then sorted by Start Date, Finish Date, and then Total Float.
 - c. Each Activity line must display the Activity ID (Act ID), Description (Name), Original Duration (OD), Remaining Duration (RD), Start Date (ES), Finish Date (EF), and Total Float (TF), Baseline Original Duration (BL OD) Baseline Start (BL Start), Baseline Finish (BL Fin), Baseline Total Float (BL TF).
 - d. An Activities progress bar must show both current progress update ES and EF, and baseline ES and EF. The top line of the bar chart area must contain the updated ES and EF; the second line below must depict the accepted baseline ES and EF dates.
- 3. The City may request additional standard P6 reports from time to time at no additional cost.
- 4. The Monthly Update submittal must contain a Narrative Report. It must include the following, or as directed by the City:
 - a. Any changes to the schedule basis narrative;
 - b. Overall health of the Project;
 - c. Actual Activity Start Dates;
 - d. Actual Activity Finish Dates;
 - e. The physical conditions that were used to update Activities percent complete;
 - f. Percent of Work reported in place;
 - g. A description of the overall sequence of major components of Work;
 - h. Description of the Critical Path and near Critical Paths;
 - i. Description of key Project coordination points or events;
 - j. Discussion of long lead items and basis of time frames for submittals;
 - k. Potential opportunities and risks, including quantification of the schedule reduction or expansion;
 - I. Assumptions/exclusions made in the schedule;
 - m. Contract and Milestone completion date status:
 - i. Number of Days ahead or behind schedule and; and
 - ii. Days lost/gained compared with the previous update.
 - n. Lookahead report listing each Activity in the CPM schedule that is scheduled to be performed during the next reporting period;
 - o. Changes in Activity description, Logic, or Duration must be submitted as a separate Proposed Schedule and approved by the City prior to being submitted as an official update. Once allowed, said changes must be grouped and organized in the report in a manner that communicates in detail the rationale associated with each change and



the impact upon construction sequence, relationships and the Critical Path. A standard Digger Report is not sufficient to meet this requirement;

- p. Added/deleted Activities and the rationale associated with each action;
- q. Pending issues and status of other items;
- r. Permits;
- s. Contract modifications; and
- t. Extra Work, including change orders.

1.13 PROJECT SCHEDULE UPDATING:

- A. The initial updating must take place immediately after the City accepts the Contractor's Baseline Schedule. The Data Date for the first update must not exceed seven (7) Days from the date of receipt of the accepted Baseline Schedule, or as directed by the City.
- B. Subsequent updates of the Project Schedule must be submitted monthly until Substantial Completion. The schedule Data Date must be the last Work Day of the period unless otherwise directed by the City. Updates must be provided to the City no later than seven (7) Days after the 'schedule Data Date'.
- C. Updates must reflect actual or reasonably anticipated progress as of the last Work Day of the period.
- D. The City may request meetings with the Contractor to review the Project Schedule and narrative and jointly verify Project health and information.
- E. In addition, the City may request meetings with the Contractor's scheduling representative to:
 - 1. Resolve out-of-sequence Logic.
 - 2. Should out-of-sequence progress occur where Activities have reported progress without predecessor Activities being completed, the Contractor must obtain the City's approval in a Proposed Schedule before revising the Logic ties to reflect the way the Work is actually being performed. Use of progress override by default mechanisms that may be included in CPM scheduling software systems will not be allowed except on a case-by-case basis with the approval of the City. A written explanation for each instance must be included in the monthly submittal narrative.
 - 3. Assess the impact, if any, of any pending change orders.
 - 4. Incorporate accepted time extensions.
 - 5. Review revised Logic (as-built and projected) and changes in Activity Duration, cost, and labor hours assigned.
- F. Contractor's failure to provide required scheduling information within the required timeframe or to adhere to the currently accepted schedule may result in rejection of all or a portion of the progress payment until such time as the required schedule information is submitted and accepted by the City.
- G. Delays to the Critical Path Whenever it becomes apparent from the monthly CPM schedule update that delays to the Critical Path have occurred due to action or inaction of the Contractor, and as a result the date for Substantial Completion will not be met, the Contractor must promptly take some or all of the following actions at no additional cost to the City, unless otherwise directed by the City:
 - 1. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of Work.



- 2. Increase the number of working hours per shift, shifts per day, or Work Days per week; the amount of construction equipment; the forms for concrete work; etc., or any combination of the foregoing to substantially eliminate the backlog of Work.
- 3. Reschedule Activities to achieve maximum practical concurrence of accomplishment of Activities and comply with the revised schedule.
- 4. Submit to the City for review a written statement of the steps the Contractor intends to take to remove or arrest the delay to the schedule.
- 5. Add to its equipment and materials or construction forces, as well as increase the working hours, if operations for critical, less critical or non-critical Activities fall behind the Contractor's Baseline Schedule at any time during the construction period.
- H. The City may, at any time during the Project and at no additional cost to the City, require the Contractor to develop a more detailed schedule/ Fragnet than depicted in the Baseline Schedule to provide a clearer understanding of the effort needed to complete an Activity or group of Activities.
- I. If the City determines that either the Critical Path is in the negative by four (4) weeks, or that the Project's date for completion may be affected, the Contractor may be required, at no additional cost to the City, to prepare a Recovery Schedule. Such Recovery Schedule is subject to review and acceptance by the City. The Recovery Schedule must propose alternative methods, overtime, and other means available to the Contractor to recover the delays incurred to date.
- J. The Contractor must submit an "As-Built Schedule", as the last schedule update showing all Activities, with the exception of punch list and closeout tasks, at Substantial Completion. This schedule must reflect the exact manner in which the Project was actually constructed.

1.14 TIME IMPACT ANALYSIS:

- A. In addition to the requirements of the Standard Construction Contract Article 11, the Contractor must submit a Time Impact Analysis to the Engineer with all requests for time extension.
- B. The Time Impact Analysis must include a written narrative and supporting impact schedule Fragnet detailing the Project delays resulting from the alleged delay. The impact schedule Fragnet, separate and distinct from the Progress Schedule update, must demonstrate that the changes or anticipated delays affect Activities of the current accepted Progress Schedule. The impact schedule will be incorporated into the Progress Schedule only after it is accepted by the Commissioner and a time extension is approved. The Fragnet submitted as part of the Time Impact Analysis must illustrate the impact of these changes or delays on the date for Substantial Completion.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 32 16.10



SECTION 01 32 16.20 PROJECT SCHEDULES (METHOD B)

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SECTION 01 32 16.20

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. Methods
 - 2. Definitions
 - 3. Preliminary, Baseline, and Project Schedule Preparation Timeline
 - 4. Preliminary Project Schedule Development
 - 5. Project Schedule
 - 6. Activity and Calendar Coding Structure
 - 7. Work Breakdown Structure (WBS)
 - 8. Major Milestones
 - 9. Short (Three-Week) Interval/Two-Week Look-Ahead
 - 10. Submittals
 - 11. Project Schedule Updating
 - 12. Time Impact Analysis

1.3 METHODS:

- A. The Contractor must comply with Project schedule development and updating requirements as specified herein.
 - 1. The Contractor must employ or retain the services of a Construction Scheduler with verifiable construction scheduling experience, subject to review and acceptance by the City. Upon request, the Contractor must provide the City with qualifications and experience of the proposed scheduling staff member(s).
 - 2. The Contractor must prepare, update, and maintain a detailed Project Schedule using a version of scheduling software that is compatible with the City's Oracle Primavera P6 Enterprise Project Portfolio Management (EPPM). All schedule submittals must be developed using Oracle's Primavera P6 EPPM software. Schedules must be developed using accepted CPM techniques using the Precedence Diagramming Method (PDM). The Project Schedule must be developed following Defense Contract Management Agency (DCMA) and American Association of Cost Engineering International (AACE International) guidance. The Contractor will be required to use



the Contractor's own P6 license (whether single-user or Enterprise license), unless otherwise directed by the Commissioner. If directed by the Commissioner prior to the Notice to Proceed (NTP), the Contractor must use the Department's P6 Enterprise license and develop the Progress Schedule within the Department's Enterprise environment.

- 3. Once the Baseline Schedule is accepted by the City, progress updates to the Project Schedule must be submitted monthly, unless otherwise directed by the City, until Substantial Completion. The Data Date for the schedule updates must use the last Friday of the month, or as directed by the City.
- 4. The Contractor will be responsible for providing the monthly schedule updates once the Baseline Schedule is approved. Each monthly schedule update must be accompanied with a schedule narrative that explains the following:
 - a) The progress of work during that particular period of performance;
 - b) Any changes in schedule Logic;
 - c) The physical conditions that were used to update every Activities Percent Complete;
 - d) Any change in actual Start and Finish Dates;
 - e) Any Duration changes;
 - f) Any added and deleted Activities; and,
 - g) Any added Extra Work (e.g., change orders).

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.

<u>Term</u>	Definition
Activity	A representation of a discrete portion of the overall scope of Work or an event through Duration and description in a CPM schedule.
Baseline Schedule	The planned and detailed CPM schedule of Activities, including all Logic, Durations, Resource and Cost Loading, and showing the entire scope of Work. The Baseline Schedule must be accepted by the City.
Critical Path	The longest sequence of Activities in a network which establishes the minimum length of time for accomplishment of the end event of the Project.
Critical Path Method (CPM)	A management technique used to plan and control a Project which combines all relevant information into a single plan defining the sequence and Duration of operations and depicting the interrelationship of the Work elements required to complete the Project.
Current Schedule	The most recently updated schedule that captures progress to date and forecasts the dates for each Activity.
Data Date	The date used as a starting point for scheduling calculations. The Data Date is changed to the current end of period date when a schedule is updated for progress.
Duration	The amount of time, in workdays, an Activity will take to perform.



Term	Definition
Finish Date	The earliest estimated date an Activity is calculated to be complete, based on the estimated performance of all prior Activities to which the Activity is logically connected in a progressive relationship.
Free Float	The calculated amount of time that the estimated start or finish of an Activity can be delayed without impacting the start or finish of other downstream Activities logically connected in a progressive relationship. (See Finish Date and Late Finish).
Fragnet	Fragmentary network: a portion of a schedule detailing impacts of an event on specific Activities in the broader schedule.
Inclement Weather	Any weather condition, the duration of which varies in excess of the 3-year average published by the National Oceanic and Atmospheric Administration (NOAA) information for the local area.
Integrated Project Schedule	The Commissioner's overall schedule covering design, procurement, and construction. The Commissioner will use the Contractor's Project Schedule to update the Integrated Project Schedule.
Late Finish	An estimate of the latest plausible date an Activity's completion can be postponed without rendering as unachievable the required completion of any downstream Milestones to which the Activity is Logically connected to in a progressive relationship.
Late Start	An estimate of the latest plausible date an Activity's start can be postponed without rendering as unachievable the required completion of any downstream Milestones to which the Activity is Logically connected to in a progressive relationship.
Logic	A direct progressive relationship between Activities where one Activity's performance restricts the performance of another Activity.
Milestone	A key or critical point in time for reference or measurement.
Network Diagram	A graphic diagram of a network schedule, showing Activities and Activity relationships.
Original Duration	The estimated amount of time, in Work Days, an Activity is expected to take to complete at the beginning of a Project as anticipated by the Contractor based on its planned means and methods at time of bid and documented in the Baseline Schedule.
Percent Complete	The percentage of the scope of Work represented by an Activity completed as of the Data Date calculated as physical percent complete for payment purposes.
Project Schedule	The Contractor's schedule used to manage the orderly and expeditious completion of the Work. The Project Schedule is initially the accepted Baseline Schedule, and is updated throughout the Project.



Term	Definition
Remaining Duration	The amount of time, in Work Days, the remaining scope of Work represented by an Activity is expected to take to complete, measured from the current Data Date.
Resource and Cost Loading	Values assigned for estimated dollars, manpower, equipment and/or materials necessary to complete the scope of Work represented by a specific Activity.
Recovery Schedule	A Recovery 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 minimize delays as much as possible and must establish the nature of efforts; for instance, resources and equipment required, 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 to recover the schedule.
Revised and/or Updated Schedule	A Baseline Schedule, Project Schedule, or Recovery Schedule for the Project that shows the actual Duration of all the completed Activities, including Duration of and the reasons for delays, if any have 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 Schedule must be reviewed and approved by the City.
Start Date	The earliest estimated date an Activity is calculated to begin, based on the estimated performance of all prior Activities to which the Activity is logically connected in a progressive relationship.
Time Impact Analysis	A forward looking (prospective) schedule analysis used to forecast the impact to the Critical Path and to Milestone Finish Dates caused by a single event or series of events. Time Impact Analysis is not a retrospective (forensic) schedule analysis or a what-if schedule analysis of a potential event.
Total Float	The amount of time the start or finish of an Activity can be delayed without affecting the Project completion date.
Work Breakdown Structure (WBS)	WBS is a deliverable-oriented decomposition of a Project into smaller components. A WBS provides the necessary framework for detailed cost estimating and control along with providing guidance for schedule development and control.
Work Days (WD)	Work Days are every consecutive day on the calendar, excluding weekends (Saturday and Sunday) and holidays.

1.5 PRELIMINARY, BASELINE, AND PROJECT SCHEDULE PREPARATION TIMELINE:

A. Upon receipt of the NTP, the Contractor must promptly prepare a preliminary Project Schedule and subsequently a Baseline Schedule and must submit for the City's acceptance as follows:



- Submit the Contractor's CPM Scheduler's qualifications to the City for approval within seven (7) Days after NTP. The City will respond to the submittal within seven (7) Days of the submittal receipt.
- 2. The preliminary Project Schedule must be submitted no later than twenty-one (21) Days after NTP.
- 3. The initial submittal of the Baseline Schedule must be provided to the City for review no later than forty-five (45) Days after NTP.
- 4. The Contractor must incorporate all corrections and revisions required by the City and provide an updated version of the Baseline Schedule for review and acceptance no later than seventy-five (75) Days after NTP to ensure that the Baseline Schedule is accepted no later than ninety (90) Days after the NTP. The ninety (90) Days must include fourteen (14) Days review time by the City for each submittal of the Baseline Schedule.
- 5. Once accepted, the Baseline Schedule will be the basis of Project Schedule updates.

B. Remedies

- 1. Preliminary Project Schedule: The City will take a credit of three thousand dollars (\$3,000) if the preliminary Project Schedule is not submitted within twenty-one (21) Days of the NTP.
- 2. Acceptable Baseline Schedule: The City will take a credit of five thousand dollars (\$5,000) if an acceptable Baseline Schedule is not submitted within ninety (90) Days of the NTP.
- 3. Monthly Progress Schedule updates: The City will take a credit of two thousand dollars (\$2,000) for each schedule update not submitted within the period it was due.
- 4. Scheduling Firm Services: If an acceptable Baseline Schedule is not provided by the Contractor within ninety (90) Days of the NTP or three (3) updates are not provided by the Contractor during the period they are due, the City may engage the services of a scheduling firm to develop a Project schedule or update an existing schedule. The total cost of such services will be deducted from the monies due to the Contractor.
 - a. Any schedules and updates developed by such scheduling firm are for the City's sole use and do not, in any way, represent an acceptance of responsibility by the City to schedule the Work or relieve the Contractor of the obligation to complete the Work within the Durations specified by the Contract.
- 5. The City will only accept the submitted information after all corrections have been made and all issues have been resolved. The City may find the Contractor in default if items required by this Section are incomplete.

1.6 PRELIMINARY PROJECT SCHEDULE DEVELOPMENT:

- A. The preliminary Project Schedule must be a detailed plan (division level per Construction Specifications Institute (CSI) MasterFormat) of all operations, including submittals, permitting, testing, and construction Activities, for either the first ninety (90) Days after NTP or to the point where the Contractor plans to mobilize on site (whichever is greater). This submittal will also depict a summary level (section level per CSI MasterFormat) schedule of the major Activities for the remainder of the Work.
- B. The preliminary Project Schedule will be reviewed by the City and returned with comments, as necessary, within fourteen (14) Days of submittal receipt. Information from the preliminary Project Schedule will be the general foundation for development of the Baseline Schedule.



1.7 **PROJECT SCHEDULE**:

- A. The Baseline Schedule must show the sequence in which the Contractor proposes to perform the Work, and account for all major and intermediate Milestone Activities, phasing, restrictions of access, availability of work areas and the availability and use of labor, materials, and equipment.
- B. After the Baseline Schedule is approved, the Project Schedule must be the Contractor's working schedule and must be used to plan, organize, execute, and track the Project. The Project Schedule is the primary vehicle used to report actual performance, progress, and convey the Contractor's execution plan to complete all of the Work.
- C. The Project Schedule must show the sequence in which the Contractor proposes to perform the Work, and account for all major and intermediate Milestone Activities, phasing, restrictions of access, availability of work areas and the availability and use of labor, materials, and equipment.
- D. The Project Schedule must be the Contractor's working schedule used to plan, organize, execute, and track the Project. The Project Schedule is the primary vehicle used to report actual performance, progress, and convey the Contractor's execution plan to complete all remaining Work.
- E. All delay claims must be based on the current approved updates of the Project Schedule.
- F. The Contractor must confirm in writing that all subcontractors performing any portion of the Work are in agreement with the accepted Baseline Schedule and the monthly updates.
- G. The amount of detail represented in the Baseline and Project Schedule and supporting documents submitted must, at a minimum, include the following items :
 - 1. Contract Milestones must be identified and included in the Baseline and Project Schedule.
 - 2. All submittal, owner review & approval, purchase, manufacture, and delivery Activities for all major materials and equipment.
 - 3. Deliveries of owner-furnished equipment and/or materials.
 - 4. Preparation, submittal, and approval of drawings, material samples, and safety plans.
 - 5. Preparation, submittal, review, and approval of permits required by all regulatory agencies and other third parties.
 - 6. Performance of tests, submission of test reports, and approval of test results.
 - 7. Commissioning Activities for all commissioned systems and equipment is to be clearly delineated and scheduled such that they will be completed prior to Substantial Completion. Such Activities must include, at a minimum, Pre-Functional testing and check sheets; Testing, Adjusting, and Balancing (TAB) verification; Functional Testing, including testing of all controls; and Owner's demonstration and orientation.
 - 8. Completion dates of all items required for phased completion (if applicable).
 - 9. Completion dates of all items required for Substantial Completion.
 - 10. Completion dates of all items required to obtain a Temporary Certificate of Occupancy (TCO) and Certificate of Occupancy (CO).
 - 11. Completion dates for close-out of regulatory and punch list items prior to Final Acceptance and transfer of the Project.
 - 12. Any additional detail requested by the Commissioner.



- H. Activities identified in the Baseline and Project Schedule must have the Duration in units of whole Work Days. Construction Activity Durations must not exceed twenty (20) work days unless specifically approved by the City. This is to ensure that Activities are not generalized and that each Activity and sub-Activity are defined as narrowly as reasonable to facilitate schedule tracking. Durations for non-construction Activities such as procurement of materials, delivery of equipment, concrete curing, etc., may exceed twenty (20) work days without prior approval; however, these are still subject to review by the City. Durations must be based on the available resources required for performing each Activity and must be the result of definitive labor hours using established production rates, and with consideration of on-site working conditions. If requested by the City, the Contractor must justify the reasonableness of a planned Duration.
- I. Activity descriptions must use plain language that clearly and uniquely define each Activity. Each description must include a verb or work function (e.g. submit, form, pour etc.) an object (e.g. slab, foundation, etc.) and, for any construction Activities, a specific location. The Work related to each Activity must be limited to one responsibility and one trade.
- J. Activity relationships must be assigned to clearly establish predecessor and successor relationships to each Activity. Open-ended Activities are not permitted with the exception of the first and last Activities in the network, the first Activity being NTP and the last being Final Acceptance. The use of relationship lag times is discouraged and only permitted with prior approval by the City. The use of negative lag is never permitted.
- K. Activity constraint dates are only to be used to reflect contractual constraints unless specifically authorized by the City.
- L. Float or slack in any schedule must not be for the exclusive use or benefit of either the City or the Contractor, but must be available for use by both the City and the Contractor.
- M. Each resubmittal after the Project Schedule is delivered for acceptance must comply with all requirements of this section. Review and response by the City will be given within fourteen (14) Days after resubmission. The Contractor's receipt of the comments within the time specified must not in any way affect the Contractor's responsibility to complete the Project within the time fixed in Schedule A.
- N. Failure by the City to return comments or indicate acceptance status will in no way relieve the Contractor's obligation to submit monthly schedule updates.
- O. At the request of the City, the Contractor must be required to make a presentation to explain or clarify the intended logical sequence of construction Activities depicted in the detailed Project Schedule. The Contractor and designated scheduler must discuss anticipated challenges and outline construction methodology and flow of work to show how and when major Milestones will be achieved. In addition, the Contractor may, at no cost to the City, be required to participate in additional Project meetings necessary to obtain acceptance of the above noted submittals.

1.8 ACTIVITY AND CALENDAR CODING STRUCTURE:

- A. The Baseline and Project Schedules must contain a sufficient number of Activities to represent adequate planning and execution of the Work so that it shows an accurate flow of work and demonstrates an understanding of the Project by the Contractor.
- B. Activity ID and Calendar Coding
 - 1. The Contractor's proposed Activity and calendar coding and must be submitted with the preliminary Project Schedule. A meeting may be requested by the City to discuss the scheme and other schedule information prior to the submittal of the Project Schedule. The accepted coding scheme and WBS Structure must be incorporated into the Project Schedule.



- C. Activity ID Coding
 - 1. All Activities/Resources/Calendars (Baseline and Project Schedules) must be coded inside the P6 Project Environment / Project Level (NOT the Global Environment/Enterprise Level) to facilitate selection, sorting and preparation of reports.
 - 2. Activity coding must consist of the Project ID followed by a dash, followed by Activity coding (PROJECT ID-ACTIVITY CODE). Activity codes must be created at the Project level and must utilize the coding scheme outlined in the table below:

Activity Code	Meaning
RESP	<u>Responsibility:</u> Identify the party (e.g. Contractor, subcontractor, City, etc.) responsible for the Activity.
PHAS	<u>Phase:</u> Breakdown of Activities in Milestones, pre-construction, procurement, construction and close-out Activities.
LOCN	Location: Breakdown by floor or elevation.
AREA	<u>Area:</u> Breakdown by room, area, block or wing. May be used as a subdivision of PHAS to include Milestones, permits, subcontractor approvals, submittals, fabrication and delivery, and subdivision of the Site and buildings into Logical modules, such as by blocks, wings, etc.
TRAD	Trade: Breakdown by CSI Code or section number in the Specifications.

- a. Description of schedule Activities must include terminology that represents the scope of work associated with that particular Activity. Terminology used to describe similar actions must be consistent across all segments of work.
- b. Naming convention for schedule Activities must be descriptive and indicate the associated work covered by the Activity. Activities must use a verb, noun, and location of the work in the Activity name.
- 3. Project Calendar Coding
 - a. All calendars created and assigned to Activities must be Project-level calendars. The Calendar Name must consist of the Project ID number followed by a dash, followed by a descriptive Calendar Name (PROJECT ID-CALENDAR NAME).

1.9 WORK BREAKDOWN STRUCTURE:

- A. A multi-level hierarchal WBS must be incorporated in all P6 schedules. An initial, proposed WBS must be submitted with the preliminary Project Schedule. The levels (nodes) must include, but not be limited to:
 - 1. LEVEL 01 The Project Level.
 - 2. LEVEL 02 Contains a minimum of four (4) nodes; Pre-Construction, Procurement, Construction or Phase of Construction, and Closeout.
 - 3. LEVEL 03 Decomposition of each of the four (4) nodes in Level 02 into its constituent parts. This level must target specific, tangible, deliverable scopes of the Project Work.
- B. The Contractor's proposed WBS must be submitted with the preliminary Project Schedule. The accepted WBS must be incorporated into the Baseline and Project Schedule.



1.10 MAJOR MILESTONES:

A. The schedule must include both contractual and non-contractual Milestones that are provided by the City. These Milestones must be properly associated with the related Work packages and maintained to represent the progress of the Project.

1.11 SHORT (THREE-WEEK) INTERVAL / TWO-WEEK LOOK-AHEAD:

- A. On a bi-weekly basis, the Contractor must provide a three (3) week short interval schedule in a format satisfactory to the City. The purpose of this schedule is to report the actual progress of the past week against the previous short interval look-ahead Activities and add any additional Activities planned for the next two (2) weeks. Electronic files and hard copies must be provided to the City on the first day of each work week with the prior week's actual progress included.
- B. Each Task listed on the short interval schedule must be representative of the most current Project Schedule Update and include a reference to an Activity shown on the current update.

1.12 SUBMITTALS:

- A. General
 - 1. Development of the Baseline Schedule and updating of the Project Schedule must follow the DCMA and AACE International guidelines.
 - 2. Each electronic submission of the Project Schedule must be assigned a unique file name consisting of the Project ID (as noted on the NTP followed by a dash followed by a unique file name clearly marked (i.e. ProjID- B000 = B/L rev0, ProjID-B001 = B/L rev01 etc.) to indicate the specific submission. Similarly, update submittals must be named ProjID-Uxxx where xxx is a sequential number, starting with 001, indicating the revision or issue number.
 - 3. The Contractor must provide all submittals in electronic format and two hard copies.
- B. Preliminary Project Schedule
 - 1. For acceptance of the preliminary Project Schedule the Contractor must submit the following:
 - a. Two (2) 11" x 17" hard copies of the proposed preliminary Project schedule, as well as the native electronic schedule data file, in .XER file format, per the direction of the City.
 - b. A Schedule Narrative Report detailing the Contractor's initial plan for executing the Contract work within the allotted Contract Duration, and include the following explanation of their provided preliminary schedule:
 - i. The proposed WBS;
 - ii. All proposed Project Calendars;
 - iii. All proposed Activity Codes, clearly defined;
 - iv. The proposed Activity ID format; and
 - v. Schedule basis narrative, which must memorialize assumptions made in the development of the schedule.
- C. Baseline Schedule
 - 1. The City will return comments within ten (10) Work Days after receipt of the initial Project Schedule Submission. If any of the required submissions are returned to the Contractor for corrections or revisions, they must be resubmitted within five (5) Work Days from receipt of



comments. Each resubmittal must comply with the requirements enumerated above. Review and response by the City will be given within ten (10) Work Days after resubmission.

- 2. At the request of the City, the Contractor will be required to participate in Project meetings necessary to obtain an acceptance of the above noted submittals.
- 3. Baseline Schedule submittal must contain a Narrative Report. It must include the following, or as directed by the City:
 - a. A description of the Project scope and how the Work is represented in the schedule Activities;
 - b. A description of the overall sequence of major components of Work;
 - c. Planned work week for each definable feature of work;
 - d. Description of the Critical Path and near Critical Paths;
 - e. Basis of Durations, described in terms of quantity and production rate;
 - f. How weather will be accommodated in the schedule, including a description of the weather calendar and the Activities it is applied to, and the NOAA Inclement Weather data that defined the number of non-Work Days;
 - g. How regulatory, operational or third-party constraints are accommodated in the schedule;
 - h. Description of key Project coordination points or events;
 - i. Discussion of long lead items and basis of time frames for submittals;
 - j. Description of anticipated means and methods for large quantity production Activities; and,
 - k. Potential opportunities and risks, including quantification of the schedule reduction or expansion.
- D. Project Schedule Updates
 - 1. Every schedule submittal must be provided with a corresponding narrative. These schedule submittals and narratives are to be submitted in hard copy, as well as in the native electronic format, as attachments to emails or other media accepted by the City. When opened, the electronic format must provide flawless restoration of the native files (P6 (.XER) for Primavera schedule files and MS Word and/or Adobe Acrobat for Narrative and supporting document submittals).
 - 2. For each submittal of the updated Project Schedule, the following layouts, reports, and graphics are required in the specified formats, unless otherwise directed by the City:
 - a. The Contractor must furnish two (2) 11" x 17" hard copies of the complete progress schedule with each initial schedule update and final update incorporating comments furnished by the City. Additionally, the Contractor must provide the native electronic schedule data file, in .XER file format, with the initial and final schedule update submission.
 - b. An Activity bar chart layout grouped by Activity Code and then sorted by Start Date, Finish Date, and then Total Float.
 - c. Each Activity line must display the Activity ID (Act ID), Description (Name), Original Duration (OD), Remaining Duration (RD), Start Date (ES), Finish Date (EF), and Total Float (TF), Baseline Original Duration (BL OD) Baseline Start (BL Start), Baseline Finish (BL Fin), Baseline Total Float (BL TF).



- d. An Activities progress bar must show both current progress update ES and EF, and baseline ES and EF. The top line of the bar chart area must contain the updated ES and EF; the second line below must depict the accepted baseline ES and EF dates.
- 3. The City may request additional standard P6 reports from time to time at no additional cost.
- 4. The Monthly Update submittal must contain a Narrative Report. It must include the following, or as directed by the City:
 - a. Any changes to the schedule basis narrative
 - b. A discussion of progress through the update period and status of the Project with respect to completion of the schedule. The progress reporting must detail work Activities that relate to the Project's Critical Path and if these Activities are progressing as planned.
 - c. A discussion of changes, delays or other circumstances affecting Progress including identified risks and opportunities and the Contractor's strategy.
 - d. A listing and brief explanation of modifications to the previously submitted network including Logic changes and Activity additions, deletions or modifications.
 - e. An update on the status of long lead items and whether the item is on the Critical Path.
 - f. The Contractor must report on all out of sequence Activities, the cause of this deviation to plan, and the proposed resolution of this issue.
 - g. The Contractor must include an explanation of assumptions and exclusions made in developing the schedule update and narrative.
- 5. The Contractor must provide a copy of the computer file(s) in electronic format or other media accepted by the City. When opened, the electronic format must provide flawless restoration of the native files and an electronic copy of the Narrative Report.

1.13 PROJECT SCHEDULE UPDATING:

- A. The initial updating must take place immediately after the City accepts the Contractor's Baseline Schedule. The Data Date for the first update must not exceed seven (7) Days from the date of receipt of the accepted Baseline Schedule, or as directed by the City.
- B. Subsequent updates of the Project Schedule must be submitted monthly until Substantial Completion. The schedule data date must be the last Work Day of the period unless otherwise directed by the City. Updates must be provided to the City no later than seven (7) Days after the 'schedule Data Date'.
- C. Updates must reflect actual or reasonably anticipated progress as of the last Work Day of the period.
- D. The City may request meetings with the Contractor to review the Project Schedule and Narrative and jointly verify Project health and information.
- E. In addition, the City may request meetings with the Contractor's scheduling representative to:
 - 1. Resolve out-of-sequence Logic;
 - 2. Should out-of-sequence progress occur where Activities have reported progress without predecessor Activities being completed, the Contractor must obtain the City's approval in a Proposed Schedule before revising the Logic ties to reflect the way the Work is actually being performed. Use of progress override by default mechanisms that may be included in CPM scheduling software systems will not be allowed except on a case-by-case basis with the approval of the City. A written explanation for each instance must be included in the monthly submittal narrative.
 - 3. Assess the impact, if any, of any pending change orders.
 - 4. Incorporate accepted time extensions.


- 5. Review revised Logic (as-built and projected) and changes in Activity Duration, cost, and labor hours assigned.
- F. Contractor's failure to provide required scheduling information within the required timeframe or to adhere to the currently accepted schedule may result in rejection of all or a portion of the progress payment until such time as the required schedule information is submitted and accepted by the City.
- G. Delays to the Critical Path Whenever it becomes apparent from the monthly CPM schedule update that delays to the Critical Path have occurred due to action or inaction of the Contractor and, as a result, the date for Substantial Completion will not be met, the Contractor must promptly take some or all of the following actions at no additional cost to the City, unless otherwise directed by the City:
 - 1. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of Work.
 - 2. Increase the number of working hours per shift, shifts per day, or Work Days per week; the amount of construction equipment; the forms for concrete work; etc., or any combination of the foregoing to substantially eliminate the backlog of Work.
 - 3. Reschedule Activities to achieve maximum practical concurrence of accomplishment of Activities and comply with the revised schedule.
 - 4. Submit to the City for review a written statement of the steps the Contractor intends to take to remove or arrest the delay to the schedule.
 - 5. Add to its equipment and materials or construction forces, as well as increase the working hours, if operations for critical, less critical or non-critical Activities fall behind the Contractor's Baseline Schedule at any time during the construction period.
- H. The City may, at any time during the Project and at no additional cost to the City, require the Contractor to develop a more detailed schedule/ Fragnet than depicted in the Baseline Schedule to provide a clearer understanding of the effort needed to complete an Activity or group of Activities.
- I. If the City determines that either the Critical Path is in the negative by four (4) weeks, or that the Project's date for completion may be affected, the Contractor may be required, at no additional cost to the City, to prepare a Recovery Schedule. Such Recovery Schedule is subject to review and acceptance by the City.
 - 1. The recovery schedule must propose alternative methods, overtime, and other means available to the Contractor to recover the delays incurred to date.
 - 2. The Recovery Schedule must be resource-loaded with manpower and equipment required to bring the date for Substantial Completion back into compliance.
- J. The Contractor must submit an "As-Built Schedule", as the last schedule update showing all Activities, with the exception of punch list and closeout tasks, at Substantial Completion. This schedule must reflect the exact manner in which the Project was actually constructed.



1.14 TIME IMPACT ANALYSIS:

- A. In addition to the requirements of the Standard Construction Contract Article 11, the Contractor must submit a Time Impact Analysis to the Engineer with all requests for time extension.
- B. The Time Impact Analysis must include a written narrative and supporting impact schedule Fragnet detailing the Project delays resulting from the alleged delay. The impact schedule Fragnet, separate and distinct from the Progress Schedule update, must demonstrate that the changes or anticipated delays affect Activities of the current accepted Progress Schedule. The impact schedule will be incorporated into the Progress Schedule only after it is accepted by the Commissioner and a time extension is approved. The Fragnet submitted as part of the Time Impact Analysis must illustrate the impact of these changes or delays on the date for Substantial Completion.

PART II – PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 32 16.20



(No Text on This Page)



SECTION 01 32 16.30 PROJECT SCHEDULES (METHOD C)

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SECTION 01 32 16.30

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. Methods
 - 2. Definitions
 - 3. Preliminary, Baseline, and Project Schedule Preparation Timeline
 - 4. Preliminary Project Schedule Development
 - 5. Project Schedule
 - 6. Activity and Calendar Coding Structure
 - 7. Work Breakdown Structure (WBS)
 - 8. Major Milestones
 - 9. Short (Three-Week) Interval/Two-Week Look-Ahead
 - 10. Submittals
 - 11. Project Schedule Updating
 - 12. Time Impact Analysis

1.3 METHODS:

- A. The Contractor must comply with Project schedule development and updating requirements as specified herein.
 - 1. The Contractor must employ or retain the services of a Construction Scheduler with verifiable construction scheduling experience, subject to review and acceptance by the City. Upon request, the Contractor must provide the City with qualifications and experience of the proposed scheduling staff member(s).
 - 2. The Contractor must prepare, update, and maintain a detailed Project Schedule using a version of scheduling software that is compatible with the City's Oracle Primavera P6 Enterprise Project Portfolio Management (EPPM). All schedule submittals must be developed using Oracle's Primavera P6 EPPM software. Schedules must be developed using accepted CPM techniques using the Precedence Diagramming Method (PDM). The Project Schedule must be developed following Defense Contract Management Agency (DCMA), and American Association of Cost Engineering International (AACE International) guidance. The Contractor will be required to use the Contractor's own P6 license (whether single-user or Enterprise



license), unless otherwise directed by the Commissioner. If directed by the Commissioner prior to the Notice to Proceed (NTP), the Contractor must use the Department's P6 Enterprise license and develop the Progress Schedule within the Department's Enterprise environment.

- 3. Once the Baseline Schedule is accepted by the City, progress updates to the Project Schedule must be submitted monthly, unless otherwise directed by the City, until Substantial Completion. The Data Date for the schedule updates must use the last Friday of the month, or as directed by the City.
- 4. The Contractor must be responsible for providing the monthly schedule updates once the Baseline Schedule is approved. Each monthly schedule update must be accompanied with a schedule narrative that explains the following:
 - a) The progress of work during that particular period of performance;
 - b) Any changes in schedule Logic;
 - c) The physical conditions that were used to update every Activities Percent Complete;
 - d) Any change in actual Start and Finish Dates;
 - e) Any Duration changes;
 - f) Any added and deleted Activities; and
 - g) Any added Extra Work (e.g., change orders).

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.

Term	Definition
Activity	A representation of a discrete portion of the overall scope of Work or an event through Duration and description in a CPM schedule.
Baseline Schedule	The planned and detailed CPM schedule of Activities, including all Logic, Durations, Resource and Cost Loading, and showing the entire scope of Work. The Baseline Schedule must be accepted by the City.
Critical Path	The longest sequence of Activities in a network which establishes the minimum length of time for accomplishment of the end event of the Project.
Critical Path Method (CPM)	A management technique used to plan and control a project which combines all relevant information into a single plan defining the sequence and Duration of operations and depicting the interrelationship of the Work elements required to complete the Project.
Current Schedule	The most recently updated schedule that captures progress to date and forecasts the dates for each Activity.
Data Date	The date used as a starting point for scheduling calculations. The Data Date is changed to the current end of period date when a schedule is updated for progress.



Term	Definition
Duration	The amount of time, in workdays, an Activity will take to perform.
Finish Date	The earliest estimated date an Activity is calculated to be complete, based on the estimated performance of all prior Activities to which the Activity is logically connected in a progressive relationship.
Free Float	The calculated amount of time that the estimated start or finish of an Activity can be delayed without impacting the start or finish of other downstream Activities logically connected in a progressive relationship. (See Finish Date and Late Finish).
Fragnet	Fragmentary network: a portion of a schedule detailing impacts of an event on specific Activities in the broader schedule.
Inclement Weather	Any weather condition, the duration of which varies in excess of the 3- year average published by the National Oceanic and Atmospheric Administration (NOAA) information for the local area.
Integrated Project Schedule	The Commissioner's overall schedule covering design, procurement, and construction. The Commissioner will use the Contractor's Project Schedule to update the Integrated Project Schedule.
Late Finish	An estimate of the latest plausible date an Activity's completion can be postponed without rendering as unachievable the required completion of any downstream Milestones to which the Activity is Logically connected to in a progressive relationship.
Late Start	An estimate of the latest plausible date an Activity's start can be postponed without rendering as unachievable the required completion of any downstream Milestones to which the Activity is Logically connected to in a progressive relationship.
Logic	A direct progressive relationship between Activities where one Activity's performance restricts the performance of another Activity.
Milestone	A key or critical point in time for reference or measurement.
Network Diagram	A graphic diagram of a network schedule, showing Activities and Activity relationships.
Original Duration	The estimated amount of time, in Work Days, an Activity is expected to take to complete at the beginning of a project as anticipated by the Contractor based on its planned means and methods at time of bid and documented in the Baseline Schedule.
Percent Complete	The percentage of the scope of Work represented by an Activity completed as of the Data Date calculated as physical percent complete for payment purposes.



Term	Definition
Project Schedule	The Contractor's schedule used to manage the orderly and expeditious completion of the Work. The Project Schedule is initially the accepted Baseline Schedule, and is updated throughout the Project.
Remaining Duration	The amount of time, in Work Days, the remaining scope of Work represented by an Activity is expected to take to complete, measured from the current Data Date.
Resource and Cost Loading	Values assigned for estimated dollars, manpower, equipment and/or materials necessary to complete the scope of Work represented by a specific Activity.
Recovery Schedule	A Recovery 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 minimize delays and must establish the nature of efforts; for instance, resources and equipment required, 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 to recover the schedule.
Revised and/or Updated Schedule	A Baseline Schedule, or Progress Project Schedule, or Recovery Schedule for the Project that shows the actual Duration of all the completed Activities, including Duration of and the reasons for delays, if any have 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 Schedule must be reviewed and approved by the City.
Start Date	The earliest estimated date an Activity is calculated to begin, based on the estimated performance of all prior Activities to which the Activity is logically connected in a progressive relationship.
Time Impact Analysis	A forward looking (prospective) schedule analysis used to forecast the impact to the Critical Path and to Milestone Finish Dates caused by a single event or series of events. Time Impact Analysis is not a retrospective (forensic) schedule analysis or a what-if schedule analysis of a potential event.
Total Float	The amount of time the start or finish of an Activity can be delayed without affecting the Project completion date.



Term	Definition
Work Breakdown Structure (WBS)	WBS is a deliverable-oriented decomposition of a Project into smaller components. A WBS provides the necessary framework for detailed cost estimating and control along with providing guidance for schedule development and control.
Work Days (WD)	Work Days are every consecutive day on the calendar, excluding weekends (Saturday and Sunday) and holidays.

1.5 PRELIMINARY, BASELINE, AND PROJECT SCHEDULE PREPARATION TIMELINE:

- A. Upon receipt of the NTP, the Contractor must promptly prepare a preliminary Project Schedule and subsequently a Baseline Schedule and must submit for the City's acceptance as follows:
 - Submit the Contractor's CPM Scheduler's qualifications to the City for approval within seven (7) Days after NTP. The City will respond to the submittal within seven (7) Days of the submittal receipt.
 - 2. The preliminary Project Schedule must be submitted no later than twenty-one (21) Days after NTP.
 - 3. The initial submittal of the Baseline Schedule must be provided to the City for review no later than forty-five (45) Days after NTP.
 - 4. The Contractor must incorporate all corrections and revisions required by the City and provide an updated version of the Baseline Schedule for review and acceptance no later than seventy-five (75) Days after NTP to ensure that the Baseline Schedule is accepted no later than ninety (90) Days after the NTP. The ninety (90) Days must include fourteen (14) Days review time by the City for each submittal of the Baseline Schedule.
 - 5. Once accepted, the Baseline Schedule will be the basis of Project Schedule updates.

B. Remedies

- 1. Preliminary Project Schedule: The City will take a credit of three thousand dollars (\$3,000) if the preliminary Project Schedule is not submitted within twenty-one (21) Days of the NTP.
- 2. Acceptable Baseline Schedule: The City will take a credit of five thousand dollars (\$5,000) if an acceptable Baseline Schedule is not submitted within ninety (90) Days of the NTP.
- 3. Monthly Progress Schedule updates: The City will take a credit of two thousand dollars (\$2,000) for each schedule update not submitted within the period it was due.
- 4. Scheduling Firm Services: If an acceptable Baseline Schedule is not provided by the Contractor within ninety (90) Days of the NTP or three (3) updates are not provided by the Contractor during the period they are due, the City may engage the services of a scheduling firm to develop a Project schedule or update an existing schedule. The total costs of such services will be deducted from the monies due to the Contractor.
- 5. Any schedules and updates developed by such scheduling firm are for the City's sole use and do not, in any way, represent an acceptance of responsibility by the City to schedule the Work or relieve the Contractor of the obligation to complete the Work within the Durations specified by the Contract.



6. The City will only accept the submitted information after all corrections have been made and all issues have been resolved. The City may find the Contractor in default if items required by this Section are incomplete.

1.6 PRELIMINARY PROJECT SCHEDULE DEVELOPMENT:

- A. The preliminary Project Schedule must be a detailed plan (division level per Construction Specifications Institute (CIS) MasterFormat) of all operations, including submittals, permitting, testing, and construction Activities, for either the first ninety (90) Days after NTP or to the point where the Contractor plans to mobilize on site (whichever is greater). This submittal will also depict a summary level (section level per CSI MasterFormat) schedule of the major Activities for the remainder of the Work.
- B. The preliminary Project Schedule will be reviewed by the City and returned with comments, as necessary, within fourteen (14) Days of submittal receipt. Information from the preliminary Project Schedule will be the general foundation for development of the Baseline Schedule.

1.7 **PROJECT SCHEDULE**:

- A. The Baseline Schedule must show the sequence in which the Contractor proposes to perform the Work, and account for all major and intermediate Milestone Activities, phasing, restrictions of access, availability of work areas and the availability and use of labor, materials, and equipment.
- B. After the Baseline Schedule is approved, the Project Schedule must be the Contractor's working schedule and must be used to plan, organize, execute and track the Project. The Project Schedule is the primary vehicle used to report actual performance, progress, and convey the Contractor's execution plan to complete the Work.
- C. The Project Schedule must show the sequence in which the Contractor proposes to perform the Work, and account for all major and intermediate Milestone Activities, phasing, restrictions of access, availability of work areas and the availability and use of labor, materials, and equipment.
- D. The Project Schedule must be the Contractor's working schedule used to plan, organize, execute, and track the Project. The Project Schedule is the primary vehicle used to report actual performance, progress, and convey the Contractor's execution plan to complete all remaining Work.
- E. All delay claims must be based on the current approved updates of the Project Schedule.
- F. The Contractor must confirm in writing that all subcontractors performing any portion of the Work are in agreement with the accepted Baseline Schedule and the monthly updates.
- G. The amount of detail represented in the Baseline and Project Schedule and supporting documents submitted must, at a minimum, include the following, items:
 - 1. Contract Milestones must be identified and included in the Baseline and Project Schedule.
 - 2. All submittal, owner review & approval, purchase, manufacture, and delivery Activities for all major materials and equipment.
 - 3. Deliveries of owner-furnished equipment and/or materials.
 - 4. Preparation, submittal, and approval of drawings, material samples, and safety plans.
 - 5. Preparation, submittal, review, and approval of permits required by all regulatory agencies and other third parties.
 - 6. Performance of tests, submission of test reports, and approval of test results.



- 7. Commissioning Activities for all commissioned systems and equipment is to be clearly delineated and scheduled such that they will be completed prior to Substantial Completion. Such Activities must include, at a minimum, Pre-Functional testing and check sheets; Testing, Adjusting, and Balancing (TAB) verification; Functional Testing, including testing of all controls; and Owner's demonstration and orientation.
- 8. Completion dates of all items required for phased completion (if applicable).
- 9. Completion dates of all items required for Substantial Completion.
- 10. Completion dates of all items required to obtain a Temporary Certificate of Occupancy (TCO) and Certificate of Occupancy (CO).
- 11. Completion dates for close-out of regulatory and punch list items prior to Final Acceptance and transfer of the Project.
- 12. Any additional detail requested by the Commissioner.
- H. Activities identified in the Baseline and Project Schedule must have the Duration in units of whole Work Days. Construction Activity Durations must not exceed twenty (20) Work Days unless specifically approved by the City. This is to ensure that Activities are not generalized and that each Activity and sub-Activity are defined as narrowly as reasonable to facilitate schedule tracking. Durations for non-construction Activities such as procurement of materials, delivery of equipment, concrete curing, etc. may exceed twenty (20) Work Days without prior approval; however, these are still subject to review by the City. Durations must be based on the available resources required for performing each Activity and must be the result of definitive labor hours using established production rates, and with consideration of on-site working conditions. If requested by the City, the Contractor must justify the reasonableness of a planned Duration.
- I. Activity descriptions must use plain language that clearly and uniquely defines each Activity. Each description must include a verb or work function (e.g. submit, form, pour etc.), an object (e.g. slab, foundation, etc.) and, for any construction Activities, a specific location. The Work related to each Activity must be limited to one responsibility and one trade.
- J. Activity relationships must be assigned to clearly establish predecessor and successor relationships to each Activity. Open-ended Activities are not permitted with the exception of the first and last Activities in the network, the first Activity being NTP and the last being Final Acceptance. The use of relationship lag times is discouraged and only permitted with prior approval by the City. The use of negative lag is never permitted.
- K. Activity constraint dates are only to be used to reflect contractual constraints unless specifically authorized by the City.
- L. Float or slack, in any schedule, must not be for the exclusive use or benefit of either the City or the Contractor, but must be available for use by both the City and the Contractor.
- M. Each resubmittal after the Project Schedule is delivered for acceptance must comply with all requirements of this section. Review and response by the City will be given within fourteen (14) Days after resubmission. The Contractor's receipt of the comments within the time specified must not, in any way, affect the Contractor's responsibility to complete the Project within the time fixed in Schedule A.
- N. Failure by the City to return comments or indicate acceptance status will in no way relieve the Contractor's obligation to submit monthly schedule updates.
- O. At the request of the City, the Contractor must be required to make a presentation to explain or clarify the intended logical sequence of construction Activities depicted in the detailed Project Schedule. The Contractor and designated scheduler must discuss anticipated challenges and outline construction methodology and flow of work to show how and when major Milestones will be achieved. In addition,



the Contractor may, at no cost to the City, be required to participate in additional Project meetings necessary to obtain acceptance of the above-noted submittals.

P. The Contractor must provide a Cost Flow Projection (CFP) summary covering from NTP to Final Acceptance. The CFP summary must match the expected billings for each period of performance.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.7.Q

- Q. Schedule Cost and Resource Loading
 - 1. At the direction of the City, and at no additional cost to the City, a Project Schedule must be cost loaded within thirty (30) Days after acceptance of the Baseline Schedule.
 - 2. The Contractor must accurately load all Project Activities with direct field labor associated with the craft or trades required to complete that Activity. All labor must be noted in manhours required to complete the tasking. The Contractor must include in all Activities the hours required of for major pieces of equipment.
 - 3. All Resource ID's must have a unique identifier assigned by the Contractor, and approved by the City, so the Project-specific data can be separated from other data in the system.
 - 4. Cost loading must be accomplished by adding a single summary level cost loaded Activity in the Project Schedule. This Activity will allow initial generation and monthly updates of the planned value that is time-phased into monthly periods.
 - 5. The intent of the cost loading is to facilitate cost forecasting, tracking, and reporting of monthly cost projection. Every month, the cost loaded summary Activity must be updated with earned value for prior months and revised monthly forecast for future periods. If there is a significant difference between the actual cumulative monthly invoice and the cumulative planned value from the cost loaded Project Schedule for any reporting month, the Contractor must provide the City with the reason for variance in the schedule narrative.

1.8 ACTIVITY AND CALENDAR CODING STRUCTURE:

- A. The Baseline and Project Schedules must contain a sufficient number of Activities to represent adequate planning and execution of the Work so that it shows an accurate flow of work and demonstrates an understanding of the Project by the Contractor.
- B. Activity ID and Calendar Coding
 - 1. The Contractor's proposed Activity and calendar coding and must be submitted with the preliminary Project Schedule. A meeting may be requested by the City to discuss the scheme and other schedule information prior to the submittal of the Project Schedule. The accepted coding scheme and WBS Structure must be incorporated into the Project Schedule.
- C. Activity ID Coding
 - 1. All Activities/Resources/Calendars (Baseline and Project Schedules) must be coded inside the P6 Project Environment / Project Level (NOT the Global Environment/Enterprise Level) to facilitate selection, sorting and preparation of reports.
 - 2. Activity coding must consist of the Project ID followed by a dash, followed by Activity coding (PROJECT ID-ACTIVITY CODE). Activity codes must be created at the Project level and must utilize the coding scheme outlined in the table below:



Activity Code	Meaning
RESP	<u>Responsibility:</u> Identify the party (e.g. Contractor, subcontractor, City, etc.) responsible for the Activity.
PHAS	<u>Phase:</u> Breakdown of Activities in Milestones, pre-construction, procurement, construction and close-out Activities.
LOCN	Location: Breakdown by floor or elevation.
AREA	<u>Area:</u> Breakdown by room, area, block or wing. May be used as a subdivision of PHAS to include Milestones, permits, subcontractor approvals, submittals, fabrication and delivery, and subdivision of the Site and buildings into Logical modules, such as by blocks, wings, etc.
TRAD	Trade: Breakdown by CSI Code or section number in the Specifications.

- a. Description of schedule Activities must include terminology that represents the scope of work associated with that particular Activity. Terminology used to describe similar actions must be consistent across all segments of work.
- b. Naming convention for schedule Activities must be descriptive and indicate the associated work covered by the Activity. Activities must use a verb, noun, and location of the work in the Activity name.
- 3. Project Calendar Coding
 - a. All calendars created and assigned to Activities must be Project-level calendars. The Calendar Name must consist of the Project ID number followed by a dash, followed by a descriptive Calendar Name (PROJECT ID-CALENDAR NAME).

1.9 WORK BREAKDOWN STRUCTURE:

- A. A multi-level hierarchal WBS must be incorporated in all P6 schedules. An initial, proposed WBS must be submitted with the preliminary Project Schedule. The levels (nodes) must include, but not be limited to:
 - 1. LEVEL 01 The Project Level.
 - 2. LEVEL 02 Contains a minimum of four (4) nodes: Pre-Construction, Procurement, Construction or Phase of Construction, and Closeout.
 - 3. LEVEL 03 Decomposition of each of the four (4) nodes in Level 02 into its constituent parts. This Level must target specific, tangible, scopes of the Project Work.
 - 4. LEVEL 04 Decomposition of Level 03 Activities providing work package details that provide an understanding of the process to be used to execute the Project Work.
- B. The Contractor's proposed WBS must be submitted with the preliminary Project Schedule. The accepted WBS must be incorporated into the Baseline and Project Schedule.

1.10 MAJOR MILESTONES:

A. The schedule must include both contractual and non-contractual Milestones that are provided by the City. These Milestones must be properly associated with the related Work and maintained to represent the progress of the Project.



1.11 SHORT (THREE-WEEK) INTERVAL / TWO-WEEK LOOK-AHEAD:

- A. On a weekly basis, the Contractor must provide a three (3) week short interval schedule in a format satisfactory to the City. The purpose of this schedule is to report the actual progress of the past week against the previous short interval look-ahead Activities and add any additional Activities planned for the next two (2) weeks. Electronic and hard copies must be provided to the City on the first day of each work week with the prior week's actual progress included.
- B. Each task listed on the short interval schedule must be representative of the most current Project Schedule Update and include a reference to an Activity shown on the current update.

1.12 SUBMITTALS:

- A. General
 - 1. Development of the Baseline Schedule and updating of the Project Schedule must follow the DCMA and AACE International guidelines.
 - 2. Each electronic submission of the Project Schedule must be assigned a unique file name consisting of the Project ID (as noted on the NTP), followed by a dash followed by a unique file name clearly marked (i.e. ProjID- B000 = B/L rev0, ProjID-B001 = B/L rev01 etc.) to indicate the specific submission. Similarly, update submittals must be named ProjID-Uxxx where xxx is a sequential number, starting with 001, indicating the revision or issue number.
 - 3. The Contractor must provide all submittals in electronic format and two hard copies.
- B. Preliminary Project Schedule
 - 1. For acceptance of the preliminary Project Schedule, the Contractor must submit the following:
 - a. Two (2) 11" x 17" hard copies of the proposed preliminary Project Schedule, as well as the native electronic schedule data file, in .XER file format, per the direction of the City.
 - b. A Schedule Narrative Report detailing the Contractor's initial plan for executing the Contract work within the allotted Contract Duration, and include the following explanation of their provided preliminary schedule:
 - i. The proposed (WBS);
 - ii. All proposed Project Calendars;
 - iii. All proposed Activity Codes, clearly defined;
 - iv. The proposed Activity ID format; and
 - v. Schedule basis narrative, which must memorialize the assumptions made in the development of the schedule.
- C. Baseline Schedule
 - 1. The City will return comments within ten (10) Work Days after receipt of the initial Project Schedule Submission. If any of the required submissions are returned to the Contractor for corrections or revisions, they must be resubmitted within five (5) Work Days from receipt of comments. Each resubmittal must comply with the requirements enumerated above. Review and response by the City will be given within ten (10) Work Days after resubmission.
 - 2. At the request of the City, the Contractor will be required to participate in Project meetings necessary to obtain an acceptance of the above noted submittals.
 - 3. Baseline Schedule submittal must contain a Narrative Report. It must include the following, or as directed by the City:



- a. A description of the Project scope and how the Work is represented in the schedule Activities;
- b. A description of the overall sequence of major components of Work;
- c. Planned work week for each definable feature of work.
- d. Description of the Critical Path and near Critical Paths;
- e. Basis of Durations, described in terms of quantity and production rate;
- f. How weather will be accommodated in the schedule, including a description of the weather calendar and the Activities it is applied to, and the NOAA Inclement Weather data that defined the number of non-work days;
- g. How regulatory, operational or third-party constraints are accommodated in the schedule;
- h. Description of key Project coordination points or events;
- i. Discussion of long lead items and basis of time frames for submittals;
- j. Description of anticipated means and methods for large quantity production Activities;
- k. Potential opportunities and risks, including quantification of the schedule reduction or expansion; and
- I. Assumptions/exclusions made in the schedule.
- D. Project Schedule Updates
 - 1. Every schedule submittal must be provided with a corresponding narrative. These schedule submittals and narratives must be submitted in hard copy and the native electronic format as attachments to emails or other media accepted by the City. When opened, the electronic format must provide flawless restoration of the native files (P6 (.XER) for Primavera schedule files and MS Word and/or Adobe Acrobat for narrative and supporting document submittals).
 - 2. For each submittal of the updated Project Schedule, the following layouts, reports, and graphics are required in the specified formats, unless otherwise directed by the City:
 - a. The Contractor must furnish two (2) 11" x 17" hard copies of the complete progress schedule with each initial schedule update and final update incorporating comments furnished by the City. Additionally, the Contractor must provide the native electronic schedule data file, in .XER file format with the initial and final schedule update submission.
 - b. An Activity bar chart Layout grouped by Activity Code and then sorted by Start Date, Finish Date, and Total Float.
 - c. Each Activity line must display the Activity ID (Act ID), Description (Name), Original Duration (OD), Remaining Duration (RD), Start Date (ES), Finish Date (EF), and Total Float (TF), Baseline Original Duration (BL OD), Baseline Start (BL Start), Baseline Finish (BL Fin), Baseline Total Float (BL TF).
 - d. An Activities progress bar must show both current progress update ES and EF, and baseline ES and EF. The top line of the bar chart area must contain the updated ES and EF; the second line below must depict the accepted baseline ES and EF dates.
 - 3. The City may request additional standard P6 reports from time to time at no additional cost.
 - 4. The Monthly Update submittal must contain a Narrative Report. It must include the following, or as directed by the City:



- a. Any changes to the schedule basis narrative;
- b. Overall health of the Project;
- c. Actual Activity Start Dates;
- d. Actual Activity Finish Dates;
- e. The physical conditions that were used to update Activities percent complete
- f. Percent of Work reported in place;
- g. Contract and Milestone completion date status:
 - i. Number of Days ahead or behind schedule; and
 - ii. Days lost/gained compared with the previous update.
- h. Schedule change report organized by Milestone and area comparing the number of Activities that were planned to start and finish to the number that actually started and finished for the reporting period;
- i. Lookahead report listing each Activity in the CPM schedule that is scheduled to be performed during the next reporting period;
- j. Plans for executing scheduled Activities during the next reporting period;
- k. Analysis, organized by Milestone and area, of the Critical Path and near Critical Path(s) describing:
 - i. The nature of the Critical Path/near Critical Path;
 - ii. Impact on other Activities, Milestones and Finish dates; and
 - iii. Identify, or update, risks and opportunities that may impact the Critical Path/near Critical Paths.
- I. List of current and anticipated delays by Milestone:
 - i. Cause of the delay;
 - ii. Corrective actions and schedule adjustments to correct the delay;
 - iii. Impact of the delay on other Activities, Milestones and completion dates; and
 - iv. Weather delays, when applicable. The Contractor must describe how the impacts of weather conditions and constraints were absorbed and accounted for in the schedule.
- m. Changes in Activity description, Logic, or Duration must be submitted as a separate Proposed Schedule and approved by the City prior to being submitted as an official update. Once allowed, said changes must be grouped and organized in the report in a manner that communicates in detail the rationale associated with each change and the impact upon construction sequence, relationships and the Critical Path. A standard Digger Report is not sufficient to meet this requirement;
- n. Added/deleted Activities and the rationale associated with each action;
- o. Pending issues and status of other items;
- p. Permits;
- q. Contract modifications;
- r. Current and potential extra Work, including change orders;
- s. Status of long lead procurement items and whether the item is on the Critical Path;
- t. Status of Project submittals;



- u. Out of sequence report describing the necessity of each Activity relationship shown therein, as described within this Section;
- v. Illogical progress/restraint reports (if any);
- w. Other Project or scheduling concerns;
- x. Electronic copy of the latest CPM schedule update file in Primavera (.XER) format; and
- y. Primavera scheduling error report.

1.13 PROJECT SCHEDULE UPDATING:

- A. The initial updating must take place immediately after the City accepts the Contractor's Baseline Schedule. The Data Date for the first update must not exceed seven (7) Days from the date of receipt of the accepted Baseline Schedule, or as directed by the City.
- B. Subsequent updates to the Project Schedule must be submitted monthly until Substantial Completion is achieved. The schedule Data Date must be set to the last Work Day of the period unless otherwise directed by the City. Updates must be provided to the City no later than seven (7) Days after the 'schedule Data Date'.
- C. Updates must reflect actual or reasonably anticipated progress as of the last Work Day of the period.
- D. The City may request meetings with the Contractor to review the Project Schedule and narrative and jointly verify Project health and information.
- E. In addition, the City may request meetings with the Contractor's scheduling representative to:
 - 1. Resolve out-of-sequence Logic.
 - 2. Should out-of-sequence progress occur where Activities have reported progress without predecessor Activities being completed, the Contractor must obtain the City's approval in a Proposed Schedule before revising the Logic ties to reflect the way the Work is actually being performed. Use of progress override by default mechanisms that may be included in CPM scheduling software systems will not be allowed except on a case-by-case basis with the approval of the City. A written explanation for each instance must be included in the monthly submittal narrative.
 - 3. Assess the impact, if any, of any pending change orders.
 - 4. Incorporate accepted time extensions.
 - 5. Review revised Logic (as-built and projected) and changes in Duration, cost, and labor hours assigned.
- F. Contractor's failure to provide required scheduling information within the required timeframe or to adhere to the currently accepted schedule may result in rejection of all or a portion of the progress payment until such time as the required schedule information is submitted and accepted by the City.
- G. Delays to the Critical Path Whenever it becomes apparent from the monthly CPM schedule update that delays to the Critical Path have occurred due to action or inaction of the Contractor, and as a result the date for Substantial Completion will not be met, the Contractor must promptly take some or all of the following actions at no additional cost to the City, unless otherwise directed by the City:
 - 1. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of Work.



- 2. Increase the number of working hours per shift, shifts per day, or Work Days per week; the amount of construction equipment; the forms for concrete work; etc., or any combination of the foregoing to substantially eliminate the backlog of Work.
- 3. Reschedule Activities to achieve maximum resource utilization across the Project and comply with the revised schedule.
- 4. Submit to the City a written statement of the steps the Contractor intends to take to remove or arrest the delay to the schedule. The Contractor must promptly provide the necessary level of effort to bring the Work back on schedule.
- 5. Add to its equipment and materials or construction forces, as well as increase the working hours, if operations for critical, less critical, or non-critical Activities fall behind the Contractor's Baseline Schedule at any time during the construction period.
- H. The City may, at any time during the Project and at no additional cost to the City, require the Contractor to develop a more detailed schedule/Fragnet than depicted in the Baseline Schedule to provide a clearer understanding of the effort needed to complete an Activity or group of Activities.
- I. If the City determines that either the Critical Path is in the negative by four (4) weeks, or that the Project's date for completion may be affected, the Contractor may be required, at no additional cost to the City, to prepare a Recovery Schedule. Such Recovery Schedule is subject to review and acceptance by the City. The Recovery Schedule must propose alternative methods, overtime, and other means available to the Contractor to recover the delays incurred to date.
- J. The Contractor must submit an "As-Built Schedule", as the last schedule update showing all Activities, with the exception of punch list and closeout tasks, at Substantial Completion. This schedule must reflect the exact manner in which the Project was actually constructed.

1.14 TIME IMPACT ANALYSIS:

- A. In addition to the requirements of the Standard Construction Contract Article 11, the Contractor must submit a Time Impact Analysis to the Engineer with all requests for time extension.
- B. The Time Impact Analysis must include a written narrative and supporting impact schedule Fragnet detailing the Project delays resulting from the alleged delay. The impact schedule Fragnet, separate and distinct from the Progress Schedule update, must demonstrate that the changes or anticipated delays affect Activities of the current accepted Progress Schedule. The impact schedule will be incorporated into the Progress Schedule only after it is accepted by the Commissioner and a time extension is approved. The Fragnet submitted as part of the Time Impact Analysis must illustrate the impact of these changes or delays on the date for Substantial Completion.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 32 16.30



SECTION 01 32 33 PHOTOGRAPHIC DOCUMENTATION

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SECTION 01 32 33

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. 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 must employ and pay for the services of a professional photographer who will take photographs showing the progress of the Work.

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" must 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 (4) color prints of each photographic view for each trade to the Resident Engineer. Such Progress Photographs must be included in each monthly progress report or as otherwise directed by the Resident Engineer.
- D. Digital Files: Submit digital files in the format required.

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 (3) years.

1.6 COORDINATION:

A. The Contractor and its subcontractor(s) must cooperate with the photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, such as temporary lighting required to produce clear and well-lit photographs without obscuring shadows.

1.7 COPYRIGHT:

- A. The Contractor must include the provisions of this Subsection 1.7 in the agreement between the Contractor and the Photographer who will provide the construction photographs described in this Section. The Contractor must 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, will, 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") will 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 will 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 will retain no copyright or intellectual property interest in the Copyrightable Materials. The Copyrightable Materials must 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 must 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 must be provided to the City.



PART II – PRODUCTS

2.1 PHOTOGRAPHIC MEDIA:

- A. Digital Images: Digital files must be captured as 7.2 megapixel files or greater, with a minimum pixel array of 2,400 pixels by 3,000 pixels. The camera used to capture the digital files must be a Digital SLR (Single Lens Reflex) camera or approved equal; "point and shoot" cameras or camera phones are not acceptable. Digital cameras must produce images using true optical resolution; "digital zoom" is not acceptable. Images must not be resized or interpolated. The file format for digital files must be Joint Photographic Experts Group format ("JPG"). The digital files must not be modified or processed in any way to alter the JPG file's metadata, including the photograph's original capture date.
- B. Digital Files: Digital files must be submitted on Digital Versatile Disk ("DVD") or as specified by the Commissioner. DVDs must be inserted in standard weight Archival Quality clear poly sheet protectors and submitted in a hard cover three (3) ring binder. The information imprinted on each print must be provided on an Excel file included on the DVD. The DVD must be labeled with the Project ID and the Project description. Labeling using adhesive labels is not acceptable.
- 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 1-inch 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 that provide the largest possible depth-of-field while still 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. 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 USB drive, or other electronic media requested by the Commissioner, in the field office at the Project site so that it is available at all times for reference. Ensure that the images are the same as for those submitted to Commissioner.

3.2 PRE-CONSTRUCTION & PRE-DEMOLITION PHOTOGRAPHS:

- A. Before commencement of Contract Work at the Project 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 New York City 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 New York City 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 must 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, must take images of existing elements scheduled to be removed for replacement, repair or replication in quantities as directed, including post-construction photographs of completed Work as directed by the Commissioner.
 - 1. Take Presentation Quality Photographs of designated landmark structures as directed by the Commissioner for submission to the New York City Landmarks Preservation Commission. Provide a minimum of four (4) color photographic prints of each view as directed.

3.5 VIDEO RECORDING:

A. When Video Recording of Demonstration and Orientation sessions is required, the Contractor must 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. For submission as Project Record Documents, take color photographs of minimum eight (8) unobstructed views of the completed Project and/or Project site, as directed by the Commissioner and after all scaffolding, hoists, shanties, field offices or other temporary work has been removed and final cleaning has been done after date of Substantial Completion. Submit four (4) sets of each view of Presentation Quality photographic prints, including negatives and/or digital images electronic file.

END OF SECTION 01 32 33



SECTION 01 33 00 SUBMITTAL PROCEDURES

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 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 will not relieve the Contractor of the following responsibilities:
 - 1. Accuracy of such Shop Drawings;
 - 2. Proper fitting and construction of the Work
 - 3. Furnishing of materials or Work required by the Contract that may not be indicated on the Shop Drawings.
- D. Approval of Shop Drawings must not be construed as approving departures from the Contract Drawings, Supplementary Drawings, or Specifications.
- E. 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 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 40 00 QUALITY REQUIREMENTS
 - F. Section 01 77 00 CLOSEOUT PROCEDURES
 - G. Section 01 78 39 CONTRACT RECORD DOCUMENTS
 - H. Section 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS
 - I. Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 BUILDINGS
 - J. Section 01 81 13.10 ENVIRONMENTALLY PREFERABLE PURCHASING (EPP) COMPLIANCE



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" must 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. Action Submittals: Written and graphic information, or physical samples 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 and graphic information that does not require responsive action. Informational Submittals may be rejected for non-compliance with the Contract.
- E. Shop Drawings: 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 must 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. Coordination Drawings, General: When coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity, or where limited space availability necessitates coordination, prepare Coordination Drawings according to requirements in individual Sections as a prerequisite to submittal of Shop Drawings.



- 1. Content: Project-specific information, shown accurately to a scale large enough to indicate and resolve conflicts. Do not base Coordination Drawings on standard printed data. Include the following information, as applicable for the Project:
 - a. Use applicable background views as a basis for preparation of coordination layouts. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information by multiple contractors in a sequence that best presents the information and resolution of conflicts between installed components, before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, plumbing, fire protection, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Commissioner indicating proposed resolution of such conflicts.
- B. Coordination Drawing Organization: Organize Coordination Drawings as follows:
 - 1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 - 2. Plenum Space: Indicate subframing for support of ceiling raised access floor and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
 - 3. Mechanical Rooms: Provide Coordination Drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
 - 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 - 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 - 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 - d. HVAC equipment
 - 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other firealarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motorcontrol center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.



- e. Indicate runs and locations of Audio Visual and Information Technology, and security devices.
- 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
- C. The Contractor must issue the completed Coordination Drawing(s) to the Design Consultant for his/her review. The Design Consultant may call as many meetings as necessary with the Contractor, including attendance by applicable subcontractors, and may call on the services of the applicable sub consultant(s) where necessary, to resolve any conflicts that become apparent.
- D. Upon resolution of any conflicts, the Contractor must provide a final Coordination Drawing(s) which will become the Master Coordination Drawing(s). The Master Coordination Drawing(s) must be signed and dated by the Contractor to indicate acceptance of the arrangement of the Work.
- E. A reproducible copy of the Master Coordination Drawing(s) must be provided by the Contractor to each of the appropriate subcontractor(s), the Resident Engineer and the Design Consultant for information.
- F. Shop Drawings must not be submitted prior to acceptance of the final coordinated drawings and must 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.
- G. Coordination Drawing Digital Data Files: Prepare coordination digital data files according to the following requirements:
 - 1. File Preparation Format: Same digital data software program, version, and operating system as original Design Drawings.
 - 2. File Submittal Format: Submit or post coordination drawing files using PDF format.
 - 3. BIM File Incorporation: Submit or post coordination drawing files using PDF format, unless otherwise directed by Commissioner.
 - 4. Commissioner will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Contractor must execute Digital Data File Release and indemnification form provided by Commissioner.
 - b. Commissioner makes no representations as to the accuracy or completeness of digital data files as they relate to coordination drawings.

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 in 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. 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
 - I. Other necessary identification
- D. PDF Submittals:
 - 1. Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number. Bind transmittal form with each submittal file package. Transmittal form must be the first page in the PDF file constituting the submittal.
 - 2. Submittal files received from sources other than the Contractor will be rejected without review. Resubmission of the same drawings or product data must bear the original number of the prior submission and the original titles.
- E. Web-Based Project Software Submittals: Prepare submittals as PDF files, or other format indicated by Project software website.
- F. Transmittal Form: Provide locations on form for the following information:
 - 1. Project name, DDC Project number and Contract Number
 - 2. Date
 - 3. Destination (To:)
 - 4. Source (From:)
 - 5. Names of Contractor, subcontractor, manufacturer, and supplier
 - 6. Category and type of Submittal
 - 7. Submittal purpose and description
 - 8. Specification Section number and title
 - 9. Drawing number and detail references, as appropriate
 - 10. Transmittal number, numbered consecutively
 - 11. Submittal and transmittal distribution record
 - 12. Remarks
 - 13. Signature of transmitter
- G. Shop Drawings:
 - 1. Procedures for Preparing, Forwarding, Checking, and Returning all Shop Drawings must be, generally, as follows:
 - a. The Contractor must make available to its subcontractors the necessary Contract Documents and must instruct such subcontractor to determine dimensions and conditions in the field, particularly in reference to coordination between the trade subcontractors. The Contractor must direct its subcontractors to prepare Shop Drawings for submission to the Design



Consultant in accordance with the requirements of these General Conditions. The Contractor must also direct its subcontractors to "Ring Up" corrections made on all re-submissions for approval, so as to be readily seen, and that the appropriate symbol per item 2 below (e.g., "GC") be used to identify the source of the correction or information that has been added.

The Contractor must:

- 1. Review and be responsible for information shown on its subcontractor's Shop and Installation Drawings and manufacturers' data, and 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 must promptly prepare and submit project specific layout detail and Shop Drawings of such parts of the Work as are indicated in the Specifications, or as required. These Shop Drawings must be made in accordance with the Contract Drawings, Specifications and Supplementary Drawings, if any. The Shop Drawings must 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, must 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 must be numbered consecutively and must 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
 - I. 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 must 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.



- 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 must be signed by the Contractor and, if applicable, the subcontractor responsible for preparation of the Shop Drawings. Each Shop Drawing must 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 must, in its statement, list and clearly describe each discrepancy.
- 8. 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.
- 9. Submission of Shop Drawings:
 - a. Initial Submission: The Contractor must submit seven (7) copies, or as requested by the Resident Engineer, of each Shop Drawing to the Design Consultant for his/her review and acceptance. If PDF drawings are requested by the Resident Engineer, they must be provided in an original "printed from digital" format, and not scanned. 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 digitally stamped "No Exceptions Taken", be dated and transmitted by the Design Consultant as follows:
 - 1) Addressed to the Contractor, with a cc to the following:
 - a) Design Consultant's sub consultant(s) as appropriate
 - b) DDC
 - 2) Should the Shop Drawing(s) be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will transmit 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 transmit each shop drawing to the Design Consultant. The Contractor must 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" will 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 must 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 must be transmitted to the subcontractors so affected. [These accepted Shop Drawings must 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 must make specific mention of such variations in its letter of Submittal. Acceptance of the Shop Drawings must constitute acceptance of the subject matter thereof only and not of any structural apparatus shown or indicated.
- H. Product Data:
 - 1. General: Except as otherwise prescribed herein, the submission, review, and acceptance of Product Data and Catalogue cuts must conform to the procedures specified in subsection 1.6 E, Shop Drawings.
 - 2. If information must be specially prepared for the Submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 3. Mark each copy of the 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.
 - I. 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 must 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 digitally stamped "No Exception Taken", be dated and transmitted as follows:



- 1) Addressed to the Contractor, with a cc to the following:
 - a) Design Consultant's sub consultant(s) as appropriate
 - b) DDC
- 2) Should the Product Data be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return one (1) set of such Product Data to the Contractor with the necessary corrections and changes to be made indicated and one (1) set to DDC.
- 7. Revisions: The Contractor must make such corrections and changes and again submit seven (7) copies of each Product Data for the review of the Design Consultant. The Contractor must 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" must be considered an "Accepted" Product Data and NEED NOT be resubmitted.
- I. Samples of Materials:
 - 1. For samples of materials involving electrical Work of any nature, refer to Section 01 35 06 GENERAL ELECTRICAL REQUIREMENTS.
 - 2. Samples must be in triplicate or as directed by the Resident Engineer, and of sufficient size to show the quality, type, range of color, finish and texture of the material.
 - 3. Each of the samples must 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 must be as required in the Specifications.
 - 7. Samples on Display: When samples are specified to be equal to approved product, they must 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 must 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 must be furnished equal in every respect to the accepted samples.
 - 9. The acceptance of any samples will be given as promptly as possible, and will be only for the characteristic color, texture, strength, or other feature of the material named in such acceptance, and no other. When this acceptance 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.
- J. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 - 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 - 2. Manufacturer and product name, and model number if applicable.
 - 3. Number and name of room or space.
 - 4. Location within room or space.
- K. Supplementary Qualification Data: Prepare written information that demonstrates capabilities and experience of entity. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- L. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- M. Certificates:
 - 1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 - 2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 - 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 - 4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
 - 5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 - 6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS formats. Include names of firms and personnel certified.
- N. Test and Research Reports:
 - 1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.



- 2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- 3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- 4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- 5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- 6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.
- O. 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.
- P. 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 must 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 must 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.
- Q. Engineering Services Submittals:
 - 1. Performance and Design Criteria: Refer to Section 01 40 00 QUALITY REQUIREMENTS, Article 1.5.
 - 2. Engineering Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and three paper copies of certificate, signed and sealed by the responsible professional engineer, for each product and system specifically required of the Contractor to be designed or certified by a professional engineer.
 - a. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.
 - 3. BIM Incorporation: Incorporate engineering services drawing and data files into BIM established for



Project.

a. Prepare engineering services documents in the required formats, including BIM incorporation.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.7

1.7 LEED SUBMITTALS:

- A. Comply with Submittal requirements specified in the following sections:
 - 1. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL;
 - Section 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS or Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 BUILDINGS, as applicable;
 - 3. Section 01 81 13.13 VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED v3 BUILDINGS;
 - 4. Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS;
 - 5. Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS; and/or,
 - 6. Section 01 91 15 BUILDING ENCLOSURE COMMISSIONING REQUIREMENTS.
- B. LEED Building Submittal information must be assembled into one package per each applicable Specification Section, separate from all other non-LEED Submittals. Each Submittal package must have a separate transmittal and identification as described in Subsection 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 Subsection 1.6 of Section 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 PROJECTS, or Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 BUILDINGS.
 - 1. Provide the quantity, length, area, volume, weight, and/or cost of each product submitted as required to satisfy LEED documentation requirements. Refer to Subsection 1.6 of Section 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 PROJECTS.

1.8 ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING:

A. In accordance with Section 01 10 00 SUMMARY, Subsection 1.10 E, the Contractor must 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 must be in accordance with the schedule, format, directions and procedures established by the Commissioner.



1.9 CONSTRUCTION PHOTOGRAPHS AND VIDEO RECORDINGS:

A. Submit construction progress photographs and Video recordings in accordance with requirements of Section 01 32 33 PHOTOGRAPHIC DOCUMENTATION.

1.10 AS-BUILT DOCUMENTS:

- A. Submit all as-built documents in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.
- PART II PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 33 00



(No Text on This Page)



SECTION 01 35 03 GENERAL MECHANICAL REQUIREMENTS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 03

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. The General Mechanical Requirements contained herein must 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 must 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: 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 must 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 must 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 must follow these Contract Drawings in laying out the Work and verify the spaces in which it will be installed. The Contractor must 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 ACCESS:

A. All Work must be installed by the Contractor to readily provide access for inspection, operation, maintenance and repair. Minor deviations from the arrangement indicated on the Contract Drawings may be made to accomplish this, but they must not be made without prior written approval by the Commissioner.

1.7 CHANGES IN PIPING, DUCTS, AND EQUIPMENT:

A. 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 must make such changes as directed and approved, without extra cost to the City.

1.8 CLEANING OF PIPING, DUCTS, AND EQUIPMENT:

A. Piping, ducts, and equipment must 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 must pay for repairs to other work damaged in the course of removing obstructions. For work on existing piping, ducts, and equipment, the Contractor must 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:

A. Unless otherwise particularly specified, all equipment of the same kind, type, or classification, used for identical purposes, must be the product of one (1) manufacturer.

1.10 SUPPORTING STRUCTURES DESIGNED BY THE CONTRACTOR:

A. Unless otherwise specified, supporting structures for equipment to be furnished by the Contractor must be designed by an Engineer licensed in New York State retained by the Contractor. Supporting structures must be built by the Contractor of sufficient strength to safely withstand all stresses to which they may be



subjected, within permissible deflections, and must meet the following standards:

- 1. Structural Steel ASTM Standard Specifications, AISC and New York City Construction Codes.
- 2. Concrete for supports for equipment must conform to the Specifications for concrete herein, but in no case must be less than the requirements of the New York City Construction Codes for average concrete.
- 3. Steel reinforcement for concrete must be of intermediate grade and must meet the requirements of the Standard Specifications for Billet Steel-Concrete Reinforcement Bars, ASTM.
- 4. Drawings and calculations must 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 must 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 must, 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 that is 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 must, 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:

A. As soon as conditions permit, the Contractor must furnish all necessary labor and materials for, and must 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 must, prior to the acceptance test, make all changes, adjustments, and replacements as required.

1.13 INSTRUCTIONS ON OPERATION:

A. At the time the equipment is placed in permanent operation by the City, the Contractor must make all adjustments and tests required by the Commissioner to prove that such equipment is in proper and satisfactory operating condition. The Contractor must 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:

A. On completion of the Work, the Contractor must obtain certificates of inspection, approval, and acceptance, and be in compliance with all laws from all agencies and/or entities having jurisdiction over the Work and must deliver these certificates to the Commissioner in accordance with Section 01 77 00 CLOSEOUT PROCEDURES. The Work will not be deemed substantially complete until the certificates have been delivered.

PART II – PRODUCTS (Not Used) PART III – EXECUTION (Not Used) END OF SECTION 01 35 03



(No Text on This Page)



SECTION 01 35 06 GENERAL ELECTRICAL REQUIREMENTS

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 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, must take precedence.
- B. This Section includes the following:
 - 1. Related Sections
 - 2. Definitions
 - 3. Procedure for Electrical Approval
 - 4. Submittals
 - 5. Electrical Installation Procedures
 - 6. Electrical Conduit System Including Boxes (Pull, Junction and Outlet)
 - 7. Electrical Wiring Devices
 - 8. Electrical Conductors and Terminations
 - 9. Circuit Protective Devices
 - 10. Distribution Centers
 - 11. Motors
 - 12. Motor Control 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: contains wire and raceway (rigid steel, heavy wall conduit unless specifically indicated otherwise).
- B. POWER WIRING: 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: 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: rigid steel heavy wall conduit that is hot-dip galvanized inside and outside. The conduit must 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 must be used for all exposed work, all underground conduits in contact with earth, and fire alarms systems, as required by the New York City Construction Codes.
- E. ELECTRICAL METALLIC TUBING (EMT): industry standard thin wall conduit of galvanized steel. All elbows, bends, couplings and similar fittings which are installed as a part of the conduit system must be compatible for use with electric metallic tubing. Couplings and terminating fittings must be of the pressure type as approved by the Commissioner. Set screw fittings will not be acceptable. EMT must meet the requirements of the latest edition, as amended, of the "Standard for Electrical Metallic Tubing" of the Underwriters Laboratories Inc. <u>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.</u>
- F. FLEXIBLE METALLIC CONDUIT (FMC): 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 must 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 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 must 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 must 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 must be made as required by the Commissioner of all electrical materials, electrical and associated mechanical equipment, and of appliances installed hereunder. The Contractor must 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, on written notice the Contractor must remove and promptly replace the materials to be in conformity with the Contract.
- D. CERTIFICATE OF THE BUREAU OF ELECTRICAL CONTROL, OF THE DEPARTMENT OF BUILDINGS (B.E.C.): Prior to requesting a substantial completion inspection, the Contractor must file a Certificate of Inspection issued by B.E.C. On completion of the Work, the Contractor must obtain certificates of inspection, approval, acceptance and compliance from all agencies and/or entities having jurisdiction over the work and must 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 must be responsible for the equipment until it has been inspected, tested and accepted, in accordance with the requirements of the Contract.
 - 2. After delivery, before and after installation, the Contractor must protect all equipment against theft, injury or damage from all causes. The Contractor must carefully store all equipment received for work which is not immediately installed. If any equipment has been subject to possible injury by water, it must 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, must be made by the same manufacturer.

1.6 SUBMITTALS:

- A. CONTRACTOR'S ELECTRICAL DRAWINGS AND SAMPLES FOR APPROVAL:
 - 1. The Contractor must 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 must be included. A letter, in triplicate, must accompany each submittal.
 - 2. The Contractor must 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 must 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 must 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 must submit a statement in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
- D. BULLETINS AND INSTRUCTIONS: The Contractor must 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 must 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 must 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 access for repairs, even if this selection is the costliest.
- 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; must be furnished and set by the Contractor installing the conduits. Sleeves in waterproofed floors must be provided with flashing extending twelve (12) inches in all directions from sleeve and secured to waterproofing. Flashing must be turned down into space between pipe and sleeve and caulked watertight. Flashing must be twenty (20) ounces cold rolled copper. Sleeves must be supplied with welded flanges similar to those supplied by the subcontractor for Plumbing Work and must extend one (1) inch above finished floor.
- D. COORDINATION: The Contractor must keep in close touch with the construction progress and promptly obtain the necessary information for the accurate placement of its work well 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 must be repaired or replaced by the Contractor. The Contractor must 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 must 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, must furnish this unit, ready for connection and operation, complete with internal wiring, connections, terminal boxes with



copper connectors and/or lugs and ample electrical leads. The cost of any wiring, re-wiring, or other work required to be done on this unit in the field, must 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 must 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 must be used throughout, unless otherwise directed by the Commissioner. Where the word 'conduit' is used without a modifier such as, rigid steel, EMT, etc., must 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 must be installed concealed in finished spaces.
 - 2. CONDUIT SIZES: The sizes of conduits must be as indicated on the Contract Drawings. Wherever conduit sizes are not indicated, the conduit must meet the requirements of the New York City Electrical Code to accommodate the conductors to be installed therein.
 - Conduits must be reamed smooth after cutting. No running threads will be permitted. Universal type couplings must be used where required. Conduit joints must be screwed up to butt. Empty conduits after installation must have all open ends temporarily plugged to prevent the entrance of water or other foreign matter.
 - 4. Conduits installed in concrete or masonry must be securely held in place during pouring and construction operations. A group of conduits terminating together must be held in place by a template.
 - 5. UNDERGROUND STEEL CONDUITS: Unless otherwise specified, all underground steel conduits in contact with earth must 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 must be one (1) part cement to four and one-half (4 ¹/₂) parts of fine and coarse aggregate.
 - 6. EXCAVATION RESTORATION PERMITS: When installing underground conduits, duct banks or manholes, the Contractor must 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 must 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 must secure and pay for all necessary permits, inspection fees, and the cost of repaving.
 - 7. EXPOSED CONDUIT SUPPORTS: Exposed conduits must be supported by Galvanized hangers with necessary inserts, beam clamps of approved design, or attached to walls or ceilings by expansion bolts. Exposed conduits must be supported or fastened at intervals not more than five (5) feet.



- 8. Exposed conduits must be installed parallel or at right angles to ceilings, walls and partitions. Where direction changes of exposed conduit cannot be made with neat bends, as may be required around beams or columns, conduit-type fittings must be used.
- 9. Conduit must be installed with an expansion joint approved by the Commissioner in the following conditions:
 - 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. Conduits may only enter and leave a floating slab in a vertical direction, and only in an approved manner. Horizontal entries into floating slabs are not permitted.
- 11. Conduits installed in pipe shafts must 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 must be provided to assure stability of the raceway system.
- 12. BUSHINGS AND LOCKNUTS: Approved bushings and locknuts must be used wherever conduits enter outlet boxes, switch boxes, pull boxes, panel board cabinets, etc.
- 13. CONDUIT BENDS: must be made without kinking conduit or appreciably reducing the internal diameter. All bends in conduits of two (2) inch in diameter or larger must be made with a hydraulic or power pipe bender. The radius of the inner edge of any bend must 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 ten (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 must 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 must be turned to approximately 85% of the internal diameter of the raceway to be tested. Two (2) short wire brushes must be included in the mandrel assembly. Snaking of conduits, ducts, etc., must be performed by the Contractor in the presence of the Resident Engineer. Any conduits or ducts which reject the mandrel must 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 must be assigned to the various conduit runs, and as they test clear they must 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, must be tagged.
 - c. TEST RECORDS: As the conduit runs clear, a record must 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 must be signed by the Resident Engineer and submitted in triplicate for approval. This record must be entered on the Contract Record Drawings under Section 01 78 39 CONTRACT RECORD DOCUMENTS.
 - d. CAPPING: After test, all empty conduit and duct openings, must be capped or plugged by the Contractor as directed.
 - e. DRAG LINES: A drag line must be left in all empty conduit.



- B. BOXES:
 - 1. The Contractor must furnish and erect all pull boxes indicated on the plans or where required. Sides, top and bottom of pull boxes must be Galvanized coated and must 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 must be removable and held in place by corrosion resistant machine screws. Pull boxes in damp locations must have threaded hubs and gaskets and be NEMA 4X. All pull boxes must 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 must be supported from the black iron or structure.
 - 3. The exact location of all outlets in finished rooms must be as directed by the Commissioner. When the interior finish has been applied, the Contractor must make any necessary adjustment of its work to properly center the outlets. All outlet boxes for local switches near doors must be located at the strike side of doors as finally hung, whether so indicated on the drawings or not.
 - 4. Exposed wall outlet boxes must be securely anchored, erected neatly and tight against the walls.
 - 5. All wall outlets of each type must be set accurately at the same level on each floor, except where otherwise specified or directed by the Commissioner. Where special conditions occur, outlets must be located as directed.
 - 6. MOUNTING HEIGHTS: The following heights are standard heights and are subject to correction due to coordination with Contract Drawings. All such changes must be approved by the Resident Engineer. Heights given are from finished floor to center line of outlet or device on wall or partition, unless otherwise indicated.

a.	General Convenience Outlets (mount vertical)	1'-6"
b.	Clock Outlets	8'-6"or 1'-6" below ceiling
C.	Wall Lighting Switches	4'-0"
d.	Motor Controllers	5'-0"
e.	Motor Push-button	4'-2"
f.	Telephone Outlets	As Directed by the Commissioner
g.	Fire Alarm Bells	8'-6"or 1'-6" below ceiling
ĥ.	Fire Alarm Stations	4'-0"
i.	Intercom Outlet	1'-6"
j.	Cooking and Refrigerator Unit	As Directed

- 7. Outlet boxes must be of a design and construction approved by the Commissioner. The type of box, including its form and dimensions, must be appropriate for: its specific location; the kind of fixture to be used; and, the conduits (both quantity and type) that will connect to it. All ferrous outlet boxes must meet the requirements for zinc coating as specified under Electrical Conduit Systems.
- 8. Knockouts will only be opened to insert conduit. Any outlet boxes with more openings than are necessary for conduit insertion must be sealed by the Contractor without additional charge.
- 9. All outlet boxes and junction boxes for exposed work must be galvanized cast iron or cast aluminum with threaded openings. Outlet boxes for exposed inside work in damp locations must be galvanized cast iron or cast aluminum with threaded hubs and neoprene gaskets.
- 10. Junction boxes must not be less than 4 11/16" square and must be equipped with zinc coated plates. Where plates are exposed they must be finished to match the room decor.



- 11. FIXTURE SUPPORTS: Outlet boxes supporting lighting fixtures must be equipped with fixture studs held by approved galvanized stove bolts or integral with the box. Cast iron or malleable boxes must have four (4) tapped holes for mounting required cover or fixtures.
- 12. Outlet boxes exposed to the weather or indicated W.P. must be cast iron or cast aluminum with the covers made watertight with neoprene gaskets. The boxes must have external lugs for mounting. Drilling of the body of the fitting for mounting will not be permitted. The cover screws must 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: must be of the best specification grade, quiet type, and must have a rating of 20 Amperes at 277 volts, as manufactured by Bryant, Hubbell or approved equal. The mechanism must be equipped with arc snuffers. They must be of the tumbler type, single pole. Switches of the 3-way type must have a similar rating.
- B. RECEPTACLES:
 - 1. CONVENIENCE OUTLETS: must be of the best specification grade, duplex, two-pole, 3-wire, 20 Amperes at 125 volts. It must have a grounding pole that must be grounded to the conduit system. Receptacles must be capable of both back and side wiring and must have only one (1) grounding screw. Receptacles must be Hubbell Catalog #5262 or approved equal.
 - 2. HEAVY DUTY RECEPTACLE OUTLETS: must have the Ampere rating and the number of poles specified on the Contract Drawings and must be Hubbell, Russell-Stoll, Bryant, AH & H or approved equal. Each outlet must have a grounding pole, which must be grounded to the conduit system.
 - 3. FLOOR RECEPTACLES: must 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 must 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 must be in a gasketed, cast iron enclosure.
- E. PLATES:
 - 1. Every convenience outlet and switch outlet must 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 must 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 must be of annealed copper of 98% conductivity. Aluminum wire or cable will not be permitted. The insulation must be flame retardant, moisture and heat resistant, thermoplastic, type THW or THWN rated for 600 volts at 75 degrees Celsius (C.) for both wet and dry locations. Wires No. 8 or larger must be stranded. Wires and cables must also



be subject to the requirements of the NYCEC. Cables for incoming service, or wire in conduits contiguous with the earth, in concrete, or other damp or wet locations, must be synthetic rubber insulated with neoprene jacket, heat and moisture resistant and must 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 must 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 must not be used for light or power.
- E. COLOR CODE: Wires must have a phase color code, and multiple conductor cables must be color coded.
- F. CABLE DATA: The Contractor must 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 must 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 must not be installed into conduit before the rough plastering work is completed. No conductors must be pulled into floor conduits before floor is poured.
 - 2. CONDUIT SECURED IN PLACE: No conductor must 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 must be left with sufficiently long ends for proper connection and stowing.
 - 4. PULLING COMPOUNDS: to ease the pulling-in of wires into the conduit, only approved compounds as recommended by cable manufacturers must be used.
 - 5. PRESSURE CONNECTORS: pressure connectors for wires must be of the cast copper or forged copper pressure plate type. Connectors must be O.Z., Burndy, National Electric Products or approved equal.
 - 6. Splices and feeder taps in the gutters of panel boxes must be made by means of pressure platetype 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, must 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 must be as approved by the connector manufacturer.



- b. For branch circuit wire and cable No. 6 AWG and larger, the seamless tubular connector will only be accepted. Application of this connector must be with a tool recommended by the connector manufacturer.
- 9. TAGS: All feeders and risers must be tagged at both ends, and in all pull and junction boxes and gutter spaces through which they pass. Such tags must be of fiber and have the feeder designation and size stamped thereon.
- 10. BRANCH CIRCUIT WIRING:
 - a. The Contractor installing branch circuit wiring must test the work for correct connections and leave all loop splices in the fixture outlet boxes properly spliced and taped. The Contractor must provide wire ends long enough for convenient connection to device.
 - b. NEUTRALS: No common neutrals must be used except for lighting branch circuits. Each neutral wire must be terminated separately on a neutral busbar in the panelboard. No common neutrals will be permitted for convenience receptacle branch circuits.
- I. TERMINATIONS
 - LUGS: All lugs for all devices and all cable terminations must 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 must be cast copper or forged copper pressure plate type. Lugs for 1/0 and larger must be fastened with two (2) bolts.
 - 2. All lugs must 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 ensure that the device terminations are adequate for the wire or cable (whose size may be larger than expected due to voltage drop considerations) connected to the device.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.5

3.5 CIRCUIT PROTECTIVE DEVICES:

This Section sets forth the circuit protective devices such as circuit breakers and safety switches, used in connection with Motor Control Equipment, Distribution Centers, Panel boards and Service Entrance.

- A. CIRCUIT BREAKERS:
 - 1. CIRCUIT BREAKERS: must be operable in any position and must be of the quick-make, quick-break type on manual operation. The handle must 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 must be provided, in addition to the "On" and "Off" indication. All circuit breakers must be of the bolted type.
 - 2. TRIP RATING: Circuit breakers must 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 must be designed to break all poles simultaneously. They must be provided with barriers between poles and arc suppressing devices.
 - 4. ELEMENTS: Multipole circuit breakers must have frames of not less than a 100 Ampere rating. Multipole circuit breakers for 480 volts AC operation must have an NEMA interrupting rating of 18,000 Amperes, unless a higher rating is specified in the Specifications 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 must be provided with interchangeable trip elements, which can be replaced readily.

- 6. Single pole circuit breakers for branch circuits must have a frame size of no less than 100 Amperes, and must 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 must 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 must 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 must insure constant calibration and be capable of withstanding excessive short circuit conditions without injury.
- 9. CONTACTS: must be non-welding under operating conditions and of the silver to silver type.
- 10. TEMPERATURE RISE: Current carrying parts, except thermal elements, must not rise in temperature in excess of 30 degrees C. while carrying current at the part's rated current and frequency.
- 11. NUMBERING: Each circuit breaker must be distinctly numbered when installed in a group with other breakers. The calibration of trip element must 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 must be of the type HD of a rating not less than 30 Amperes. Enclosures must be provided with means for locking. For ratings above 60 Amperes terminals must 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. PANEL BOARDS, GENERAL TYPE: The panel boards must be of the automatic circuit breaker type with individual breakers for each circuit, removable without disturbing the other units. Circuit breakers must be in accordance with the requirements outlined under Section 3.5, "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 must be distinctly numbered.
- C. BUS BAR CONSTRUCTION AND SUPPORT: Panel Boards must be of the dead front type and must have bus bars and branch circuits designed to suit the system and voltage. Current carrying parts, exclusive of circuit breakers, must be copper and based on a maximum density of 1,000 Amperes per square inch. Bus bars for the main switchboard must be designed for the frame rating of the Service Breaker. Bus bars must run up the center of the panel, unless otherwise indicated, and must have connected thereto the various branch circuits. Unless otherwise specified, bus bars for each panel board must be equipped with main lugs only and capacity as required on Contract Drawings. Where main protection is required, automatic circuit breakers must be used. A neutral bus of at least the same capacity as a live bus bar must be provided for the connection of all neutral conductors. Each terminal must be identified. All current carrying parts, exclusive of circuit breakers, must be of copper with a minimum number of joints. The bus bar structure must be a self-supporting unit, firmly fastened to a ¹/₂



inch plastic board, extending the full length and width of assembly which must 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 must separate neutral bus from other parts of panel.

- D. CIRCUIT BREAKER ASSEMBLY: The entire circuit breaker and bus bar assembly must be mounted on an adjustable metal base or pan and secured to the back of the panel box. The panel must have edges flanged for rigidity.
- E. PANEL MOUNTING: The panel must be centered in the panel box, line up with the door openings, be set level and plumb, and no live parts may be exposed with the door open.
- F. PANEL CABINET:
 - 1. PANEL CABINET INSTALLATION: When installed, surface mounted in panel closets must be mounted on Kindorf channel.
 - 2. Where cabinets cannot be set entirely flush due to mustow walls or partitions or where cabinet is extra deep, the protruding sides of cabinet must 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: Where required, nameplates must be made of engraved Lamicoid sheet, or approved equal. Letters and numbers must be engraved white on a black background (except for Firehouse projects which must have white letters on a red background). The Contractor must submit an engraved sample for approval as to design and style of lettering before proceeding with the manufacture of the nameplate. Nameplates must be of suitable size and must 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 must 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., must be submitted for approval.
- I. DIRECTORIES: A directory must 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 must be typewritten and show the number and name of each circuit, and lighting or equipment supplied. The size of riser feeder must be as indicated on the directory. The dimensions of the directory must be submitted for approval for each size of panel.
- J. CONSTRUCTION
 - 1. FINISH: Panel boxes, doors and trim for installation in dry locations, must be zinc coated after fabrication by the hot-dip galvanizing or electroplate process on inside and outside surfaces. In damp locations, panel boards must be enclosed and gasketed NEMA 3R type. Panel boards located outdoors or exposed to the weather must be NEMA 3X type.
 - 2. PAINTING: Panel boxes, doors and trim must receive a coat of approved priming paint and a second coat of approved paint in the field after installation. Paint must be applied to the inside and outside of boxes and on both sides of trim. Panel trims and doors must 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 must apply to all



motors furnished in the Contract.

- A. MOTOR DESIGN: All motors must 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 must prevail. Motors must have standard NEMA frames and must have nameplate ratings adequate to meet the specified conditions of operation. Motor performance under variable conditions of voltage and frequency must be within the limits set in NEMA standards, unless modified in the Specifications. Motors must be expressly designed for the hazard duty load, voltage and frequency as specified in the Contract. All motor windings must be copper. All motors intended to operate on a 208 volt system must 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 must be considered as a standard for comparison. The requirements of the NEMA standards for motors and generators must 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 must bear a nameplate lettered "Quiet Motor." Springs and slip rings must be of approved non-ferrous material.
- D. BEARINGS:
 - 1. Bearings, unless specified otherwise, must be of the ball or roller type. Motors one (1) horsepower and larger that are equipped with ball roller bearings must also have lubrication of the pressure-relief greasing type. The Contractor furnishing four (4) or more such motors must also furnish, as part of the Contract, a pressure grease gun of rugged design, of approximately ten (10) ounce capacity, complete with necessary adapters. The Contractor must also provide ten (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 must, in addition to having protected fittings easily accessed for oiling, be provided with visible means for determining normal oil level. Lubrication must be positive, automatic and continuous.
- E. MOTOR TERMINALS AND BOXES: Each motor must 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 must be furnished of ample size to make and house motor connections. These requirements must be met irrespective of any other standards or practices. Size of cable terminals and conduit terminal box holes must be subject to approval. For motors five (5) horsepower or larger, each terminal must 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 must be of cast iron with threaded hubs and gasketed covers. Cover screws must be of non-corrosive material.
- F. MOTOR TEMPERATURE RISES: The motor nameplate temperature rises for the various types of motor enclosures must be as listed below:

 Open Frame Totally enclosed and enclosed Explosion proof and subme Partially enclosed and dripped 	40 degrees C. sed fan cooled 55 degrees C. rsible 55 degrees C. proof 40 degrees C.
--	--

The temperature of the various parts of a motor must meet the requirements of NEMA standards for the size and type of the motors. Tests for heating must 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 must comply in design and safety features with such applicable codes, regulations and rulings, and must 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 must not exceed 1/4 horsepower.
- I. MOTORS RATED: ¹/₂ horsepower and larger must 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 must 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 must 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 breakers, magnetic starters 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 must furnish as many of these items as 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 must 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 thirty (30) horsepower, must have magnetic across the line starters; motors rated above thirty (30) horsepower must be furnished with reduced voltage (autotransformer type) starter or part winding start with time delay to reduce inrush current. Size of starters must be based on 200V operation.
 - 2. SLIP RING: A.C. motors of the slip-ring type must be furnished with primary across the line starters interlocked with secondary starting and regulating equipment. The interlocking feature must 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 must 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 must be provided.



- D. DISCONNECTING BREAKER: All motor starters, unless otherwise specified, must 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 must be contained in the same housing with the starter and must be operable from outside. Means must 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 must 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 must be provided.
- G. PANELS: Motor control devices and appliances must be mounted on approved insulating slabs with all wiring and connections made on the back of the slabs.
- H. WIRING AND TERMINALS: Wiring connections for currents of one hundred (100) Amperes or less may be made with copper wire or cable with special flameproof insulating coverings. Such wires must be installed in a neat workmanlike manner, flat against the slab, and held in place by clips. Connections must 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 must 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.
- I. COPPER BUS: For currents exceeding one hundred (100) Amperes, copper bus must be used in place of wires. The bus must 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 must provide sufficient areas to keep current density at not more than one thousand (1,000) Amperes per square inch.
- J. COOPERATION: The Contractor's subcontractor(s) who furnish electrically operated equipment must 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.

END OF SECTION 01 35 06



(No Text On This Page)



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 and / or Contaminated 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" must 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, one or more safety representatives, the Commissioner's designated representatives and other concerned parties for the purpose of reviewing the Contract safety requirements. Additionally, implementing Work safety provisions must 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 29 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. Additionally, Work shall 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, the Contractor must submit to the Resident Engineer copies of shipping manifests, permits from applicable federal, state, or local authorities and disposal facilities, and certificates that the material has been disposed of in accordance with regulations.
- 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 Office of Environmental and HazMat Services (OEHS) through the Resident Engineer.
- E. Request for Subcontractor Approval: Any subcontractor performing environmental work must submit required documentation for approval to perform such work as required by DDC's OEHS.

PART II – PRODUCTS

2.1 PERSONNEL PROTECTIVE EQUIPMENT:

A. 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 AND / OR CONTAMINATED 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 and / or contaminated.
- B. The Commissioner shall determine whether the Contractor shall perform tests to determine if the material is hazardous and / or contaminated. 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 the Work may resume.
- D. The Contractor shall not be allowed any extension of time or compensation for damages in connection with a work stoppage for an unsafe condition.

3.2 **PROTECTION OF PERSONNEL:**

- A. The Contractor shall take all necessary precautions to prevent injury to the public, occupants, or damage to property of others. The public and occupants includes all persons not employed by the Contractor or a subcontractor.
- B. Whenever practical, the work area shall be fenced, barricaded, or otherwise blocked off from the public or occupants to prevent unauthorized entry into the work area, in compliance with the requirements of Section 01 50 00 TEMPORARY FACILITIES, SERVICES AND CONTROLS, and including without limitation, the following:
 - 1. Provide traffic barricades and traffic control signage where construction activities occur in vehicular areas.
 - 2. Corridors, aisles, stairways, doors, and exit ways shall not be obstructed or used in a manner to encroach upon routes of ingress or egress utilized by the public or occupants, or to present an unsafe condition to the public or occupants.
 - 3. Store, position and use equipment, tools, materials, scraps and trash in a manner that does not present a hazard to the public or occupant by accidental shifting, ignition, or other hazardous activity.
 - 4. Store and transport refuse and debris in a manner to prevent unsafe and unhealthy conditions for the public and occupants. Cover refuse containers and remove refuse on a frequent regular basis acceptable to the Resident Engineer. Use tarpaulins or other means to prevent loose transported materials from dropping from trucks or other vehicles.

3.3 ENVIRONMENTAL PROTECTION:

- A. Dispose of solid, liquid and gaseous contaminants in accordance with local codes, laws, ordinances and regulations.
- B. Comply with applicable federal, state, and local noise control laws, ordinances, and regulations, including but not limited to 29 CFR 1910.95, 29 CFR 1926.52 and NYC Administrative Code Chapter 28 of Title 15.

END OF SECTION 01 35 26



(No Text on This Page)



SECTION 01 35 91 HISTORIC TREATMENT PROCEDURES

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 91

PARTI- 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. General Protection
 - 3. Protection during use of heat-generating equipment
 - 4. Photographic Documentation
 - 5. 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" means 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 (NYC) 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 the Work.
- B. Alternative Methods and Materials: If alternative methods and materials to those indicated are proposed for any phase of the Work, submit for the Commissioner's approval a written description, including



evidence of successful use on other comparable projects and provide a program of planned testing to demonstrate the effectiveness of the alternative methods and materials for use on this Project.

- C. Qualification Data: Submit qualification data for historic treatment specialists as specified and required by individual sections of the Project specifications.
- 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. Historic Treatment Specialist Qualifications: Refer to Section 01 40 00 QUALITY REQUIREMENTS for Qualifications for Historic Treatment Specialists.
- 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 GENERAL PROTECTION:

- A. Comply with manufacturer's written precautions against harmful effects of products and procedures on adjacent building materials, components, and vegetation.
- B. Ensure that supervisory personnel are present when work begins and throughout 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 must 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 eight (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 the Commissioner immediately of drains or systems that are stopped or blocked. Do not begin Work pertaining to 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 the 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 will 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 must be given for each occurrence and location of work with heat-generating equipment.
 - 2. Where possible, 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 the 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 thirty (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:

A. 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:

A. For all projects involving a Landmark Structure or Site, the Contractor, at the completion of the Work, must 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 must 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 NYC Landmarks Preservation Commission jurisdiction.

END OF SECTION 01 35 91



(No Text on This Page)



SECTION 01 40 00 QUALITY REQUIREMENTS

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. Definitions
 - 2. Engineering Services
 - 3. Conflicting Requirements
 - 4. Quality Assurance
 - 5. Quality Control
 - 6. Approval of Materials
 - 7. Special Inspections (Controlled Inspection)
 - 8. Inspections by Other City Agencies
 - 9. Certificates of Approval
 - 10. Acceptance Tests
 - 11. 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 Documents.
- D. Specified tests, inspections, and related actions do not limit Contractor's other quality assurance and quality control procedures that facilitate compliance with the Contract Documents.
- E. Provisions of this section do not limit requirements for the Contractor to provide quality assurance and quality 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 the 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 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS or Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 BUILDINGS.
- H. COMMISSIONING: Refer to the Addendum to identify whether the Project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning must be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS and/ or Section 01 91 15 GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE. The Contractor must 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" means 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.
- D. Installer/ Applicator/ Erector: Contractor or another entity engaged by Contractor as an employee or Subcontractor, to perform installation, erection, application, assembly and similar operations.
- E. Mockups: Full-size physical assemblies that are constructed on-site either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under sample Submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
- F. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- G. Product Tests: Tests and inspections that are performed by a Nationally Recognized Testing Laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- H. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory means the same as testing agency.



- J. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- K. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements.

1.5 ENGINEERING SERVICES

- A. Performance and Design Criteria: Where professional design services provided by a professional engineer are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are insufficient to perform services or certification required, submit a written request for clarification to the Commissioner.

1.6 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 must comply with the most stringent requirement. The Contractor must 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 must 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 must refer any uncertainties to the Commissioner for a decision before proceeding.

1.7 QUALITY ASSURANCE:

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required. Individual Specification Sections may specify supplementary qualification requirements.
 - 1. **Minimum Experience**: Minimum Experience qualification levels as described herein, apply to all entities indicated in the Specification Sections for the Project, unless such entity requires Special Experience requirements per Subsection 1.7 A.2. below. Individual Specification Sections may specify supplementary qualification requirements.
 - 2. **Special Experience**: Special Experience qualification levels as described herein, apply to all entities indicated in the "Special Experience Requirements" page of the PASSPort procurement. Individual Specification Sections may specify supplementary qualification requirements.

B. Minimum Experience qualification levels:

- 1. **Qualifications for Installer or Applicator or Erector**: An entity complying with the requirements of authorities having jurisdiction; having a minimum of three (3) consecutive years of experience in installing, erecting, applying, or assembling work in a timely fashion similar in material, design, and extent to that indicated for the Project, and whose work has resulted in construction with a record of successful in-service performance.
- 2. Qualifications for Installer or Applicator or Erector requiring approval or certification or



authorization by Manufacturer: An entity complying with the requirements of authorities having jurisdiction; having a minimum of three (3) consecutive years of experience in installing, erecting, applying, or assembling work in a timely fashion similar in material, design, and extent to that indicated for the Project, and whose work has resulted in construction with a record of successful in-service performance. In addition, the entity must be approved, or certified, or authorized by the manufacturers listed in the Specification Section and must be eligible to receive manufacturers' warranty.

- 3. **Qualifications for Fabricator**: An entity complying with the requirements of authorities having jurisdiction; having a minimum of three (3) consecutive years of experience in producing products similar to those indicated for the Project; having a record of successful in-service performance, and having sufficient production capacity to produce required units.
- 4. **Qualifications for Manufacturer**: An entity complying with the requirements of authorities having jurisdiction; having a record of a minimum of three (3) consecutive years in manufacturing products or systems similar to those indicated for the Project; having a record of successful in-service performance for not less than three (3) years and having sufficient production capacity to produce required units. Manufacturer must meet warranty requirements and technical or factory-authorized service representative requirements.
- 5. **Qualifications for Specialist:** An entity complying with the requirements of authorities having jurisdiction; satisfying qualification requirements indicated in the Specification Section and having a record of a minimum of three (3) consecutive years of experience successfully engaged in the activities indicated.

C. Special Experience Qualification Levels:

- 1. **Special Qualifications for Installer or Applicator or Erector**: An entity complying with the requirements of authorities having jurisdiction; having, prior to the bid opening, a minimum of five (5) consecutive years of experience in installing, erecting, applying, or assembling work similar in material and design to that indicated for the Project, and whose work has resulted in construction with a record of successful in-service performance on a minimum of three (3) projects similar in scope and size required for the Project.
- 2. **Special Qualifications for Fabricator**: An entity complying with the requirements of authorities having jurisdiction; having a minimum of five (5) consecutive years of experience in producing products similar to those indicated for the Project; having completed a minimum of three (3) projects similar in nature, size, and extent, to the requirement of the project; having a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- 3. **Special Qualifications for Installer of a Manufacturer-Warrantied Roof System:** An entity complying with the requirements of authorities having jurisdiction; regularly engaged in performing roofing projects with its own workforce; having successfully completed in a timely fashion within the last three (3) consecutive years prior to the bid opening, at least three (3) roofing projects similar in scope, size and type to the required Project, and having performed at least one (1) of those projects in the last twelve (12) months. The three (3) qualifying projects must have utilized one or more of the roofing systems specified for the project being bid herein, been installed by the entity utilizing its own workforce and must have qualified for, and have been issued, the warranty provided by the manufacturer of the roofing systems specified herein and must submit proof of same.



- 4. **Special Qualifications for Installer of Roof tie-in to maintain existing Roof System Warranty:** An entity complying with the requirements of authorities having jurisdiction; regularly engaged in performing roofing projects with its own workforce; having successfully completed in a timely fashion within the last three (3) consecutive years prior to the bid opening, at least three (3) roofing projects similar in scope, size and type to the required Project, and having performed at least one (1) of those projects in the last twelve (12) months. The three (3) qualifying projects must have utilized the manufacturer and manufacturer's Product, been installed by the entity utilizing its own workforce and must have qualified for, and have been issued, the warranty provided by the manufacturer listed in the technical specification. In addition, the entity must be a certified or authorized installer for this manufacturer's specified roofing system specified herein and must submit proof of same.
- 5. **Special Qualifications for Manufacturer:** An entity complying with the requirements of authorities having jurisdiction; having a minimum of five (5) consecutive years of experience in manufacturing products or systems similar to those indicated for the Project; having completed a minimum of three (3) projects similar in nature, size, and extent, to the requirements of the project; having a record of successful in-service performance, as well as sufficient production capacity to produce required units. Manufacturer must meet warranty requirements, and technical or factory-authorized service representative requirements.
- 6. **Special Qualifications for Historic Treatment Specialist:** An entity complying with the requirements of authorities having jurisdiction; having prior to the bid opening, a minimum of five (5) consecutive years of experience in completing in a timely fashion at least three (3) projects similar in scope, size, and type to the required work, based on architectural style, construction method and materials and age of building for the project. One (1) such prior project of the three (3) must have involved a landmarked building, as officially designated by the City, State, or Federal government.
- D. Professional Engineer Qualifications: A professional engineer who is licensed and registered 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 the Project in material, design, and extent.
- E. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for the Project.
- F. Testing Agency Qualifications: A Nationally Recognized Testing Laboratory (NRTL), a National Voluntary Laboratory Accreditation Program (NVLAP), or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E329 (Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection); and with additional qualifications specified in individual Specification Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- G. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same



tasks for Project.

- e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
- f. When testing is complete, remove test specimens and test assemblies, and mockups, and laboratory mockups; do not reuse products on Project.
- 2. Testing Agency Responsibility: Submit a certified written report of each test, inspection, and similar quality-assurance service to Commissioner, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- H. 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 Commissioner.
 - 2. Notify Commissioner 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.
- I. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings or as indicated on Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials. Comply with requirements in "Mockups" Paragraph in this Section.
- J. Room Mockups: Construct room mockups according to approved Shop Drawings or as indicated on Drawings, incorporating required materials and assemblies, finished according to requirements. Provide required lighting and additional lighting where required to enable Architect to evaluate quality of the Work. Comply with requirements in "Mockups" Paragraph in this Section.
- K. Laboratory Mockups: Comply with the requirements of preconstruction testing and those specified in individual Specification Sections.

1.8 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. (Refer to Special Inspections Article 1.10.)
 - 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 must provide quality control services as set forth in the Specifications and those 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 will be borne by the Contractor and will be deemed to be included in the Contract price. The Contractor must 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 must 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 must not employ same entity engaged by the City, unless agreed to in writing by the Commissioner.
- 4. The Contractor must notify testing agencies and the Commissioner 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 must submit a certified written report of each quality-control service, in triplicate, to the Commissioner.
- 6. Testing and inspecting requested by the Contractor and not required by the Contract Documents are Contractor's responsibility.
- 7. The Contractor must 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 must engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Results must be submitted in writing as specified in Section 01 33 00 SUBMITTAL PROCEDURES. Manufacturer's field representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- D. Retesting/Re-inspecting: Regardless of whether the original tests or inspections were the Contractor's responsibility, the Contractor must provide quality control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Commissioner and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Commissioner and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar qualitycontrol service through Contractor.
 - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 - 6. Do not perform duties of Contractor.
- F. Associated Services: The Contractor must cooperate with entities performing required tests, inspections, and similar quality control services, and must provide reasonable auxiliary services as requested. The Contractor must 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.
- G. Coordination: Coordinate sequence of activities to accommodate required quality assurance and quality control services with minimal delay and 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.
- H. Manufacturer's Directions: Where the Specifications provide that the manufacturer's directions are to be used, such printed directions must be submitted to the Commissioner.
- I. 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 will be subject to prior written approval by the Commissioner.
 - 1. NOTICE The Contractor must 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 must 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.
- J. No Shipping Before Inspection: The Contractor must comply with the foregoing before shipping any material.
- K. Certificate of Manufacture: When the Commissioner so requires, the Contractor must 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 must 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 the Bureau of Standards and Appeals (B.S.A.), the Materials and Equipment (M.E.A.) acceptance Index, the Bureau of Electrical Control (B.E.C.), etc.
- L. Acceptance: When materials or manufactured products comprise of 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.
- M. Testing Compliance: The testing personnel must make the necessary inspections and tests, and the reports thereof must 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.
- N. Reports: Reports in duplicate must be submitted and authoritative certification thereof must be furnished to the Commissioner as a prerequisite for the acceptance of any material or equipment.



- O. 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.
- P. Furnish Designated Materials: Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Specifications, the Contractor must immediately proceed to furnish the designated material or equipment.

1.9 APPROVAL OF MATERIALS:

- A. Local Laws: All materials, appliances and types or methods of construction must be in accordance with the Specifications and must in no event be less than that necessary to conform to the requirements of the New York City (NYC) 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 must 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 has a plant of ample capacity and have successfully produced similar products. All approvals of materials or equipment that are legally required by the NYC Construction Codes and other governing authorities must be obtained prior to installation.
- C. All Materials: Fixtures, fittings, supplies and equipment furnished under the Contract must 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 must 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 must inform the manufacturer or dealer of all the General Conditions and requirements herein contained.

1.10 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 NYC Construction Codes, will 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 will be an entity that is in compliance with the requirements of the NYC Construction Codes. The Contractor must 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 will 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 must notify the relevant Special Inspector in writing at least 72 hours before the commencement of any Work requiring Special Inspection. The Contractor will be responsible for



and bear related costs to assure that all construction or work has suitable access and remains exposed for inspection purposes until the required inspection is completed.

- 4. Inspections and tests performed under "Special Inspection" will 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.

1.11 INSPECTIONS BY OTHER CITY AGENCIES:

Department of

Design and

Construction

- A. Letter of Completion: Just prior to Substantial Completion of the 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.

1.12 CERTIFICATES OF APPROVAL:

- A. Responsibility: The Contractor will be responsible for and must 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 must be forwarded to the DDC.

1.13 ACCEPTANCE TESTS:

- A. Government Agencies: All equipment and appliances furnished and installed under the Contract must conform to the requirements of the Specifications and will 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 will give to all concerned, written notice 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 must 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 will 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 must only proceed as directed by the Commissioner. Additional costs resulting from retesting, re-inspecting, replacing of material and/or damage to the Work and any delay caused to the schedule will be borne by the Contractor.

PART II – PRODUCTS (Not Used)



PART III – EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, the Contractor must repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

END OF SECTION 01 40 00



(No Text on This Page)



SECTION 01 42 00 REFERENCES

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 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 will mean and intend approved, acceptable, or satisfactory to the Commissioner.
- C. Design Consultant: "Design Consultant" means 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 will, 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.B.A	Architectural Barriers Act
A.D.A.A.G.	Americans with Disabilities Act (ADA) Accessibility Guidelines
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
N.Y.C.P.C.	New York City Plumbing Code
N.Y.C.B.C.	New York City Building Code
N.Y.C.M.C.	New York City Mechanical Code New York
N.Y.C.F.G.C.	New York City Fuel Gas Code
N.Y.S. D.O.L	New York State Department of Labor
N.Y.C.D.O.B.	New York City Department of Buildings
N.Y.C.D.E.P.	New York City Department of Environmental Protection
N.Y.C.D.O.T.	New York City Department of Transportation
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.SD.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 must 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 N.Y.C.C.C. adopts a different or earlier dated version of such standard. All references to the ICC A117.1 are only to the 2009 version, whether or not a specific version is specified.
- 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
- AAPFCO Association of American Plant Food Control Officials
- 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)
- ACAC American Council for Accredited Certification
- ACPA American Concrete Pipe Association
- AEIC Association of Edison Illuminating Companies, Inc. (The)
- AF&PA American Forest & Paper Association
- AGA American Gas Association
- AGC Associated General Contractors of America (The)
- AGMA American Gear Manufacturer Association
- AHA American Hardboard Association (Now part of CPA)
- AHAM Association of Home Appliance Manufacturers



- AI Asphalt Institute
- AIA American Institute of Architects (The)
- AIEE American Institute of Electrical Engineers
- AIHA American Industrial Hygiene Association
- 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 (Formerly: 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 Building Industry Consulting Services International
- BIFMA BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
- BISSC Baking Industry Sanitation Standards Committee
- CIBSE Charted Institute of Building Services Engineers
- CCC Carpet Cushion Council
- CDA Copper Development Association
- CEA Consumer Electronics Association
- CESB Council of Engineering and Scientific Specialty Boards
- CFFA Chemical Fabrics & Film Association, Inc.
- CFSEI Cold-Formed Steel Engineers Institute
- 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)
- CSSA Certified Steel Stud Association
- 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
- FEMA Federal Emergency Management Agency
- FIBA Federation Internationale de Basketball Amateur (The International Basketball Federation)
- FIVB Federation Internationale de Volleyball (The International Volleyball Federation)
- FMG FM Global (Formerly: FM Factory Mutual System)
- FMRC Factory Mutual Research (Now FMG)
- FRSA Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
- FSA Fluid Sealing Association
- FSC Forest Stewardship Council
- GA Gypsum Association
- GANA Glass Association of North America
- GRI (Now GSI)
- GS Green Seal
- GSI Geosynthetic Institute
- 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
- IICRC Institute of Inspection, Cleaning, and Restoration
- ILIA Indiana Limestone Institute of America, Inc.
- IPEMA International Play Equipment Manufacturers Association
- ISA International Society of Arboriculture
- ISO International Organization for Standardization
- ISSFA International Solid Surface Fabricators Association
- ITS Intertek
- ITU International Telecommunication Union
- KCMA Kitchen Cabinet Manufacturers Association
- LMA Laminating Materials Association (Now part of CPA)



- LPI Lightning Protection Institute
- MBMA Metal Building Manufacturers Association
- MFMA Maple Flooring Manufacturers Association, Inc.
- MFMA Metal Framing Manufacturers Association
- MH Material Handling (Now MHIA)
- MHIA Material Handling Industry of America
- MIA Marble Institute of America
- MIL Military Specification Standards of the US Dept of Defense
- MPEG Moving Picture Experts Group
- 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
- NBA National Basketball 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
- NICET National Institute for Certification in Engineering Technologies
- 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
- NRDCA National Roof Deck Association
- NRMCA National Ready Mixed Concrete Association
- NSF NSF International (National Sanitation Foundation International)
- NSSGA National Stone, Sand & Gravel Association
- NTMA National Terrazzo & Mosaic Association, Inc. (The)
- NTRMA National Tile Roofing Manufacturers Association (Now TRI)
- NWWDA National Wood Window and Door Association (Now WDMA)
- OPL Omega Point Laboratories, Inc. (Acquired by ITS Intertek)
- PCI Precast / Pre-stressed Concrete Institute



- PDCA Painting & Decorating Contractors of America
- PDI Plumbing & Drainage Institute
- PGI PVC Geomembrane Institute
- PLANET Professional Landcare Network (Formerly: ACLA Associated Landscape Contractors of America)
- PPS Power Piping Society
- PTI Post-Tensioning Institute
- RCSC Research Council on Structural Connections
- RFCI Resilient Floor Covering Institute
- RIS Redwood Inspection Service
- RMI Rack Manufacturers Institute
- RTI (Formerly: NTRMA National Tile Roofing Manufacturers Association) (Now TRI)
- RUS Rural Utilities Service, Department of Agriculture
- 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)
- SFIA Steel Framing Industry Association



- 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
- SSMA the Steel Stud Manufacturers Association
- SSPC SSPC: The Society for Protective Coatings
- SSSA Soil Science Society of America
- STI Steel Tank Institute
- SWI Steel Window Institute
- SWRI Sealant, Waterproofing, & Restoration Institute
- TABB Testing, Adjusting, and Balancing Bureau
- TCA Tile Council of America, Inc.
- TIA/EIA Telecommunications Industry Association/Electronic Industries Alliance
- TMS The Masonry Society
- TPI Truss Plate Institute, Inc.
- TPI Turfgrass Producers International
- TRI Tile Roofing Institute (Formerly: RTI Roof Tile Institute)
- UL Underwriters Laboratories Inc.
- ULC Underwriters Laboratories of Canada



- UNI Uni-Bell PVC Pipe Association
- USAV USA Volleyball
- USC United States Code
- USGBC U.S. Green Building Council
- USITT United States Institute for Theatre Technology, Inc.
- WASTEC Waste Equipment Technology Association
- WCLIB West Coast Lumber Inspection Bureau
- WCMA Window Covering Manufacturers Association (Now WCSC)
- WCSC Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association)
- WDMA Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)
- WNBA Women's National Basketball 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



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SECTION 01 50 00 TEMPORARY FACILITIES, SERVICES AND CONTROLS

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. Temporary Water System
 - 2. Temporary Sanitary Facilities
 - 3. Temporary Electric Power, Temporary Lighting System, and Site Security Lighting
 - 4. Temporary Heat
 - 5. Dewatering Facilities and Drains
 - 6. Temporary Field Office for Contractor
 - 7. DDC Field Office
 - 8. Material Sheds
 - 9. Temporary Enclosures
 - 10. Temporary Partitions
 - 11. Temporary Fire Protection
 - 12. Work Fence Enclosure
 - 13. Rodent and Insect Control
 - 14. Plant Pest Control Requirements
 - 15. Project Identification Signage
 - 16. Project Construction Sign and Rendering
 - 17. Security Guards/Fire Guards on Site
 - 18. 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.



<u>Term</u>	Definition
Design Consultant	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.
Permanent Enclosure	As determined by the 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.

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 will 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. The Contractor must install, operate, maintain and protect temporary facilities, services, and controls, including without limitation:
 - 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; and
 - 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 must provide the temporary services, facilities and controls set forth in this section during non-regular working hours if the Contract Drawings and/or the Specifications indicate that the Work, or specific components thereof, must be performed during non-regular working hours. In such case, all costs for the provision of temporary services, facilities and controls during non-regular working hours will be deemed included in the total Contract price.
- B. The Contractor must provide the temporary services, facilities and controls set forth in this section during non-regular working hours if a change order is issued directing the Contractor to perform the Work, or specific components thereof, during non-regular working hours. In such case, compensation for the provision of temporary services, facilities and controls during non-regular working hours will be provided



through the change order.

1.8 SERVICES BEYOND COMPLETION DATE:

A. The Contractor must 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 Final Approved Punch List Work, as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. The Contractor must 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. The Contractor must provide undamaged materials in serviceable condition and suitable for use intended.
- B. Tarpaulins: Waterproof, fire-resistant UL labeled with flame spread rating of fifteen (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 New York City Department of Environmental Protection (DEP).

2.2 EQUIPMENT:

- A. The Contractor must provide undamaged equipment in serviceable condition and suitable for use intended.
- B. Water Hoses: Heavy-duty abrasive-resistant flexible rubber hoses, one hundred (100) feet (thirty (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 do 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. The Contractor must 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. The Contractor must provide each facility ready for use when needed to avoid delay. The Contractor must not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities as approved by the Resident Engineer.



3.2 TEMPORARY WATER SYSTEM:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 A

- A. TEMPORARY WATER SYSTEM NEW FACILITIES: During construction, the Contractor must furnish a Temporary Water System as set forth below.
 - 1. Immediately after the Commissioner has issued an order to start the Work, the Contractor must file an application with DEP 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 the Work, the Contractor must file an application with DEP's Bureau of Water Supply and obtain a permit to install the temporary water supply system. The system must be installed and maintained for the use of the Contractor and its subcontractors. A copy of the above-mentioned permit must be filed with the Commissioner. The Contractor must 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 must 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 must take the necessary precautions to prevent the temporary water system from freezing. The Contractor must 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 will 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 will 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 must restore the existing water system to conditions existing before initial use.
 - 2. The Contractor will be responsible for all repairs to the existing water system permitted to be used for temporary water service during construction. The Contractor will 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 New York City Water Board Water and Wastewater Rate Schedule.
- C. WASH FACILITIES: The Contractor must 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, including without limitation:
 - 1. Dispose of drainage properly;
 - 2. Supply cleaning compounds appropriate for each condition; and
 - 3. Include safety showers, eyewash fountains and similar facilities for the convenience, safety and sanitation of personnel.
- D. DRINKING WATER FACILITIES: The Contractor must provide drinking water fountains or containerized tapdispenser bottled-drinking water units, complete with paper cup supplies. Where power is available, provide



electric water coolers to maintain dispensed water temperature at forty-five (45) to fifty-five (55) deg. F (7 to 13 deg. C).

3.3 TEMPORARY SANITARY FACILITIES:

A. The Contractor must 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:
 - The Contractor must provide temporary single-occupant toilet units of the chemical, aerated recirculation, or combustion type for use by all construction personnel. Units must be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Quantity of toilet units must comply with the latest Occupational Safety and Health Administration (OSHA) regulations.
 - 2. Toilets: The Contractor must 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 must arrange for the use of existing toilet facilities by all personnel during the execution of the Work. The Contractor will be responsible to clean and maintain facilities in a condition acceptable to the Resident Engineer and, at Substantial Completion, to restore facilities to the condition at the time of initial use.
 - 2. MAINTENANCE The Contractor must maintain the temporary toilet facilities in a clean and sanitary manner and make all necessary repairs.
 - 3. NUISANCES The Contractor must not cause any sanitary nuisance to be committed by its employees or the employees of its subcontractors in or about the Work and must 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 must 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 must 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 must be provided as follows: The Contractor must make all necessary arrangements with the public utility company and pay all charges for the Temporary Electric Power system. The Contractor must 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 will make payment directly to the public utility company.

- b. APPLICATIONS FOR METER: The Contractor must complete an 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 must 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 must 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 must not be less than one hundred (100) Amperes, 3-phase, 4-wire and must be of sufficient capacity to take care of all demands for all construction operations and must meet all requirements of the New York City Electrical Code.

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 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 must 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 must provide, maintain and pay all costs for separate temporary electric power for any temporary power for equipment larger than 1/4 horsepower. When directed by the Commissioner, the Contractor must 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 must 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 must 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 will be responsible for all costs due to this change over of service and it must 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 must 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 will be under the supervision of the Contractor, but this will 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 will 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 must provide adequate service for the temporary lighting system, or a minimum of one hundred (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 must 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 must be located near entrance on ground floor.
 - 3. ITEMS: The Temporary Lighting System provided by the Contractor must 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 will 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, as 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, will be borne by the Contractor.
 - PIGTAILS: The Contractor must furnish pigtails with left-hand sockets with locked-type guards and forty (40) feet of rubber covered cable. The Contractor must 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 must 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 must be replaced by the Contractor. All lamps must be compact fluorescent.
 - 8. CIRCUIT PROTECTION: The Contractor must furnish and install Ground Fault Interruption (GFI) protection for the temporary lighting and site security lighting systems.
 - 9. MAINTENANCE OF TEMPORARY LIGHTING SYSTEM:
 - a. The Contractor must maintain the Temporary Lighting System in good working order during the scheduled hours established.
 - b. The Contractor must 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 must be removed by the Contractor when authorized by the Commissioner.



11. HAND TOOLS: The temporary lighting system must 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 (NEW CONSTRUCTION ONLY):
 - 1. The Contractor must furnish, install and maintain a system of site security lighting, as herein specified, to illuminate the construction Site of the Project, with the system connected to and energized from the Temporary Lighting System. All costs in connection with site security lighting will 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 must direct its subcontractors to cooperate, coordinate and exert every effort to accomplish an early complete installation of the site security lighting system. If, after the system is installed and in operation, a part of the system interferes with the Work of any trade, the Contractor will 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 must consist of flood lighting by pole-mounted guarded sealed-beam units. Floodlight units must be mounted sixteen (16) feet above grade. Floodlights must 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 must be installed in a manner acceptable to the Resident Engineer. The first lighting unit in each circuit must be provided with a photoelectric cell for automatic control. The photoelectric cell must be installed as per manufacturer's recommendations.
 - 4. All necessary poles must be furnished and installed by the Contractor.
 - 5. The site security lighting must be kept illuminated at all times during the hours of darkness. The Contractor must, at its own expense, keep the system in operation and must furnish and install all material necessary to replace all damaged or burned out parts.
 - 6. The Contractor must be on telephone call alert for maintaining the system during the operating period stated above.
 - 7. All materials and equipment furnished under this section will remain the property of the Contractor and must 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 means 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 will include the provision of heat to permit normal operations in such occupied areas.
 - a. The provision of Temporary Heat must be in accordance with the temperature requirements set forth in sub-section 3.5 C herein.
 - b. The provision of Temporary Heat must 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 must mean that minimum force required for the safe day-to-day operation of the system for the provision of Temporary Heat and must include, without limitation, heating maintenance labor and/or fire watch as required by New York City Fire Department (FDNY) regulations. Operating labor may be required seven (7) days per week and during non-regular 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 must include the provision of domestic hot water at the same temperature as the system which is being replaced. Domestic hot water must 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, is 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 is responsible for the provision of Temporary Heat.
 - 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 is responsible for the provision of Temporary Heat by one or more of the following means:
 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 must, 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 must provide Temporary Heat in accordance with the approved plan until written acceptance by the Commissioner of the Work of all subcontractors, 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:
 - 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 will be responsible for the provision of Temporary Heat, except as otherwise provided in subsection 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 will be responsible for the provision of Temporary Heat and must 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 must notify all its subcontractors and the Resident Engineer at least thirty (30) Days prior to the anticipated date that the building(s) will be enclosed.
 - 2. Commissioner Determination: The Commissioner will 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 will be responsible for the provision of Temporary Heat. The Commissioner's determination with respect to building enclosure will 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 will 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 will 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 ten (10) millimeter plastic, 2) minimum twelve (12) ounce waterproof canvas tarpaulins, or 3) a minimum three-eighths (3/8) inch thickness exterior grade plywood.
 - d. Temporary covers for openings will be the responsibility of the Contractor and such Work will 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 will be the GREATER of the following: 1) fifty (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, will be the GREATER of the following: 1) sixty-eight (68) degrees Fahrenheit, or 2) the temperature requirement for the particular type of Work set forth in the Contract Documents.
- D. DURATION:
 - 1. The Contractor must be required to provide Temporary Heat until Final Acceptance, 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 must 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 must include in its total Contract price all expenses in connection with the provision of Temporary Heat in accordance with the requirements specified herein.

 The total Contract duration is set forth 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 CCDs. At a minimum, a full heating season must extend from October 15th to April 15th.

Contract Duration	Full Heating Seasons Required
up to 360 CCD	1 full heating season
360 to 720 CCD	2 full heating seasons
more than 720 CCD	3 full heating seasons

- E. METHOD OF TEMPORARY HEAT:
 - 1. The method of temporary heat must be in conformance with the New York City Fire Code and with all applicable laws, rules, and regulations. Prior to implementation, such method must be subject to the written approval of the Commissioner.
 - 2. The method of temporary heat must:
 - a. Not cause the deposition of dirt or smudges upon any finished Work or cause any defacement or discoloration to the finished Work.
 - b. Not be injurious or harmful to people or materials.
 - c. Portable fueled heating devises or equipment will 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 must 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 must 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, must coordinate its operations in order to insure sufficient and timely performance of all required Work, including Work performed by trade subcontractors. The Contractor must 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 must 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 must provide proper ventilating and drying, open and close the windows and other openings when necessary for the proper execution of the Work and when directed by DDC. The Contractor must 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 must provide all labor and materials to promptly furnish and set all required equipment, 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 must 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, must be made by the Contractor at his/her expense. The starting date for the warranty or guarantee period for such equipment must 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 must 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 must be placed so as to comply with the requirements specified hereinbefore, and must 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, must 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 must 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 must include such Allowance amount in its total Contract price. The Contractor will 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 must 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 must be responsible for the provision of Temporary Heat, as directed by the Commissioner. The City must pay such Contractor for all costs for labor, material, and equipment necessary and required for the same. Payment must be made in accordance with Article 26 of the Contract, except that the cost of fuel must 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 Final Acceptance by the Commissioner of the Work, and that the need for such maintenance is not the fault of the Contractor, the Contractor must provide the required maintenance of the permanent heating system for the period of time directed by the Commissioner. The City will 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 must be made in accordance with Article 26 of the Contract, except that the cost of fuel must 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, must be limited to the direct cost of such fuel. The Contractor will 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 must be responsible for providing the items set forth below and must include all expenses in connection with such items in its total Contract price. The Contractor must provide such items promptly when required and must 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 must 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 the Contractor's Contract.
 - b. The Contractor must 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 must 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 non-regular working hours for the period of time required by seasonal weather conditions.
- J. RELATED PLUMBING WORK:
 - 1. The Contractor must 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 must include all expenses in connection with such items of Work in its total Contract price. The Contractor must provide such items of Work promptly when required and must 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 will be responsible to provide such plumbing equipment to the City in near-perfect condition and must make any repairs required, other than for ordinary wear and tear on the equipment, at the Contractor's expense. The starting date for warranty and/or guarantee period for such plumbing equipment must be the date of Substantial Completion by the City.
 - 3. For Projects requiring the installation of new and/or modified gas service, as well as associated meter installations, the Contractor must 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 must 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 must be maintained at all times in proper working order.
- 4. Dispose of rainwater in a lawful manner that will not result in flooding the 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 must establish a temporary field office for its own use at the Site during the period of construction, at which readily available copies of all Contract Documents must be kept.
- B. The field office must 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: There must be a responsible and competent representative of the Contractor in charge of the office who is duly authorized to receive orders and directions and to put them into effect.
- D. Arrangements must be made by the Contractor whereby its representative may be readily available by telephone.
- E. All temporary structures must be of substantial construction and neat appearance, and must be painted a uniform gray unless otherwise directed by the Commissioner.
- F. CONTRACTOR'S SIGN: The Contractor must post and keep posted on the outside of its field office, office, exterior fence, or wall at Site of Work, a legible sign giving the 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 the event of an emergency at any time.
- G. ADVERTISING PRIVILEGES: The City reserves the right to all advertising privileges. The Contractor must 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 must provide and install a lockset for the door to secure the equipment in the room. The Contractor must provide two (2) keys to the Resident Engineer. After completion of the Project the Contractor must 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 must provide, for exclusive use of the DDC Field Office, the following:
 - a. Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two metal (2) lockers, single units, 15" x 18" x 78" overall including 6" legs. Lockers to have flat key locks with two (2) keys each, General Steel products or approved equal. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks, approximately 52"H x 28 ½"D x 18"W.



- b. One (1) 9000 B.T.U air conditioner or as directed by Commissioner. Wiring for the air conditioner must 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 must provide one (1) telephone, where directed and must 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, must remain the property of the Contractor.
- 5. Computer workstation quantities must 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 must, 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 must be located at the Project Site and must be solely dedicated to the Project. Provision of the DDC Field Office must commence within thirty (30) Days from Notice to Proceed (NTP) and must continue through forty-five (45) Days after Substantial Completion of the required construction at the Project Site. The Contractor must 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 must provide at its own cost and expense a mobile office trailer for use as the DDC Field Office. The Contractor must install and connect all utility services to the trailer within thirty (30) Days from NTP. The trailer must have equipment in compliance with the minimum requirements hereinafter specified. Any permits and fees required for the installation and use of said trailer must be borne by the Contractor. The trailer including furniture and equipment therein, except computer equipment specified in sub-section 3.8D.3 herein, must remain the property of the Contractor.
 - 3. Trailer must be an office-type trailer of the size specified herein, with exterior stairs at entrance. Trailer construction must 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.

- DDC Managed Project Trailer: DDC Field Office Trailer Size, Layout and Computer a. 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 must 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 FIELD OFFICE	2-1/2"

NOTE: In lieu of painting letters on the 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 must have aluminum insect screens. Provide wire mesh protective guards at all windows.
- 6. The interior must 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 sixty (60) inches long by thirty-six (36) inches wide with cabinet below and wall type plan rack at least forty-two (42) inches wide.
- 8. The washroom must 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 must be



Design and

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 must be furnished.

- 9. HVAC: The trailer must be equipped with central heating and cooling adequate to maintain a temperature of seventy-two (72) degrees during the heating season and seventy-five (75) degrees during the cooling season when the outside temperature is five (5) degrees F. winter and eighty-nine (89) degrees F. summer.
- 10. Lighting must be provided via ceiling mounted fluorescent lighting fixtures to a minimum level of fifty (50) foot candles in the open and private office(s) along with sufficient lighting in the washroom. Broken and burned out lamps must be replaced by the Contractor. A minimum of four (4) duplex convenience outlets must be provided in the open office and two (2) each in the private office(s). These outlets must be in addition to special outlet requirements for computer stations, copiers, HVAC unit, etc.
- 11. Electrical service switch and panel must 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 must conform to the New York City Electrical Code.
- 12. The following movable equipment must be furnished:
 - Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side а 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.
 - One (1) folding conference table, 96" x 30" and ten (10) folding chairs. b.
 - Three (3) metal wastebaskets. C.
 - 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.
- TRAILER TEMPORARY SERVICE: Plumbing and electrical Work required for the trailer will be 13. furnished and maintained as below.
 - a. PLUMBING WORK: The Contractor must 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 must 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 subsection 3.8 B 1 herein, the temporary water and drainage connections and piping to the DDC Field Office trailer must be removed by the Contractor and must be plugged at the mains. All piping must become the property of the Contractor for plumbing Work and must be removed from the Site, all as directed. All repair Work due to these removals must be the responsibility of the Contractor.
- **ELECTRICAL WORK:** b.
 - 1) The Contractor must 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 must 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 must 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., must be removed and disposed of as directed.
- 6) All repair Work due to these removals must be the responsibility of the Contractor.
- c. MAINTENANCE
 - The Contractor must 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 must be responsible for providing (1) all office supplies, including without limitation, pens, pencils, stationery, filtered drinking water and sanitary supplies, and (2) 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 must remain solely and completely with the Contractor. The Contractor must 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 Contractor must have all services disconnected and capped to the satisfaction of the Commissioner. All repair Work due to these removals must be the responsibility of the Contractor.
- d. TELEPHONE SERVICE: The Contractor must 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 must include voice mail. All electronic voicemail messages must be automatically forwarded as email attachments, to allow for the voicemails to be played remotely.
 - 4) A remote bell located on outside of trailer
 - 5) The telephone service must continue until the trailer is removed from the Site.
- e. PERMITS: The Contractor must 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 must 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 subsection 3.8 B 3 for the DDC Field Office trailer, must 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. Photocopying Machine: Stand-alone, heavy duty, electric, dry-process color photocopying type with color scan and send capability via email, a minimum production rate of seventy (70) pages per minute and an adequate supply of copy paper, toner, etc. The machine must be capable of duplex copying paper sizes of 8-1/2 x 11 inches, 8-1/2 x 14 inches and 11 x 17 inches, and have separate trays for each paper size. It must have a document feeder, collator, stapler, and the capability to reduce/enlarge copies between each paper size. The supply of each size copy paper, toner, etc. must be replenished and the machines must be maintained for the duration of the Contract by the Contractor as required by the Resident Engineer. Make and model can be Minolta, Canon, IBM, Epson, or an approved equivalent, and must be networked to the office computers for printing capability. Copier must remain at job Site until the DDC Field office trailer is removed from the Site.
 - 2. The Contractor must 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 must be new, sealed in manufacturer's original packaging and must have manufacturers' warrantees. All items must remain the property of the City of New York at the completion of the Project.
 - 3. COMPUTER WORKSTATION: The Contractor must provide one (1) complete computer workstation, in quantities specified in sub-section 3.8.B.3, as specified herein:
 - a. Hardware/Software Specification:
 - Computer Equipment: Computers must be provided for all Contracts that have a total Consecutive Calendar Days (CCD) for construction duration, as set forth in Schedule "A", of 180 CCD's or greater. Contracts of lesser duration must not require computers.
 - 2) Computers furnished by the Contractor for use by City Personnel for the duration of the Contract must be in accordance with the Specific Requirements contained herein, must remain the property of the City of New York at the completion of the Project, and must 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 DDC Assistant Commissioner of Information Technology Services (ITS)).
b)	Processor:	i5-2400 (6MB Cache, 3.1GHz) or faster computer - Single Processor.
c)	System RAM:	Minimum of 4GB (Gigabytes) Dual Channel DDR3 SDRAM at 1333MHz – 2 DIMMSs.
d)	Hard Disk Drive(s):	500 GB (Gigabytes) Serial ATA (7200RPM) w/DataBurst Cache, or larger.
e)	CD-RW:	Internal CD-RW, 48x Speed or faster.
f)	16xDVD+/-RW	DVD Burner (with double layer write capability) 16x Speed or faster.



h)

i)

j)

k)

I)

g) I/O Ports:

Monitor:

Video Display Card:

- Must have at least one (1) Serial Port, one (1) Parallel Port, and three (3) USB Ports.
- HD Graphics (VGA, HDMI) with a minimum of 64 MB of RAM.
 - 22" W, 23.0 Inch VIS, Widescreen, VGA/DVI LCD Monitor.
- Available Exp. Slots: System as configured above must have at least two (2) full size PCI Slots available.
- Network Interface: Integrated 10/100/1000 Ethernet card.
- 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 must be provided with the following:
 - a) One (1) broad-band internet service account. Wideband Internet connectivity at a minimum throughput of fifteen (15) Mbps download and five (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 must be the DDC Field Office/Project ID (preferably Gmail or Outlook e.g. <u>ABC1234@gmail.com</u>).

- b) One (1) 600 DPI HP Color Laser Jet Printer (twelve (12) pages per minute or faster) with one (1) Extra Paper (Legal Size) (Not required if photocopying machine prints in color).
- c) All necessary cabling for equipment specified herein
- d) Storage Boxes for Blank CD's
- e) Printer Table
- f) UPS/Surge Suppressor combo
- g) Ten (10) USB Thumb (or Flash) Drives sixteen (16) GB each
- 5) All computers required for use in the DDC Field Office must be delivered, installed, and



setup in the Field Office by the Contractor.

- 6) All Computer Hardware must 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 must be provided by the Contractor and must 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 ITS at 718-391-1761.
- E. HEAD PROTECTION (HARD HATS):
 - 1. The Contractor must provide a minimum of ten (10) standard protective helmets for the exclusive use of DDC personnel and their visitors. Helmets must be turned over to the Resident Engineer and kept in the DDC Field Office.
 - 2. Upon completion of the Project, the helmets must become the property of the Contractor.

3.9 MATERIAL SHEDS:

- A. Material sheds used by the Contractor for the storage of its materials must 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. The Contractor must store combustible materials apart from the facility.

3.10 TEMPORARY ENCLOSURES:

- A. The Contractor must 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, the Contractor must insulate temporary enclosures.

3.11 TEMPORARY PARTITIONS:

- A. The Contractor must provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate occupied tenant areas from fumes and noise, including, but without limitation:
 - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fireretardant plywood on construction operations side.
 - Construct dustproof partitions with 2 layers of 3-mil (0.07-mm) polyethylene sheet on each side. Cover floor with two (2) layers of 3-mil (0.07-mm) polyethylene sheet, extending sheets eighteen (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 forty-eight (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. The Contractor must install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with National Fire Protection Association (NFPA) Standard 241.
- B. Smoking in all areas is prohibited.
- C. The Contractor must supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
- D. The Contractor must 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. The Contractor must 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 must furnish, erect and maintain a wood construction or chain-link fence to the extent shown on the Contract Drawings or required by the Work enclosing the entire Project on all sides. All materials used must be new. Any permit required for the installation and use of said fence and costs must be borne by the Contractor.
- B. WOOD FENCE must be seven (7) feet 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 must be secured minimum 1/2 inch thick exterior grade plywood. Posts must be firmly fixed in the ground at least 30" and thoroughly braced. Top edge of fence must be trimmed with a rabbeted edge mould. Provide on the street traffic sides of fence, observation openings as directed.
 - 1. GATES: The Contractor must provide an adequate number of double gates, complete with hardware, located as approved by the Resident Engineer. Double gates must have a total clear opening of 14'-0" with two (2) 7'-0" hinged swinging sections. Hanging posts must be 6" x 6" and must extend high enough to receive and be provided with tension or sag rods for the swinging sections.
 - 2. PAINTING: The fence and gates must 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" must be painted on fence with three (3) inch high letters on twenty-five (25) foot spacing for the entire length of fence on street traffic sides. Signs must be stenciled five (5) feet above the sidewalk.



- C. CHAIN-LINK FENCING must be minimum two (2) inch thick, galvanized steel, chain-link fabric fencing; eight (8) feet high with galvanized steel pipe posts; minimum 2-3/8-inch Outside Diameter (OD) line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Fence must be accurately aligned and plumb, adequately braced and complete with gates, locks and hardware as required. Under no condition must fencing be attached or anchored to existing construction or trees.
- D. ADDITIONAL REQUIREMENTS:
 - 1. It must 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 must 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 must be provided for protection of sidewalks and curbs.
 - 4. Where required, make provision for fire hydrants, lampposts, etc.
- E. REMOVAL: When directed by the Resident Engineer, the fence must be removed.

3.14 RODENT AND INSECT CONTROL:

- A. DESCRIPTION: The Contractor must 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 Site requiring such special attention.
- B. MATERIALS:
 - 1. All materials must be approved by the New York State Department of Environmental Conservation (DEC) 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 must 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 must 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 must 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 must be placed during the period of construction and any consumed or decomposed bait must be replenished as directed.
- 3. At least one (1) 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, must be placed at locations that do not allow access to pets, human beings, children and other non-target species, particularly wildlife (for example-birds) in the Project area.
- 4. The Contractor must be responsible for collecting and disposing of all trapped and poisoned rodents found in live traps and tamper-proof bait stations. The Contractor must also be responsible for posting and maintaining signs announcing the baiting of each particular location.
- 5. The Contractor must be responsible for the immediate collection and disposal of any visible rodent remains found on streets or sidewalks within the Project area.
- 6. It is anticipated that public complaints will be addressed to the Commissioner. The Contractor, where directed by the Commissioner, must 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.
- 7. Emergency service during the regular workday hours (Monday through Friday) must be rendered within twenty-four (24) hours, if requested by the Commissioner, at no additional cost to the City.
- F. EDUCATION & NOTICES:
 - 1. The Contractor must post notices on all Construction Bulletin Boards advising workers, employees, and residents to call the DDC Field Office to report any infestation or outbreak of rodents, rats, mice, water beetles, roaches and fleas within the Project area. The Contractor must provide and distribute literature pertaining to Integrated Pest Management (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 must 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 must keep a record of all rodent and waterbug infestation surveys conducted and make available, upon request, to the Commissioner. The findings of each survey must include, but not be limited to, recommended IPM techniques, like baiting, trapping, proofing, etc., proposed for rodent and waterbug pest control.
 - 2. The Contractor must 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, must 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 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 subcontractor performing tree Work has entered into a compliance agreement with NYSDAM. The terms of said compliance agreement must be strictly complied with. Any host material so removed must be delivered to a facility approved by NYSDAM. For the purpose of this Contract, host material must be ALL species of trees.
- 2. Any host material that is infested with the ALB 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 must submit to the Commissioner a copy of a valid ALB compliance agreement entered into with NYSDAM and the Contractor or its subcontractor performing tree Work. If any host material is transported from the quarantine area the Contractor must 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, must be defined as all five boroughs of the City of New York. In addition, prior to the start of any tree Work, the Contractor must contact the NYC Department of Parks & Recreation's (DPR) 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 must retain a Certified Arborist, as defined by DPR regulations, to provide the services described below.
 - 1. Surveys and Reports: The Certified Arborist must, 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; and (3) evaluation of the general health and condition of any infected plant material.
 - 2. Frequency of Reports: The Certified Arborist must 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 twenty-four (24) months in duration, the Certified Arborist must conduct a survey and prepare a report at the midpoint of construction. Copies of each plant material assessment report must 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 must 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 fifty (50) feet of the project's Contract Limit Lines (CLLs) or Property Lines (PLs).
 - b. Any part of the tree or shrub stands within fifty (50) 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 fifty (50) foot inclusionary perimeter as outlined above.



- 4. Tree Protection Plan: The Certified Arborist must prepare, and the Contractor must 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 DPR jurisdiction as determined by the NYC Department of Transportation, and (4) all trees that are located in proximity to the Project Site, as defined above. The Tree Protection Plan must comply with the 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 must be submitted to the Resident Engineer prior to the commencement of construction. Implementation of the Tree Protection Plan for street trees and trees under DPR jurisdiction must 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 fifty (50) feet of the intersection of the Project's Site's PL with the street frontage property line.
- C. No Separate Payment: No separate payment must 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 must be deemed included in the Contractor's bid for the Project.

3.16 PROJECT IDENTIFICATION SIGNAGE:

- A. The Contractor must 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 must furnish and install a sign at the entrance (gates) as follows:

NO TRESPASSING

AUTHORIZED PERSONNEL ONLY

- C. If no construction fence exists at the Site, this notice must 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:
 - Responsibility: The Contractor must produce and install one (1) Project sign which must be posted and maintained upon the Project Site at a place and in a position directed by the Commissioner. The Contractor must protect the sign from damage during the continuance of Work under the Contract and must 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 must 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 must provide all materials required for the production of the sign as specified herein. Workmanship must be of the best quality, free from defects and must be produced in a timely manner.



- 3. Schedule: Upon Project mobilization, the Contractor must commence production and installation of the sign.
- 4. Removal: At the completion of all Work under the Contract, the Contractor must remove and dispose of the Project sign away from the Site.
- 5. Sign construction:
 - a. Frame: The frame must be from quality dressed 2"x2" pine, fire retardant, pressure treated lumber, that surrounds the inside back edge of the sign. The sign must have one (1) intermediate vertical and two (2) diagonal supports, glued and screwed for rigidity. Frame must be painted white with two (2) coats of exterior enamel paint, prior to mounting of sign panel.
 - Edging: U-shaped, twenty-two (22) gauge aluminum edging, with a white enameled finish to match sign background, must run around entire edging of sign panel and frame. Corners must be mitered for a tight fit. Channel dimensions must 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 must be constructed in one (1) piece of fourteen (14) gauge (.0785") 6061-T6 aluminum. This panel must be pre-finished both sides with a glossy white baked-on enamel finish and be flush with edge of 2" x 2" wood frame. Samples must be submitted for approval.
 - d. Fastening: Fasten sign panel to wood frame using cadmium plated no. 8 sheet metal screws at ½" below edge of panel and 8" on center. The U-shaped aluminum channel must 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 must insert the Project name and names and titles of personnel (three (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 must 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 must be guaranteed for nine (9) years. Guarantee must cover fading, peeling, chipping or cracking. The sign manufacturer is required to maintain all specified Pantone Matching System (PMS) type and other composition elements represented in the digital file of the Project sign.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SETION 3.17 B

- B. PROJECT RENDERING:
 - 1. Responsibility: In addition to the Project sign, the Contractor must 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 subsection 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 must 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 must 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 must provide a 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 must 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 must be no less than one (1) security guard on duty every day, including Saturdays, Sunday and holidays, twenty-four (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 must not apply after the finishing painting of the plaster Work is commenced; thereafter, not less than one (1) security guard must be on duty continuously, twenty-four (24) hours a day.
 - 2. Every security guard must be required to hold a "Certificate of Fitness" issued by FDNY. Every security guard must, 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 must be replaced by the Contractor upon the written demand of the Commissioner.
 - 4. Each security guard furnished by the Contractor must 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 must 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 must 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 must 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 must 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, must 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, must be replaced by the Contractor at no additional cost to the City.

END OF SECTION 01 50 00



SECTION 01 54 11 TEMPORARY ELEVATORS AND HOISTS

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. Temporary Use, Operation and Maintenance of Elevators during Construction
 - a. For new buildings up to and including fifteen (15) stories
 - b. For new buildings over fifteen (15) stories
 - c. For existing buildings
 - 2. Temporary Construction Hoists and Hoistways (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 FIFTEEN (15) STORIES:

- A. INSTALLATION: The Contractor must 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, representatives of DDC, and other governmental agencies having jurisdiction of Work at the Project. The Contractor must 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 must 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 must 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 must 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 and 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 must include all costs in connection with the temporary elevator, including without limitation, the costs specified herein.

- D. COMMENCEMENT OF SERVICE: The Contractor must begin to provide temporary elevator service using the selected main passenger elevator no later than eight (8) weeks (forty (40) 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 (fifteen (15) Days) after the machine room roof slab has been placed, or that portion of it surrounding the elevator shaft, the following Work must be completed:
 - 1. The shaft must be completely enclosed by either a permanent or temporary enclosure meeting all building code requirements.
 - 2. The machine room must be completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary, must be provided to enable the safe and practicable hoisting of the elevator machinery for installation.
 - 3. On all floors at the shaft way entrances to the elevator, the Contractor must install solid substantial frames, either sliding or swing doors with substantial hardware and door locks, and any necessary approved wire mesh barricades for adjacent shaft ways.
 - 4. The Contractor must furnish and install solid, substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at the top of car and a substantial temporary door or gate on the front of the elevator entrance.
- E. ELECTRICAL INSTALLATION: The Contractor, no later than twenty (20) Days after the machine room roof slab or that portion of it surrounding the elevator has been placed, must furnish and install temporary or permanent power and light feeders as required for the elevator used for temporary service. Additionally, the Contractor must connect 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 the shaft way and for the car control and signal traveling cables. The Contractor must make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.
- F. REMOVAL: As directed by the Commissioner and when elevators for permanent use have been installed and are in proper condition for service, the Contractor must 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 must 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 must furnish and install new governor and compensating ropes, traveling cables, controller parts, etc. The car and counterweight safeties must 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 must be installed and payment will be made in accordance with Article 26 of the Contract.
- H. REPLACEMENT: The Contractor must 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, except for the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators must be thoroughly cleaned. Where lubricated rails are used they must 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., must be borne by the Contractor except for the replacement of hoisting ropes.
- I. LIMITATIONS ON USE: The temporary elevator must not be used during its operation for the hoisting of materials or the removal of rubbish, but must be limited only to the transportation of employees of the Contractor and/or its subcontractors, 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 must notify the Resident Engineer within twenty-four (24) hours after such damage has occurred. As indicated above, the Contractor must 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 one hundred dollars (\$100) per Day for each Day it fails to provide the temporary elevator service described in this section beginning with the forty-first (41st) 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 FIFTEEN (15) STORIES:

- A. INSTALLATION: The Contractor must 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, representatives of DDC, and other governmental agencies having jurisdiction of work at the Project. The Contractor must 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 must 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 must not be operated simultaneously.
- B. RESPONSIBILITY: The Contractor must 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 must 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 must include all costs in connection with the temporary elevators, including without limitation, the costs specified herein.

- D. LOW RISE ELEVATOR: The Contractor must begin to provide temporary elevator service using one (1) selected main passenger elevator no later than six (6) weeks (thirty (30) Days) after the twelfth (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) Days), after the twelfth (12th) floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. No later shaft, has been placed and stripped, the following Work must have been completed:
 - 1. The shaft must be completely enclosed up to the twelfth (12th) floor by either the permanent or a temporary enclosure meeting the requirements of the law.
 - 2. A temporary machine room enclosure must be provided at the eleventh (11th) floor and must be completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary, must be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 - 3. The Contractor must install on all floors up to and including the ninth (9th) floor at the shaft entrances to the elevator, solid substantial wood frames, either sliding or swing doors with substantial hardware and door locks, and any necessary approved wire mesh barricades for adjacent shaft ways.
 - 4. The Contractor must furnish and install solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, except that the portion of the front at the elevator entrance must be provided with a substantial temporary door or gate.
- E. ELECTRICAL INSTALLATION: The Contractor must, no later than ten (10) Days after the twelfth (12th) floor slab or that portion of it surrounding the elevator has been poured and stripped, furnish and install temporary or permanent power and light feeders as required for the elevator used for temporary service. The Contractor must connect such feeders to the terminals on the starter panels or controllers in the temporary machine room to the low voltage transformers, car light outlets in the center of the shaftway, and for the car control and signal traveling cables. The Contractor must 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 must begin to provide temporary elevator service to all floors using a selected main passenger elevator no later than eight (8) weeks (forty (40) 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 (fifteen (15) Days) after the machine room roof slab, or that portion of it surrounding the elevator shaft has been placed, the following Work must have been completed:
 - 1. The shaft must be completely enclosed by either the permanent or temporary enclosure, meeting the



requirements of the law.

- 2. The machine room must be completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary, must be provided to enable the safe and practicable hoisting of the elevator machinery for installation.
- 3. The Contractor must install on all floors at the shaft way entrances to the elevator solid substantial frames, either sliding or swing doors with substantial hardware and door locks, and any necessary approved wire mesh barricades for adjacent shaft ways.
- 4. The Contractor must furnish and install solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, except that the portion of the front at the elevator entrance must be provided with a substantial temporary door or gate.
- G. ELECTRICAL INSTALLATION: The Contractor must, not later than twenty (20) Days after the machine room slab or that portion of it surrounding the elevator shaft has been placed, furnish and install temporary or permanent power and light feeders as required for the high-rise elevator to be used for temporary service. The Contractor must connect 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 must 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 must be shut down.
- I. REMOVAL: When directed by the Commissioner and one (1) or more elevators for permanent use have been installed and are in condition for service, the Contractor must remove the temporary enclosures, 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 must 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 must furnish and install new governor and compensating ropes, new traveling cables, new controller parts, etc. The car and counterweight safeties must 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 must be installed and payment will be made in accordance with Article 26 of the Contract.
- K. REPLACEMENT: The Contractor must 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, except the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheaves spaces used for temporary operation of elevators must be thoroughly cleaned down. Where lubricated rails are used they must 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., must be borne by the Contractor except for the replacement of hoisting ropes.
- L. LIMITATIONS ON USE: The temporary elevators must not be used during their operation for the hoisting of materials or the removal of rubbish, but must be limited only to the transportation of employees of the Contractor and/or its subcontractors, 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 must notify the Resident Engineer within twenty-four (24) hours after such damage has occurred. As indicated above, the Contractor must 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 one hundred dollars (\$100) per Day for each Day it fails to provide the temporary elevator service described in this Section beginning with the thirty-first (31st) Day after the twelfth (12th) floor slab, or that portion of the twelfth (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, 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 must 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 must 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 must 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, except the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators must be thoroughly cleaned down. Where lubricated rails are used they must 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., must 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 must be installed and payment will be made in accordance with Article 26 of the Contract.
- D. LIMITATIONS ON USE: The temporary elevator must not be used during its operation for the hoisting of materials or the removal of rubbish, but must be limited only to the transportation of employees of the Contractor and/or its subcontractors, 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 must notify the Resident Engineer within twenty-four (24) hours after such damage has occurred. As indicated above, the Contractor must 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 one hundred dollars (\$100) per Day for each Day it fails to provide elevator services described in this section beginning with fifteen (15) Days from Notice to Proceed (NTP). 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 must 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 must be constructed at such locations as to 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 must be located a sufficient distance from the exterior walls and be so protected as to prevent any of the permanent Work from being damaged, stained or marred.



- C. ELEVATOR SHAFT: Wherever possible, one or more of the permanent elevator shafts may be used as temporary hoistways, providing such use complies with the requirements of the Building Code of the City of New York, has been approved by the Commissioner, and does not interfere with the progress of the Work.
- D. PROTECTION FOR INTERIOR HOISTS: All interior material hoistways must be enclosed on each floor and must be adequately protected with appropriate safety guards. In no event must the protection be less than that required by law.

END OF SECTION 01 54 11



(No Text on This Page)



SECTION 01 54 23 TEMPORARY SCAFFOLDING AND PLATFORMS

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. SECTION 01 35 26 SAFETY REQUIREMENTS PROCEDURES.
- C. The Contractor must 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 site(s), 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 must comply with requirements of Chapter 33 (Safeguards During Construction or Demolition) of the New York City (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 must designate and employ a Jobsite Safety Coordinator, who must be a competent person, who must 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 (DOB) supported scaffold certificate of completion. An alternate must also be designated in the event that the Jobsite Safety Coordinator is absent. The Jobsite Safety Coordinator must:
 - 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; and,
- 12. Keep a log of significant actions and events connected with the scaffolding.
- B. The Contractor will be responsible for erecting, maintaining, and dismantling the scaffolding and/or sidewalk shed in conformance with requirements of the NYC Building Code, OSHA and the Contract Documents, including the Specifications. The Contractor must also be guided by generally accepted standards of scaffold industry practice as promulgated by the Scaffold Industry Association.
- C. The Contractor must 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 will be responsible to ensure the following: (1) that the installation design is in compliance with requirements of the NYC 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 DOBapproved training provider are mandatory. These users have a duty to become familiar with the NYC 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 must prepare, obtain, and submit the following to the Resident Engineer:

- A. NYC DOB 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 <u>all</u> 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; and,
 - 16. All sidewalk sheds must 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 must be issued for each inspection and pull-test below, and must be logged and maintained on site by the Jobsite Safety Coordinator for the duration of the Project.
- B. Pull testing will be required during design, and during or post erection, where anchorage is made into masonry. The Scaffold Engineer must specify the test method, proof load, and the number of trials.
- C. Sidewalk sheds must be inspected after initial installation, major modification, or damage and thence every three months. Inspections must be by a Scaffold Engineer for custom sheds and by a Competent Person employed by the Contractor for standard sheds.
- D. Scaffolds must be inspected by the Scaffold Engineer during erection, post-erection, and prior to use and thence every three (3) months. The Scaffold Engineer must repeat inspections after major alteration/ modification, and/or damage.
- E. A Qualified Person assigned by the Contractor must 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 must 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 must 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 must always be available on-site.
- 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 must 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 must 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



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SECTION 01 60 00 PRODUCT REQUIREMENTS

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 administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 RELATED SECTIONS:

A. Section 01 42 00 REFERENCES for applicable industry standards for products specified.

1.4 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved by Commissioner through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics are listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.



C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure.

1.5 ACTION SUBMITTALS

- A. Product Specification Submittals: Comply with requirements in Section 01 33 00 SUBMITTAL PROCEDURES. Show compliance with requirements.
- B. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 - 2. Review Action: If necessary, Commissioner will request additional information or documentation for evaluation and will notify Contractor of approval or rejection of proposed comparable product request.
 - a. Format of Approval of Submittal: Per Article 1.6 of Section 01 33 00 SUBMITTAL PROCEDURES.
 - b. Use product specified, or products by Manufacturers specified if Commissioner does not issue a decision on use of a comparable product request.

1.6 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
 - 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
 - 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.
 - 3. See individual identification sections in Divisions 21, 22, 23, and 26 for additional identification requirements.



1.7 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
 - 1. Store products to allow for inspection and measurement of quantity or counting of units.
 - 2. Store materials in a manner that will not endanger Project structure.
 - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 - 4. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 - 5. Protect stored products from damage and liquids from freezing.

1.8 **PRODUCT WARRANTIES**

- A. Warranties specified in other Sections will be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of Guaranty obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to the City of New York.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for the City of New York.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 - 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 01 77 00 CLOSEOUT PROCEDURES.



PART 2 – PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Descriptive, performance, and reference standard requirements in the Specifications establish required characteristics of products.
 - 2. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 3. Commissioner will review and approve products with warranties meeting the requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Commissioner will make selection.
- B. Or Approved Equal:
 - 1. Comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product, or for use of a product by an unnamed Manufacturer, as designated by the term "Or approved equal".
 - 2. Submit additional documentation required by Commissioner, in order to establish equivalency of proposed products. Evaluation of "Or approved equal" product status is by the Commissioner, whose determination is final.
- C. Product Selection Procedures:
 - 1. Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products will be considered. Comply with requirements in "Comparable Products" Article for consideration of a product by an unnamed manufacturer. Products' listing is indicated by the following:
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Manufacturer; Product designation
 - 2) Manufacturer; Product designation
 - 3) Manufacturer; Product designation
 - 4) Or approved equal
 - 2. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed. Comparable products from unnamed Manufacturers will be considered. Comply with requirements in "Comparable Products" Article for consideration of a product by an unnamed manufacturer. Manufacturer's listing is indicated by the following:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Manufacturer
 - 2) Manufacturer
 - 3) Manufacturer
 - 4) Or approved equal



- 3. Basis-of-Design Product: Where Specifications name a basis-of-design product, provide the specified product, or a comparable product by one of the other named manufacturers. Drawings may indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Specifications indicate performance requirements and physical properties, durability and other special and required features that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers. Basis-of-Design Product listing is indicated by the following:
 - a. Subject to compliance with requirements, provide [product indicated on Drawings] [manufacturer's name; product name or designation] or comparable product by one of the following:
 - 1) Manufacturer
 - 2) Manufacturer
 - 3) Or approved equal
- 4. Sole Source Product (Single Proprietary): Where Specifications name a single manufacturer and product, provide the named product. A Sole Source Product selection requires prior request by the Design Consultant and approval by the Commissioner for its inclusion in specifications. Sole Source Product is indicated by the following phrase listing:
 - a. Sole Source Product: Manufacturer's name and Product designation.
 - 1) No substitutions Permitted.
- D. Visual Matching Specification: Where Specifications require "match Commissioner's sample," provide a product that complies with requirements and matches Commissioner's sample. Commissioner's decision will be final on whether a proposed product matches.
- E. Visual Selection Specification: Where Specifications include the phrase "as selected by Commissioner from manufacturer's full range" or similar phrase, select a product that complies with requirements. Commissioner will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products (Or Approved Equal): Commissioner will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Commissioner may return requests without action, except to record noncompliance with these requirements:
- B. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
- C. Evidence that proposed product provides specified warranty.
- D. List of similar installations for completed projects with project names and addresses and names and addresses of architects and Owners, if requested.
- E. Samples, if requested.



- F. Submittal Requirements: Approval by the Commissioner of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements.
- G. Comply with all other specified product and submittal requirements.

PART 3 – EXECUTION (Not Used)

END OF SECTION 016000



SECTION 01 73 00 EXECUTION

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 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
 - 24. Payment for Allowances
- **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.

<u>Term</u>	Definition
Design Consultant	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 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 DELIVERY OF MATERIALS:

- A. Material Orders: The Contractor must furnish to the Commissioner a copy of each material order, indicating date of order and quantity of material, and must also notify the Commissioner when materials have been delivered to the Site and in what quantities.
- B. Ample Quantities: The Contractor must deliver materials in ample quantities to ensure 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 must be delivered with unbroken seals and must bear proper labels.
- D. Deliveries: The Contractor must coordinate deliveries in order to avoid delaying or impeding the progress of the Work.
- E. Handling: The Contractor must 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 of the Standard Construction Contract, and periodically inspect to assure that stored products are undamaged and are maintained under required conditions.
- G. Stacking: All materials must be properly stacked in convenient places adjacent to the Site, or where directed, and protected in a satisfactory manner. Stacked materials must be arranged so as to not interfere with visibility of traffic control devices.



- H. Overloading: If the Commissioner permits the storage of materials in any part of the Project area, they must 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 must 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 must devote its time and personal attention to the Work and must employ and retain at the Project Site, from commencement until Final Acceptance, a Contractor's Construction Superintendent. The Contractor's Construction Superintendent must be registered with the New York City Department of Buildings (DOB) in compliance with the Construction Superintendent Rule of the City of New York, be competent and capable of maintaining proper supervision and care of the Work, and be acceptable to the Commissioner. The Construction Superintendent, in the absence of the Contractor, and irrespective of any superintendent or foreman employed by any subcontractor, must see that the instructions of the Commissioner are carried out.
- B. Replacement: The Contractor's Construction Superintendent on the job must 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 by the Contractor in connection with the performance of the Work.
- B. Responsibility: The Contractor must establish all other lines and elevations required for the Work and must be solely responsible for the accuracy thereof.
- C. Safeguard All Points: The Contractor must safeguard all points, stakes, grade marks and bench marks made or established by the Contractor on the Work. The Contractor must re-establish same if disturbed, and bear the entire expense of rectifying the Work if improperly installed due to not maintaining, protecting or removing without authorization from the Commissioner such established points, stakes, or marks.
- D. City Monuments and Markers: No Work must be performed near City monuments or markers so as to disturb them until the said monuments or markers have been referenced or reset or otherwise disposed of by the relevant Agency or party who installed them.
- E. Foundations: The Contractor must 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 must 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 must establish the permanent lines of exterior walls. The Contractor must promptly furnish 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 must 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, must be a land Surveyor licensed in the State of New York and must be subject to the approval of the Commissioner. The Surveyor must not be a regular employee of the Contractor, nor must the Surveyor have any interest in the Contract. The Surveyor's certification must represent an independent and disinterested verification of all layout. The Surveyor must report to the Department of Design and Construction's (DDC) 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 must 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 Contract Drawings must be noted on the final certificate and must include 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 must submit to DDC for submission to DOB a final Survey by the licensed Surveyor showing the location of the new Work, before completion of the Work. This Survey must 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 Work on the plan, together with the location and boundaries of the lot or plot upon which the Work 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 must 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 DDC 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 were actually taken from the site at the times, places, and in the manner indicated on the boring drawings. The samples are available for inspection in DDC's Subsurface Exploration Unit.
 - 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. 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 the Work, the Contractor must investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, the Contractor must 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, the Contractor must investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, the Contractor must verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, water-service piping, and underground electrical services.
 - 2. The Contractor must furnish location data for Work related to the Project that must be performed by public utilities serving the Project Site.
- C. Acceptance of Conditions: Examine all existing substrates, areas, and conditions, with the subcontractor responsible for installation or application, for compliance with requirements for installation tolerances and other conditions affecting performance. The Contractor must record observations of these examinations:
 - 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.

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 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 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 must comply with all federal, state and local asbestos regulations affecting the work for this Contract.
- B. Contractor Responsibility: The Contractor must comply with all federal, state and local environmental regulations, including without limitation, United States Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA) regulations, which require the Contractor to assess if lead-based paint will be disturbed during the Work in order to protect the Contractor's workers and the building occupants from migration of lead dust into the air. The Contractor must comply with all federal, state and local environmental waste disposal regulations 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 must verify all dimensions and conditions on the Site so that all Work will properly join the existing conditions.



- B. Before commencing the Work, the Contractor must examine all adjoining materials 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 must report to the Commissioner any condition that will prevent it from performing Work that conforms to the required Specifications.
- C. Existing Utility Information: The Contractor must 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. Additionally, the Contractor must coordinate with authorities having jurisdiction.
- D. Space Requirements: The Contractor must verify space requirements and dimensions of items shown diagrammatically on the Contract Drawings.

3.8 DEFERRED CONSTRUCTION:

- A. In order to permit the installation of any item or items of equipment required to be furnished and installed within the time allowed for completing the Work of the Contract, the Contractor must defer construction Work limited to adequate areas as approved and certified by the Commissioner.
- B. The Contractor must 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: The Contractor must 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 on the Contract Drawings.
- 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 must 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 must be responsible for all costs in connection with such regulatory compliance, unless otherwise specified in the Contract.

3.11 TRANSPORTATION:

- A. Availability: The Contractor must determine the availability of transportation facilities and dockage for the use of its employees, equipment, and materials, 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 must 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 must 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 must 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: To avoid delay, in the event that timely delivery of sleeves and other materials cannot be made, 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 must fill around them with materials as required by the Contract. The necessary expenditures incurred for the boxing out and filling in must 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 must submit to 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 must be stamped and returned if approved and/or comments will be transmitted. The Contractor must 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 must not predicate its layout Work on unapproved sketches.

3.14 CUTTING AND PATCHING:

- A. Responsibility: The Contractor must do all cutting, patching, and restoration required by its Work, unless otherwise particularly specified in the Specifications.
- B. Restore Work: The Contractor must restore any Work damaged during the performance of the Work.
- C. Competent Workers: All restoration Work must 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 must 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 the Commissioner's opinion, reduce the building's aesthetic qualities. The Contractor must remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- G. Existing Warranties: The Contractor must 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 must 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 must be reused, salvaged, or recycled. Waste disposal in landfills must be minimized. Comply with requirements of Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.



- B. Rubbish: Rubbish must not be thrown from the windows or other parts of the Project. Mason's rubbish, dirt and other dust-producing material must be wetted down periodically.
- C. Location: The Contractor must clean the Project Site and Work area daily, sweep up, and deposit at a location designated on each floor, all of its rubbish, debris, and waste materials as it accumulates or more frequently when directed by the Resident Engineer. Wood crating must 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 seven (7) Days during normal weather or three (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: Since the Contractor is responsible for the removal of all rubbish, etc., from the Site, the Contractor must employ and keep engaged for this purpose an adequate number of laborers.
- E. Surplus Materials: The Contractor must 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 must 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 must thoroughly clean all equipment and materials furnished and installed, and must 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 the 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 must take over and maintain the Project Site, after order to start Work.
- B. The Contractor must 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 must, 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 must 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 must 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 must take over and maintain all Project areas, after order to start Work.
- B. Until the date of Final Acceptance, the Contractor must be responsible for the safety of all Project areas, including water, gas, electric and other mains and pipes and conduits and must, 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 must be kept clear at all times, maintained, and if damaged, repaired to serviceable conditions with materials to match existing.
- D. The Contractor must 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, must comply with DOB Bureau of Electrical Control requirements.

3.23 OBSTRUCTIONS IN DRAINAGE LINES:

A. The Contractor must 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 must be kept clear of any and all debris. Any stoppage must be repaired immediately at the expense of the Contractor.

3.24 PAYMENT OF ALLOWANCES:

- A. Unless otherwise called for in the Specifications, the following requirements apply to the payment and execution of Allowances established for the Contractor:
 - 1. Allowances are to be utilized when ordered and authorized in writing by the Commissioner.
 - 2. The Contractor will be paid on a time and materials (T&M) basis under the Allowance. Labor will be paid based on the Contractor's Certified Payrolls, all other expenses will be paid on an invoice basis. A markup of twelve percent (12%) for overhead and ten percent (10%) for profit will be allowed, except that no markup will be allowed on Payroll Taxes or on the premium portion of overtime pay or on sales and personal property taxes.

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 CONTRACT RECORD DOCUMENTS
 - G. 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 LEED Rating System, as specified in Section 01 81 13.03 "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS" or Section 01 81 13.04 "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 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.



<u>Term</u>	Definition		
Alternative Daily Cover (ADC)	Material other than earthen material placed on the surface of the active face of a municipal solid Waste landfill at the end of each Work Day to control vectors, fires, odors, blowing litter and scavenging.		
Design Consultant	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.		
Clean	Untreated and unpainted; not contaminated with oils, solvents, caulk or the like.		
Construction and Demolition (C&D) 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.		
Diversion from Landfill	Material removal from the Site for Recycling, Reuse or Salvage that might otherwise be sent to a landfill.		
Off-site Sorting	Material types that are combined on the project site and hauled away for sorting. Measured weights only. Approximations of weight or volume based on visual inspection are not acceptable.		
	a. Off-site Sorting Method 1: Diversion Rate derived from the weight of the individual diverted material type divided by the weight of the commingled waste. Individual diverted material types handled through this sorting method are each counted as an individual diverted material type.		
	b. Off-site Sorting Method 2: Diversion Rate derived from the waste sorting facility average diversion rate, multiplied by the weight of the commingled waste. All diverted materials handled through this sorting method are counted as a single diverted material type.		
On-site Sorting	Material types that have been sorted in segregated containers or project areas for removal as segregated diverted material types. Measured weights only. Approximations of weight or volume based on visual inspection are not acceptable.		
	 On-site Sorting: Diversion Rate derived from the weight of the diverted material type. Material diverted through this sorting method are each counted as an individual diverted material type. 		
Recyclable	The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.		
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.		
Return	To give back Reusable items or unused products to vendors.		



Reuse	To reuse excess or discarded construction material in some manner on the Project Site.		
Salvage	To remove a Waste material from the Project Site for resale or reuse.		
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.		
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.		
Waste-to-Energy	The conversion of non-Recyclable Waste materials into usable heat, electricity or fuel through a variety of processes, including combustion, gasification, pyrolization, anaerobic digestion and landfill gas recovery.		

1.5 WASTE MANAGEMENT PERFORMANCE REQUIREMENTS:

- A. The City of New York has established that this Project must generate the least amount of Waste possible and employ processes that ensure the generation of as little Waste as possible due to error, inaccurate planning, breakage, mishandling, contamination, or other factors.
- B. Of the Waste that is generated during demolition, as many of the Waste materials as economically feasible, and as stated here, must be Reused, Salvaged, or Recycled. Waste disposal in landfills must be minimized.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.5 C

- C. LEED CERTIFICATION: The City of New York will seek Leadership in Energy and Environmental Design (LEED) 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. With the exception of LEED v4 projects with demolition ADC Waste, a minimum of seventy-five percent (75%) of total Project demolition and construction Waste (by weight) must be diverted from landfill through at least four (4) diverted material types. LEED v4 projects with demolition ADC Waste must divert a minimum of fifty percent (50%) of total Project demolition and construction Waste (by weight) from landfill through at least three (3) diverted material types. 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; and
- 11. Reuse items indicated on the Contract Drawings and/or elsewhere in the Specification.
- E. All fluorescent lamps, High Intensity Discharge lamps and mercury-containing thermostats removed from the Site must be Recycled. Do not use bulb crusher on Site.
- 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.
- G. Land-clearing debris is not considered construction, demolition or renovation Waste and is not to be included as contribution to Waste diversion.
- H. A minimum of five (5) material types, both structural and nonstructural, are to be identified in the Construction Waste Management Plan for diversion.
- I. For LEED v4 projects, material to be used as ADC does not qualify as material diverted from disposal.

1.6 REFERENCES, RESOURCES:

- A. DDC encourages its Contractors to seek information from websites and experts in Salvage or Recycling inorder 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 responsible for removal); there are also outlets that will pick up, and in some cases, buy Recyclable materials. Examples of information resources are as follows:
 - 1. A standard Construction and Demolition (C&D) Waste Management Log form is available through DDC's Sustainable Design website:

https://www1.nyc.gov/assets/ddc/downloads/Sustainable/forms-local-law-86/waste-tracking-form.pdf.

- 2. Web Resources (information only; no warranty or endorsement is implied):
 - a. <u>www1.nyc.gov/assets/donate/site/</u> Website of donateNYC, a network of nonprofit organizations in New York City that accept and distribute second-hand and surplus goods.
 - b. <u>www.bignyc.org</u> Website of Build It Green NYC, a non-profit outlet for Salvaged and surplus building materials.
 - c. <u>www.usgbc.org</u> Website of the United States Green Building Council, with a description of the LEED certification process and requirements for C&D Waste Recycling.
 - d. <u>www.epa.gov/smm/sustainable-management-construction-and-demolition-materials</u>– Website of the U.S. Environmental ProtectionAgency (EPA) that discusses C&D Waste issues, and links to other resources.
- 3. Waste-to-Energy Facilities that need to comply with European Standard (EN) for Waste management and emissions into air, soil, surface water and groundwater:
 - a. <u>www.ec.europa.eu/environment/waste/framework/index.htm</u> European Commission Waste Framework Directive 2008/98/EC.
 - b. <u>https://eur-lex.europa.eu/homepage.html</u> European Commission Waste CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL 01 74 19 - 4



Incineration Directive 2000/76/EC.

c. <u>www.cen.eu/cen/Products</u> – EN Standards 303-1, 303-2, 303-3, 303-4, 303-5, 303-6, 303-7.

1.7 SUBMITTALS:

- A. The Contractor must refer to Section 01 33 00 SUBMITTAL PROCEDURES for submittal requirements.
- B. The Contractor must be responsible for the development and implementation of a Waste Management Plan for the Project. The Contractor's subcontractors must assist in the development of that Plan, and collect and deposit their Waste and Recyclable materials in accordance with the approved Plan.
- C. Draft Waste Management Plan: Within fifteen (15) Days after receipt of the Notice to Proceed (NTP), or prior to any Waste removal, whichever occurs sooner, the Contractor must submit to the Commissioner a Draft Waste Management Plan. Include separate sections for C&D Waste. The Plan must demonstrate how the performance goals will be met, and contain the following:
 - 1. List of material types targeted for Reuse, Salvage, or Recycling, and names, addresses, and phone numbers of receiving facilities/companies that will be purchasing or accepting each material. Each material listed is to include estimated amount in tons and percentage of overall construction waste of each of the material steams.
 - 2. Estimation of the percentage of overall construction waste that will be sent to landfill.
 - 3. Description of on-Site and/or off-Site sorting methods for all materials to be removed from Site. Off-site sorting methods must be categorized as Off-site Sorting Method 1 or Off-site Sorting Method 2.
 - 4. If mixed C&D Waste is to be sorted off-Site, provide a letter from the processor stating the average percentage of mixed C&D Waste they Recycle. Waste processor's average percentage of mixed C&D waste must not include Alternative Daily Cover as a recycled material for LEED v4 projects.
 - 5. Landfill information: Names of landfills where non-Recyclable/reusable/salvageable Waste will be disposed, and list of applicable tipping fees.
 - 6. Material handling procedures: Specify whether materials must be separated or commingled and describe the planned diversion strategies. Describe expected amount of each material type, where materials must be taken and how the Recycling facility must process the material. Provide 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.
 - 7. Transportation: A description of the means of transportation and destination for Recycled materials.
 - 8. Meetings: Regular meetings must be held monthly, or as directed by the Commissioner, and the Contractor must provide a description of these meetings to address Waste management.
 - 9. Sample spreadsheet and description of how the implementation of the Plan will be documented and submitted on a monthly basis.
- D. Final Waste Management Plan: Within fifteen (15) Days of Commissioner's approval of the Draft Waste Management Plan, the Contractor must submit a Final Waste Management Plan.



- E. Progress Reports: The Contractor must submit a monthly 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 Project Site Waste. A DDC C&D Waste Management Log form is 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 type;
 - d. Waste sorting method;
 - e. Total quantity of Waste, in tons/cubic yards, by type;
 - f. Quantity of Waste Salvaged, Recycled and/or Reused, by type;
 - g. Total quantity of Waste diverted from landfill (Recycled, Salvaged, Reused) as a percentage of total Waste; and
 - h. 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 measurement 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 must 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 must save such original documents for the life of the Project plus seven (7) years.
- F. LEED Submittal: For LEED-designated projects, submit final LEED construction Waste report 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. Waste report must include:
 - 1. At least four (4) material streams for diverted materials;
 - 2. Documentation of Recycling rates for commingled facilities; and
 - 3. For Waste-to-Energy strategy, submit documentation of facility adherence to relevant EN standards, and justification for the strategy.
- G. Refrigerant Recovery: Where refrigerant is recovered, submit statement of refrigerant recovery, which must include:
 - 1. Name, address, qualification data and signature of the refrigerant recovery technician responsible for recovering refrigerant;
 - 2. Statement that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations; and
 - 3. Date refrigerant was recovered.



1.8 QUALITY ASSURANCE:

- A. The Contractor must designate a Construction Waste Management Representative to ensure compliance with this section. The Representative must be present at the Project Site full-time and 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 must be discussed at the following meetings:
 - 1. Pre-demolition kick-off meeting;
 - 2. Pre-construction kick-off meeting;
 - 3. Regular job-site meetings; and
 - 4. Contractor toolbox meetings.
- E. For LEED v4 projects, Waste-to-Energy Facilities: Comply with EN standards for Waste management and emissions into air, soil, surface water, and groundwater.

PART II - PRODUCTS (Not Used)

PART III – EXECUTION

3.1 WASTE PLAN IMPLEMENTATION:

- A. Prior to the demolition and construction start, the Contractor must implement the Waste Management Plan, coordinate the Plan with all affected trades, and designate one individual as the Construction Waste Management Representative. The Representative 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 must 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 must oversee and document the results of the Plan. Monies received for Salvaged materials must remain with the Contractor, except the monies for those items specifically identified elsewhere in the specifications or indicated on the Contract Drawings as belonging to others.
- C. Responsibilities of subcontractors: Each subcontractor must be responsible for collecting its Waste, non-Returned surplus materials and rubbish, in accordance with the Waste Management Plan.
- D. Distribution: The Contractor must distribute copies of the Waste Management Plan to each subcontractor, Resident Engineer, Construction Manager, and the Commissioner.
- E. Instruction: The Contractor must provide on-Site instruction of proper Waste management procedures to be used by all parties at appropriate stages of the Project.
- F. Procedures: Conduct Waste management operations to ensure minimum interference with Site vegetation, roads, streets, walkways and other adjacent, occupied, and used facilities. The waste management operations include, but are not limited to:
 - 1. Collect commingled 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.
 - Inspect containers and bins for contamination and remove contaminated materials if found. Comply with requirements in the following General Conditions sections for controlling dust



and dirt, environmental protection, and noise control: Section 01 81 19 - INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS, Section 01 81 13.03 - SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS or Section 01 81 13.04 -SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 BUILDINGS, Section 01 10 00 – SUMMARY, Section 01 35 26 - SAFETY REQUIREMENTS PROCEDURES, Section 01 50 00 - TEMPORARY FACILITIES, SERVICES AND CONTROLS, and Section 01 73 00 – EXECUTION..

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 seventy-five percent (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



CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT LOG

Project Name:_

Project I.D.:

Contractor:	
Prepared by:	
For Month:	

Material Quantity (to		ns or cubic yards) ¹							
Haul Date	Ticket #	Hauling Company	*Material Type ²	Sorting Method⁵	*Total Weight	Excluded Material ³	*Diverted Material ⁴	*Landfilled Material	*Material Recipient
					*Total		*Diverted	*Landfilled	
Monthly Totals									
					•				
% Diverted this Month*									
						T			
Cumulative Totals									
% Diverted to Date							-		

Notes:

- 1. Volume (cubic yards) may be used instead of weight if used for ALL amounts and ALL materials.
- 2. Includes concrete; bricks; concrete masonry units (CMU); asphalt; metals; clean dimensional wood; carpet and pad; drywall; ceiling tiles; cardboard, paper, and packaging; and any other Reuse items indicated on the Contract Drawings and/or elsewhere in the Specifications.
- 3. Excluded material includes soil or land clearing debris and for LEED v4 projects, Alternative Daily Cover (ADC) such as screen fines and 6" minus.
- 4. Diverted material includes Recycled and Reused material diverted from landfill. Recycled material is reprocessed into new products. Reused material is reclaimed, Salvaged or otherwise used in its original form, either on-site or off-site.
- 5. Sorting Method must be classified as On-Site Sorted, Off-Site Sorted Method 1, or Off-Site Sorted Method 2.
- * These items must be listed in order to receive LEED credit.



(No Text on This Page)



SECTION 01 77 00 CLOSEOUT PROCEDURES

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 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 (USGBC) Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS or Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 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 must be in accordance with ASHRAE and USGBC LEED- NC procedures, as described in Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS and Section 01 91 15 GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE. The Contractor must 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 AND 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.



<u>Term</u>	Definition
Design Consultant	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 SUBSTANTIAL COMPLETION:

- A. Preliminary Procedures: Before requesting inspection to determine the date of Substantial Completion, the Contractor must 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. The Contractor must 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 must 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 Approved 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 must request re-inspection when the Work identified in previous inspections as incomplete are completed or corrected.
 - 2 Results of completed inspection will form the basis of the requirements for Final Acceptance.

1.6 FINAL ACCEPTANCE:

- A. Preliminary Procedures: Before requesting final inspection for Final Acceptance of the Work, the Contractor must 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 Contract 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 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS or Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 BUILDINGS; and
- 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 must state that each item has been completed or otherwise resolved for acceptance, and must 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 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 must 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 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.

1.7 WARRANTIES:

- A. Schedule B of the Addendum lists the items of materials and/or equipment for which manufacturer warranties are required. For each item of material and/or equipment listed in Schedule B, the Contractor must obtain a written warranty from the manufacturer. Such warranty must 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 must 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 fifteen (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 the entire Project or for a portion of the 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.
- I. 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 all applicable 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 must complete repair and restoration operations before requesting inspection for determination of Substantial Completion.



- B. Contractor must repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00



SECTION 01 77 00

ATTACHMENT 'A'

The following list is a general sample of Substantial Completion requirements, including, but not limited to:

- 1. Prepare and submit a list to the Resident Engineer of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
- 2. Obtain and submit any necessary releases enabling the City unrestricted use of the Project and access to services and utilities.
- 3. Regulatory Approvals: Submit all required documentation from applicable governing authorities, including, but not limited to, the New York City Department of Buildings (DOB); Department of Transportation (DOT); Department of Environmental Protection (DEP); Fire Department (FDNY); etc. Documentation includes, but is 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; and
 - 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 Contract Documents as described in Section 01 78 39, CONTRACT RECORD DOCUMENTS, including but not limited to:
 - a. Approved documentation from governing authorities;
 - b. As-built record drawings and Specifications; product data; operation and maintenance manuals;
 - c. Final Completion construction photographs;
 - d. Damage or settlement surveys;
 - e. Final property surveys; and
 - f. Similar final record information.
 - g. 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 Construction & Demolition (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.
- If applicable submit LEED letter template in accordance with the requirements of Section 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS or Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 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 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 FOR MEP SYSTEMS and/ or Section 01 91 15 BUILDING ENCLOSURE COMMISSIONNING REQUIREMENTS.
- 15. Complete final cleaning requirements, including touchup painting.
- 16. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.



SECTION 01 78 39 CONTRACT RECORD DOCUMENTS

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 administrative and general procedural requirements for Contract Record Documents, including:
 - 1. Contract Record Drawings
 - 2. Record Specifications, Addenda and Change Orders
 - 3. Record Product Data
 - 4. Record Sample Submittal
 - 5. Construction Record Photographs
 - 6. Operating and Maintenance Manuals
 - 7. Final Site Survey
 - 8. Demonstration and Orientation DVD
 - 9. Guarantees and Warranties
 - 10. Waste Disposal Documentation
 - 11. LEED Materials and Matrix
 - 12. Miscellaneous Record Submittals
- B. The Department of Design and Construction (DDC), at the start of construction (kick-off meeting), will furnish to the Contractor, at no cost, a complete set of Contract Record Drawings (PDF set) 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 drawings, if necessary, such as Addenda Drawings and Supplementary Drawings as may be necessary to indicate all Work in detail as actually completed. <u>All professional seals must be blocked out</u>. Title box complete with Project title and Design Consultants' names will remain.
- C. Maintenance of Documents and Samples: The Contractor must maintain, during the progress of the Work, an accurate record of the Work as actually installed, on Contract Record Drawings (PDF set). Store Contract 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 Contract 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.
 - 1. 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 must also show all connections, valves, gates, switches, cut-outs and similar operating equipment.



2. For projects designated to achieve a Leadership in Energy and Environmental Design (LEED) rating, the Contractor will 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 will 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.

RELATED SECTIONS: include without limitation the following: 1.3

- Α. Section 01 10 00 SUMMARY Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION Β. C.
 - PHOTOGRAPHIC DOCUMENTATION Section 01 32 33
- D. Section 01 33 00 SUBMITTAL PROCEDURES
- E. Section 01 77 00 PROJECT CLOSEOUT PROCEDURES

1.4 **DEFINITIONS:**

Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Α. Conditions not otherwise defined herein.

<u>Term</u>	Definition
Commissioning Authority / Commissioning Agent (CxA)	The entity responsible for providing commissioning services for the Project. The entity serving as the CxA may be either an employee(s) of the City or an entity engaged by the City to provide such services.
Design Consultant	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.
LEED Consultant	The entity responsible for providing LEED sustainability services for the Project. The entity serving as the LEED Consultant may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

- As-Built Contract Record Drawings: The Contractor must comply with the following: Α
 - Progress Submission: As directed by the Resident Engineer, submit progress as-built Contract 1. Record Drawings at the fifty percent (50%) construction completion stage.
 - 2. Final Submission: Before Substantial Completion payment, the Contractor must furnish to the Commissioner one (1) complete set of marked-up as-built Contract Record Drawings, in PDF indicating all of the Work and locations as actually installed.
 - 3. As-built Contract Record Drawings must 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 must 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 R	ECORD DRAWING	
Contractor's Name		
Contractor's Address		
Subcontractor's Name (w	here applicable)	
Subcontractor's Address	,	
Made by:	Date	
Checked by:	Date	
-		
	-	

Commissioner's Representatives (Resident Engineer) (Plumbing Inspector) (Heating & Ventilating Inspector) (Electrical Inspector)

DDC
DDC
DDC
DDC

- 5. Contract Record Drawing Title Sheet: The Contractor must prepare a title sheet, the same size as the Contract Record Drawings, which must 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 digital files 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 must 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 FOR MEP SYSTEMS and 01 91 15 GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE, 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 must 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 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 must 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 must maintain one (1) set of blue- or black-line white prints as applicable of the Contract Record Drawings and Shop Drawings. If applicable, the Contract Record Drawings and Shop Drawings must 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 must mark record drawings 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 must be distinctly encircled and identified by change order number correlating to changes listed on the "Title Sheet." The Contractor must 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 Contract Record Drawings;
 - 2. Revisions to details shown on Contract Record 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; and
 - 14. Record information on the Work that is shown only schematically.
- C. Progress Record Prints: As directed by the Resident Engineer, at fifty percent (50%) construction completion, review marked-up Record Prints with the Resident Engineer and the Design Consultant. When directed by the Resident Engineer, transfer progress mark-ups to a PDF set and submit to the Resident Engineer.



- D. Final Contract Record Prints: Immediately before final inspection for the Certificate of Substantial Completion, review marked-up record prints with the Resident Engineer and the Design Consultant. When authorized, complete mark-up of a full set of corrected PDF prints 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. Submit the as-built Contract Record Drawings and Shop Drawings for use as record prints 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 Contract 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 Contract 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 must meet with the Resident Engineer at the Site to determine which of the samples maintained during the construction period must 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 CONSTRUCTION RECORD PHOTOGRAPHS:

A. The Contractor must submit the final completion construction photographs, in compliance with Section 01 32 33 PHOTOGRAPHIC DOCUMENTATION.

2.6 OPERATING AND MAINTENANCE MANUALS:

- A. The Contractor must 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 must be the same color. When multiple binders are used, correlate data into related consistent groupings. Binder front must 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 must 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. Each manual must contain the following materials, in the order listed:
 - 1. Title page
 - 2. Table of contents
 - 3. Manual contents
- E. Arrange contents alphabetically by system, subsystem, and equipment. Cross-reference Specification Section numbers. Provide tabbed flyleaf for each separate product, equipment and/or system/subsystem with typed description of product and major component parts of equipment.
- F. Safety warnings or cautions must be visibly highlighted within each maintenance procedure. Use of such highlights must be limited to only critical items and must not be used in an excessive manner which would reduce their effectiveness.
- G. 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.
- H. 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.



- I. All material within manuals must be new. Copies used for prior submittals or used in construction must not be used.
- J. Submit preliminary and final manual editions to the Commissioner according to the approved progress schedule.
- K. Manuals must present all technical material to the greatest extent possible, with respect to text, tabular matter and illustrations. Illustrations must preferably consist of line drawings. All applicable drawings must be included. If available, color photograph prints may be included.
- L. Preliminary manual editions must be as technically complete as the final manual edition. All illustrations must be in final forms.
- M. Final manual editions must be technically accurate and complete and must represent all "as-built" systems, pieces of equipment, or materials, which have been accepted by the Commissioner. All illustrations, text and tabular material must be in final form. All shop drawings must be included as specified in individual Specification Sections.
- N. 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.
- O. Instructions for care and maintenance: Include manufacturers' recommendations for cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- P. 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.
- Q. Additional requirements: Specified in individual Specification Sections.

2.7 FINAL SITE SURVEY

A. The Contractor must submit the final certification and final survey in compliance with Section 01 73 00 EXECUTION.

2.8 DEMONSTRATION AND ORIENTATION DVD:

A. The Contractor must submit a final version of applicable demonstration and training electronic recordings in compliance with Section 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.

2.9 GUARANTEES AND WARRANTIES:

- B. SCHEDULE B: Requirements for guarantees and warranties for the Project are set forth in Schedule B, which is included as part of the Addendum.
- C. FORM: For all guaranty requirements set forth in Schedule B, the Contractor must provide a written guaranty, in the form set forth herein.
- D. Submit fully executed and signed manufacturers' warranties as listed in the Project Specifications and outlined in Schedule B of the Addendum. Refer to Section 01 77 00, CLOSEOUT PROCEDURES for submittal requirements.



GUARANTY

DDC PROJECT #		
PROJECT DESCRIPTION		
CONTRACT #		
SPECIFICATION SECTION # AND TITLE		
GUARANTY TO BE IN EFFECT FROM		
то		

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



2.10 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.

2.11 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 (1) 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 the Project.
- B. Maintenance of Record Documents and Samples: Store Contract 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 Contract 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 78 39



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CONTRACT RECORD DOCUMENTS 01 78 39- 10



SECTION 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 79 00

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 administrative and procedural requirements, when set forth in sections of the Project Specifications, for instructing the 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 video recordings.
- B. The Contractor must provide the services of orientation specialists from the Contractor's equipment manufacturers. The specialists must be experienced in the type of equipment to be demonstrated.
- C. Separate orientation sessions must 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 must 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 FOR MEP SYSTEMS, and/ or Section 01 91 15 BUILDING ENCLOSURE COMMISSIONNING 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 FOR MEP SYSTEMS
 - F. Section 01 91 15 BUILDING ENCLOSURE COMMISSIONNING REQUIREMENTS
 - G. Specific requirements for demonstration and orientation 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.

Term	Definition
Commissioning Authority / Commissioning Agent (CxA)	The entity responsible for providing commissioning services for the Project. The entity serving as the CxA may be either an employee(s) of the City or an entity engaged by the City to provide such services.
Design Consultant	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 an outline of the 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 orientation, submit three (3) complete training manual(s) and three (3) applicable video 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 a 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 materials to the Resident Engineer a minimum of fourteen (14) Days prior to the scheduled orientation.
- F. Demonstration and Orientation Recordings:
 - 1. All Projects:
 - a. The Contractor must submit to the Commissioner three (3) copies of demonstration and orientation video recordings within seven (7) Days of end of each orientation 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.
- d. Commissioned Projects: The Contractor must submit one (1) additional copy of the demonstration and orientation video recording to the CxA through the Resident Engineer who will include the approved recording in the commissioning report.

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 in accordance with Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION. Review methods and procedures related to demonstration and orientation including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.7 COORDINATION:

- A. Coordinate instruction schedule with the Resident Engineer and facility's operations. Adjust schedule as required to minimize disrupting facility's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of orientation modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by the Commissioner.

PART II – PRODUCTS

2.1 INSTRUCTION PROGRAM:

A. Program Structure: Develop an instruction program that includes individual orientation modules for each system and equipment not part of a system, as specified and required by individual Specification Sections.



- B. Orientation Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
 - 1. For 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; and
 - h. Performance curves.
 - 2. For documentation, review the following items in detail:
 - a. Emergency manuals;
 - b. Operations manuals;
 - c. Maintenance manuals;
 - d. Project Record Documents;
 - e. Identification systems; and
 - f. Warranties.
 - 3. For 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; and
 - f. Special operating instructions and procedures.
 - 4. For 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;
 - I. Required sequences for electric or electronic systems; and
 - m. Special operating instructions and procedures.
 - 5. For adjustments, include the following:
 - a. Alignments;
 - b. Checking adjustments;
 - c. Noise and vibration adjustments; and
 - d. Economy and efficiency adjustments.
 - 6. For troubleshooting, include the following:



- a. Diagnostic instructions; and
- b. Test and inspection procedures.
- 7. For 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; and
 - h. Housekeeping practices.
- 8. For 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; and
 - e. Review of spare parts needed for operation and maintenance.

PART III - EXECUTION

3.1 INSTRUCTION:

- A. Facilitator: Engage a qualified facilitator to prepare the instruction program and orientation 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 must engage qualified instructors to instruct the 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 upon times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
 - 1. Schedule orientation with the Resident Engineer with at least fourteen (14) Days advance notice.
- D. Evaluation: At the conclusion of each orientation module, assess and document each participant's mastery of module(s) by use of an oral or written 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 VIDEO RECORDINGS:

- A. All projects:
 - 1. The Contractor must engage a qualified commercial videographer to video 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 the 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 video recording on USB drive or other electronic media as requested by the Commissioner.


- 5. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and orientation. Display continuous running time.
- 6. Narration: Describe scenes on the recording by audio narration by microphone while recording or by dubbing audio narration off-site after. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
- 7. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from opposite the corresponding narration segment.
- B. Commissioned Projects: 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 the Contractor. The provider of the orientation program will video record the sessions and provide a copy to the CxA for final review and comments. If necessary, Contractor must edit the recording per CxA comments.

END OF SECTION 01 79 00



SECTION 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.03

PARTI – 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:

Department of

Design and

Construction

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 must 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, will 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
В.	Section 01 81 13.13	VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES,
		SEALANTS, PAINTS AND COATINGS FOR LEED v3 BUILDINGS
C.	Section 01 81 19	INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS
D.	Section 01 91 13	GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS
E.	Section 01 91 15	GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE

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.



Agrifiber Products	Means 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.
Composite Wood	Means 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.
Design Consultant	Means 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.
Forest Stewardship Council (FSC) Certified Wood	Means wood-based materials and products certified in accordance with the Forest Stewardship Council's principles and criteria.
LEED	Means the Leadership in Energy & Environmental Design rating system developed by the United States Green Building Council.
Rapidly Renewable Materials	Means 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.
Regionally Manufactured Materials	Means 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.
Regionally Extracted, Harvested, or Recovered Materials	Means materials which are extracted, harvested, or recovered and manufactured within a radius of 500 miles from the Project site.
Recycled Content	Means 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). 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. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials. "Pre-consumer" may also be referred to as "post-industrial".
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.



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.
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1.5 LEED PROVISIONS:

A. Refer to the Addendum for the LEED rating to be achieved for this project. The provisions to achieve this LEED rating are integrated within the project construction documents and specifications. The Contractor is specifically directed to the "LEED BUILDING Performance Criteria" and "LEED BUILDING Submittals" sections within the contract specification. Additional LEED requirements are met through aspects of the project design, including material and equipment selections, which may not be specifically identified as LEED BUILDING requirements. Compliance with the requirements needed to_obtain LEED prerequisites and credits will be used as one criterion to evaluate substitution requests.

1.6 LEED BUILDING SUBMITTALS:

- A. Scope: LEED BUILDING submittals are required for all installed materials included in General Construction work. LEED BUILDING Submittals are only required for field-applied adhesives, sealants, paints and coatings included in Plumbing, Mechanical and Electrical work. Submit all required LEED BUILDING submittals in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.
- B. Applicability: The extent of the LEED BUILDING Submittals varies depending on the specification section. Applicable LEED BUILDING Submittals are listed under the "LEED BUILDING Submittals" heading in each specification section. The detailed requirements for the LEED BUILDING Submittals are defined in Item C below.
- C. Detailed Requirements: Sub-Sections 1.6 C.1through 1.6 C.3 below defines the information and documents to be provided for each type of LEED BUILDING Submittal as identified in the LEED Submittal Requirements of each specification section:
 - 1. ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM (EBMCF)[GHI]: Information to be supplied for this form (blank sample copy attached at end of this Section to be modified as appropriate to the project) must 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 must 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).
 - For each product with recycled content, also indicate the total recycled content value (1/2 x pre-consumer percentage x product value + 1 x post-consumer percentage x product value = total recycled content value).
 - 2) See additional requirements for concrete below.
 - c. Identification (Yes/No) of materials manufactured within 500 miles of the project site AND containing raw materials harvested or extracted within 500 miles of the project site.
 - 1) Indicate the percentage by weight, relative to the total weight of the product that meets these criteria.
 - 2) Indicate the point of harvest/extraction/recovery of regional raw materials, the point of final assembly of regional manufactured products, and the distance from each point to the project site.



- d. Volatile Organic Compound (VOC) content of all field-applied adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon, less water.
 - 1) For detailed requirements refer to Section 01 81 13.13 VOC LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
- e. The amount of "Forest Stewardship Council (FSC) Certified" wood products if used in the Project.
 - 1) Record only new FSC-certified wood products. Do not record reclaimed, salvaged, or recycled FSC-certified wood products.
 - 2) Reclaimed, salvaged, or recycled FSC-certified wood may be recorded as postconsumer 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 must record the above information only for those materials or products permanently installed in the project. The EBMCF must record VOC content, composite and agrifiber products, and CRI or FloorScore ratings only for those materials or products permanently installed within the weather barrier of the LEED building.
- 2. EBMCF BACK-UP DOCUMENTATION: These documents are used to validate the information provided on the EBMCF (except cost data). For each material listed on the EBMCF, provide documentation to certify the material's LEED BUILDING attributes, as applicable:
 - a. RECYCLED CONTENT: Provide published product literature or letter of certification on the manufacturer's letterhead certifying the amounts of post-consumer and/or post-industrial content.
 - b. REGIONAL MANUFACTURING **AND** REGIONAL RAW MATERIALS (WITHIN 500 MILES): Provide published product literature or letter of certification on the manufacturer's letterhead indicating the city/state where the manufacturing plant is located, where each of the raw materials in the product were extracted, harvested or recovered and the distance in miles from the project site.
 - 1) If only some of the raw materials for a particular product or assembly originate within 500 miles of the project site, provide the percentage (by weight) that these materials comprise in the complete product.



- c. VOC CONTENT: Provide Material Safety Data Sheets (MSDS) certifying the Volatile Organic Compound (VOC) content of the adhesive, sealant, paint, or coating products. VOC content is to be reported in grams/liter or lbs./gallon, less water. If the MSDS does not show the product's VOC content, this information must be provided through other published product literature from the manufacturer, or stated in a letter of certification from the product manufacturer on the manufacturer's letterhead.
- d. RAPIDLY RENEWABLE MATERIALS: If used in the project, provide published literature or letter of certification on the manufacturer's letterhead certifying the percentage of each product that is rapidly renewable (by weight).
- 3. PRODUCT CUT SHEETS: Provide product cut sheets with the Contractor's or sub-contractor's stamp, confirming that the submitted products are the products installed in the Project.
- 4. CRI GREEN LABEL PLUS CERTIFICATION: For carpets and carpet cushions, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the "Green Label Plus" IAQ testing program of the Carpet and Rug Institute of Dalton, GA.
- 5. CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER RESINS: For all composite wood, engineered wood and agrifiber products (including plywood, particleboard, and medium density fiberboard), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that that the products do not contain added urea-formaldehyde resins.
- 6. CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER LAMINATING ADHESIVES: For all laminating adhesives used with composite wood, engineered wood and agrifiber products (e.g., adhesives used to laminate wood veneers to an engineered wood substrate), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the adhesive products do not contain urea-formaldehyde.
- 7. FSC-CERTIFIED WOOD:
 - a. If used in the project, provide chain of custody documents and copies of invoices regarding wood products, including whether or not such wood product is FSC-certified.
 - b. If used in the project, for assemblies, provide the percentage (by cost and by weight) of the assembly that is FSC-certified wood.
 - c. If used in the project, for assemblies, provide published product literature or letter from the manufacturer(on the manufacturer's letterhead) verifying the percentage that is FSC-certified wood.
- 8. GREEN SEAL COMPLIANCE: Provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the following product types comply with the VOC limits and chemical component restrictions developed by the Green Seal organization of Washington, DC:
 - a. Interior Architectural Paints and Coatings: refer to Green Seal standard GS-11 (1st edition, May 1993)
 - b. Anti-corrosive and Anti-rust paints: refer to Green Seal standard GC-03 (2nd Edition, January 1997)
 - c. Aerosol Adhesives: refer to Green Seal standard GS-36 (1st edition, October 2000)
- 9. HIGH ALBEDO PAVING AND WALKWAY MATERIALS: For paving and walkway materials made from concrete or brick provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying a minimum Solar Reflectance Index (SRI) value of 29. SRI



values will be calculated according to ASTM E 1980. Reflectance will be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance will 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 will be calculated according to ASTM E 1980. Reflectance will be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance will be measured according to ASTM E 408 or ASTM C 1371.

Vegetated roof surfaces are exempt from the SRI criteria.

- 11. LOW MERCURY LAMPS: For all fluorescent, compact fluorescent, and HID lamps installed in the project, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying:
 - a. The mercury content or content range per lamp in milligrams or picograms;
 - b. The design light output per lamp (light at 40% of a lamp's useful life) in lumens; and
 - c. The rated average life of the lamp in hours.

In addition, provide the total number of each lamp type installed in the project.

- 12. FLOORSCORE CERTIFICATION: For all hard surface flooring, including vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, and wall base, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the current FloorScore standard requirements.
- 13. CONCRETE: Provide concrete mix design for each mix, designated by a distinct identifying code or number and signed by a Professional Engineer licensed in the state in which the concrete manufacturer or supplier is located.
- 14. INTERIOR LIGHTING FIXTURES: For each lighting fixture type installed within the building's weather barrier, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Dimming capability, in range of percentages.
- 15. EXTERIOR LIGHTING FIXTURES: For each lighting fixture type installed on site, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Range of field adjustability, if any.
 - e. Warranty of suitability for exterior use.



- 16. ALTERNATIVE TRANSPORTATION: Provide manufacturer's cut sheets and/or shop drawings for the following items installed on site:
 - a. Bike racks, including total number of bicycle slots provided.
 - b. Signage indicating parking spaces reserved for electric or low-emitting vehicles and for carpools/vanpools, including total number of signs.
- 17. WATER CONSERVING FIXTURES: For all water consuming plumbing fixtures and fittings, provide manufacturer's cut sheets showing maximum flow rates and/or flush rates.
- 18. ENERGY SAVING APPLIANCES: Provide manufacturer's cut sheets and published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the product's rating under the U.S. EPA/DOE Energy Star program, for all of the following:
 - a. Appliances (i.e., refrigerators, dishwashers, microwave ovens, televisions, clothes washers, clothes dryers, chilled water dispensers).
 - b. Office equipment (i.e., copy machines, fax machines, plotters/printers, scanners, binding and publishing equipment).
 - c. Electronics (i.e., servers, desktop computers, computer monitor displays, laptop computers, network equipment).
 - d. Commercial food service equipment
- 19. GLAZING: For glazing in any windows, doors, storefront and window wall systems, curtainwall systems, skylights, and partitions, provide manufacturer's cut sheets indicating the following:
 - a. Glazed area.
 - b. Visible light transmittance.
 - c. Solar heat gain coefficient.
 - d. Fenestration assembly u-factor.
- 20. VENTILATION: Provide manufacturer's cut sheets for the following:
 - a. Carbon dioxide monitoring systems, if any, installed to measure outside air delivery.
 - b. Air filters: for detailed requirements refer to Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS.
- 21. REFRIGERATION: For all refrigeration equipment, provide manufacturer's cut sheets indicating the following:
 - a. Equipment type.
 - b. Equipment life. Default values specified by the 2007 ASHRAE Applications Handbook will be used unless otherwise demonstrated by the manufacturer's guarantee and an equivalent long-term service contract.
 - c. Refrigerant type.
 - d. Refrigerant charge in pounds of refrigerant per ton of gross cooling capacity.
 - e. Tested refrigerant leakage rate, in percent per year. A default rate of 2% will be used unless otherwise demonstrated by test data.
 - f. Tested end-of-life refrigerant loss, in percent. A default rate of 10% will be used unless otherwise demonstrated by test data.



1.7 LEED BUILDING SUBMITTAL REQUIREMENTS:

A. The LEED BUILDING Submittal information must be assembled into one package per contract specification section(s) (or per subcontractor), and submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES. Incomplete or inaccurate LEED BUILDING submittals may be used as the basis for the rejection of products or assemblies. Incomplete or inaccurate LEED BUILDING Submittals may be used as the basis for rejecting the submitted products or assemblies.

1.8 LEED ACTION PLANS:

- A. Construction Waste Management Plan- Refer to Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL for detailed submittal requirements.
- B. Construction IAQ Management Plan- Refer to Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS for detailed submittal requirements.
- C. Erosion and Sedimentation Control Plan:
 - 1. The Plan must be in accordance with the New York State Department of Environmental Conservation (NYSDEC) or the 2003 EPA Construction General Permit, whichever is more stringent.
 - 2. The Plan must be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEEDURES.
 - 3. Detailed requirements: ESC Plan
 - a. Include the Stormwater Pollution Prevention Plan, if required.
 - b. Identify the party responsible for Plan monitoring and documentation. The party must be regularly on site.
 - c. Describe all site work that will be implemented on the project.
 - d. Provide site plan with location of ESC measures, including, but not limited to, stormwater quantity controls, stormwater quality controls, stabilized construction entrances, washdown areas, and inlet/catch basin protection.
 - e. Describe the inspection and maintenance of the ESC measures. Provide a construction schedule indicating weekly site review.
 - f. Describe reporting and documentation measures.
 - 4. Detailed requirements: ESC Measures
 - 5. Submittal requirements: ESC Tracking Log
 - a. Note date of major rain events, describe damage, describe any repairs or maintenance performed, and note responsible party.
 - b. Note date and findings of weekly site review, describe any repairs or maintenance performed, and note responsible party.
 - c. Submit monthly.
 - 6. Implementation
 - a. The Contractor must 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 must be responsible for the provision, maintenance, and repair of all ESC measures.
- c. Demonstration. The Contractor must provide on-site instruction of proper construction practices required to prevent erosion and sedimentation.
- d. Meetings. Urgent or ongoing ESC issues will be discussed at weekly on-site job meetings.

1.9 QUALITY ASSURANCE:

- A. The Contractor must 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 is 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 is responsible for distributing the EBMCF and any other forms or templates required for the subcontractors to record LEED documentation. The Contractor 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 must 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 13.03



Division 01 – DDC STANDARD GENERAL CONDITIONS SINGLE CONTRACT PROJECTS Issue Date: March 15, 2020

ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM

Contractor Name:	
Contractor Contact:	
Telephone Number:	

Project Name: ______ Project I.D.: _____

		Recycled C	Content		Regional ⁴			Rapidly Re	newable ⁷	VOC co	ontent ⁸	Flooring ⁹	Wood	
		Pre-	Post-	Total %	Location &	Location &	Extracted			*VOC	*VOC	*Green	*Added urea	FSC
	Material	Consumer	Consumer	(1/2 Pre	Distance to	Distance to	& Manuf.			content	content	Label or	formaldehyde	Certified ¹
Product/Manufacturer	Cost ¹	(% by wt) ²	(% by wt) ³	+ Post)	Extraction ⁵	Manufacture ⁶	(% by wt)	Material	% by wt	listed	allowed	FloorScore	(Yes/No) 10	(% by wt)

¹Material Cost: As it appears on the manufacturer's or distributor's invoice to the contractor or subcontractor. Does not include labor or equipment costs associated with installation.

² Pre-Consumer Recycled Content: Industrial/manufacturing waste material (e.g., fly-ash and synthetic gypsum, both waste products from coal burning electricity plants) diverted from landfill and incorporated into a finished product. Scrap raw materials that can be reused in the same manufacturing process from which they are recovered are not considered Pre-Consumer Recycled Content.

³ Post-Consumer Recycled Content: Material or product that has served its intended consumer use (e.g., an empty plastic bottle) and has been diverted from landfill and incorporated into a finished product.

* Regional: Refers to a material/product that is BOTH extracted AND manufactured within 500 miles of the Project site. Record this information ONLY for materials/products meeting BOTH of these criteria.

⁵ Extraction: Refers to the location from which the raw resources used in a building product are extracted, harvested, or recovered.

⁶ Manufacture: Refers to the location of the final assembly of components into a building product that is furnished and installed by the Contractor.

7 Rapidly Renewable: Refers to materials/products derived from agricultural products that are typically harvested within a ten-year or shorter cycle.

*VOC Content: The quantity of volatile organic compounds contained in adhesives, sealants. paints and architectural coatings. Reported in grams/liter or lbs/gallon, less water.

⁹ Flooring: For carpet, indicate Carpet and Rug Institute (CRI) Green Label Plus certification. For carpet cushion, indicate CRI Green Label certification. For all flooring except unfinished/untreated wood and mineral-based flooring (tile, masonry, terrazzo, cut stone) without organic-based coatings or sealants, indicate Resilient Floor Covering Institute FloorScore rating. VOC limits for adhesives, sealants, etc. still apply.

¹⁰Added Urea Formaldehyde: Applies to composite wood and agrifiber products only (plywood, particleboard, MDF, OSB, wheatboard, strawboard). Resins or binders with added urea formaldehyde are <u>prohibited</u>. ¹¹FSC 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:

a duly authorized representative of ______ (the Contractor) hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by the Contractor as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Commissioner.

Signature of Authorized Representative: _____ Date: _____



SECTION 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.04

PARTI – 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 must 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, will 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
 - 6. VOC Requirements for Interior Adhesives and Sealants
 - 7. VOC Requirements for Interior Paints and Coatings
 - 8. Low-Emitting Materials, Flooring
 - 9. Low-Emitting Materials, Composite Wood
 - 10. Low-Emitting Materials, Ceilings, Walls, Thermals and Acoustic Insulation
 - 11. Low-Emitting Materials, Furniture
 - 12. Low-Emitting Materials, Exterior Applied Products
 - 13. Low-Emitting Materials, Additional Low-Emitting Requirements
- C. This Section includes requirements for Volatile Organic Compound (VOC) emissions and content in specific materials used within the Project.
- D. All sections in the Project Specifications with adhesives, sealant or sealant primer applications, paints, coatings, flooring, composite wood, ceilings, walls, thermal and acoustic insulation, furniture, and for healthcare and schools, exterior applied products, must 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, coatings, flooring, composite wood, ceilings, walls, thermal and acoustic insulation, furniture, and for healthcare and schools, exterior applied products, the requirements set forth in this Section will prevail.



1.3 RELATED SECTIONS: Include without limitation the following:

- A. Section 01 74 19
- B. Section 01 81 19
- C. Section 01 91 13
- D. Section 01 91 15

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE

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.

Adhesive	Any substance used to bond one surface to another by attachment. Includes adhesive primers and adhesive bonding primers.
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
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.
Bio-based materials	Composed in whole or in significant part of biological products, renewable agricultural materials or forestry materials, and must meet the Sustainable Agriculture Network's Sustainable Agriculture Standard. Bio-based raw materials must be tested using ASTM Test Method D6866 and be legally harvested, as defined by the exporting and receiving country. Exclude hide products, such as leather and other animal skin material.
Building Exterior	A structure's primary and secondary weatherproofing system, including waterproofing membranes and air- and water-resistant barrier materials, and all building elements outside that system.
Building Interior	Everything inside a structure's weatherproofing membrane.
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).
Certified Wood	See Forest Stewardship Council (FSC) Certified Wood.
Clear Wood Finish	Clear/semi-transparent coating applied to wood substrates to provide a transparent or translucent solid film.
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.
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 l-joists or finger-jointed lumber.
Cradle-to-Gate Assessment	Analysis of a product's partial life cycle, from resource extraction to the factory gate, before it is transported for distribution and sale.
Design Consultant	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.



Enclosure	The exterior plus semi-exterior portions of the building. Exterior consists of the elements of a building that separate conditioned spaces from the outside (i.e., the wall assembly). Semi-exterior consists of the elements of a building that separate conditioned space from unconditioned space or that encloses semi-heated space through which thermal energy may be transferred to or from the exterior or conditioned or unconditioned spaces (e.g., attic, crawl space, basement).
Environmental Product Declaration (EPD)	A statement that the item meets the environmental requirements of, ISO 14025, 14040 and EN 15804, or ISO 21930 and have at least a cradle-to-gate scope.
Extended Producer Responsibility	A waste management strategy, also known as closed-loop program or product take-back, where the manufacturer's responsibility for a product is extended to the post-consumer stage of the product's life-cycle.
Floor Coating	Opaque coating applied to flooring. Excludes industrial maintenance coatings.
Forest Stewardship Council (FSC) Certified Wood	Wood-based materials and products certified in accordance with the Forest Stewardship Council's principles and criteria.
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.
Inherently Non-Emitting Materials	Products that are inherently non-emitting sources of VOCs, including stone, ceramic, powder-coated metals, plated or anodized metals, lass, concrete, clay brick, unfinished solid wood, untreated solid wood. These materials are considered compliant without VOC testing if they do not include integral organic-based surface coatings, binders or sealants.
Lacquer	Clear/semi-transparent coating formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and provide a solid, protective film.



LEED	The Leadership in Energy & Environmental Design rating system developed by the United States Green Building Council (USGBC).
Life-Cycle Assessment	An evaluation of the environmental effects of a product from cradle to grave, as defined by ISO 14040-2006 and ISO 14044-2006.
Mutagen	A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarding as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification of Chemicals Which Cause Mutations in Germ Cells (United Nations Economic Commission for Europe, Globally Harmonized System of Classification and Labeling of Chemicals).
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.
Paint	 A pigmented coating. For the purposes of this specification, paint primers are considered to be paints. A. 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). B. 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). C. Non-Flat High-Gloss Coating or Paint: Has a gloss of greater than or equal to 70 (using a 60-degree meter). Anti-Corrosive / Rust Preventative Paint: Coating formulated and recommended for use in preventing the corrosion of ferrous metal substrates.
Permanently Installed Building Product	See Product.
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.
Product	An item that arrives on the Project site either as a finished element ready for installation or as a component to another item assembled on-site. The product unit is defined by the functional requirement for use in the Project; this includes the physical components and services needed to serve the intended function of the permanently installed building product. Similar products within a specification will each contribute as a separate product.
Product-Specific Declaration	Products with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle-to-gate scope.
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). Recycled content claims for products must conform to the definition in ISO 14021-1999, Environmental Labels and Declarations, Self-Declared Environmental Claims (Type II Environmental Labeling).
	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. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials. "Pre-consumer" may also be referred to as "post- industrial".
Regionally Manufactured Materials	Materials that are manufactured, distributed and purchased within a radius of 100 miles from the



	Project location. Manufacturing refers to all points
Regionally Extracted, Harvested, or Recovered Materials	Materials which are extracted, harvested or recovered, manufactured, distributed and purchased within a radius of 100 miles from the Project site.
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.).
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).
Sealant	Any material with adhesive properties, formulated primarily to fill, seal, or waterproof gaps or joints between surfaces. Includes sealant primers and caulks.
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.
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.
Stain	Clear semi-transparent/opaque coating formulated to change the color but not conceal the grain pattern or texture of the substrate.
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.
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.
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.Waterproofing Sealer: A coating that prevents the penetration of water into porous substrates.

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. 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 permanently installed materials included in General Construction work. For Plumbing, Mechanical and Electrical work, LEED Building Submittals are only required for field-applied adhesives, sealants, paints and coatings. Voluntary inclusion of system components such as piping, pipe insulation, ducts, conduits, plumbing fixtures, faucets and lamp housings must be consistently applied to the Project's LEED credits. 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 Sub-Section 1.6 C below.
- C. Detailed Requirements: Sub-Sections 1.6 C.1 through 1.6 C.18 below define the information and documents to be submitted for each type of LEED Building Submittal as identified in the LEED Building Submittals heading in each specification section:
 - LEED v4 Material and Resources (MR) Credits Calculator for Building Product Disclosure and Optimization (Disclosure and Optimization Calculator): With each submittal of a product permanently installed in the Project, the Contractor is responsible for the completion of the Disclosure and Optimization Calculator, which can be found on USGBC's website. The Contractor must maintain an updated Disclosure and Optimization Calculator for all applicable products throughout the Project duration and submit the updated calculator on a monthly basis.



- a. The Disclosure and Optimization Calculator will record the information outlined in Items b.-c. below for all permanently installed products, the information outlined in Item d. below for all permanently installed concrete mixes, and the information outlined in Items e.-i. below for all permanently installed products that have the content, disclosure or optimization characteristics described herein:
- b. Cost breakdowns for the materials included in the Contractor or subcontractor's scope of work. Cost reporting must include itemized material costs (excluding the Contractor's labor, equipment, overhead and profit).
- c. The percentages (by weight) of post-consumer and/or post-industrial recycled content in the supplied product(s).
 - For each product with recycled content, also indicate the total recycled content value (1/2 x pre-consumer percentage x product value + 1 x post-consumer percentage x product value = total recycled content value).
 - 2) See additional requirements for concrete in section 1.6.C.1.d below.
- d. 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, submit a complete breakdown of all components, by weight and by cost.
- e. Identification (Yes/No) of materials manufactured, distributed and purchased within 100 miles of the Project site AND containing raw materials harvested or extracted within 100 miles of the Project site, if used in the Project, as well as the following information:
 - 1) Indicate the percentage by weight, relative to the total weight of the product that meets these criteria.
 - 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.
- f. The percentage (by cost) of "Forest Stewardship Council (FSC) Certified" wood products, if used in the Project.
 - 1) Record all new wood products, indicating which are FSC-certified. Do not record reclaimed, salvaged, or recycled FSC-certified wood products.
 - 2) Reclaimed, salvaged, or recycled FSC-certified wood may be recorded as postconsumer recycled content.
- g. The number or percentage of products with Environmental Product Declarations (EPD), with fractional or multiplied values as indicated below. If a product used in the Project has an EPD Declaration, submit one of the following:
 - 1) EPD:
 - i. Product-Specific Declaration: Valued as one quarter (1/4) of a product
 - ii. Industry-Wide (Generic) EPD: Valued as one half (1/2) of a product
 - iii. Product-Specific Type III EPD: Valued as one whole product
 - 2) Documentation of third-party certification of impact reduction below industry average for at least three of the following categories, valued at 100%:
 - i. Global warming potential (greenhouse gases), in CO₂e;
 - ii. Depletion of the stratospheric ozone layer, in kg CFC-11;
 - iii. Acidification of land and water sources, in moles H+ or kg SO₂;
 - iv. Eutrophication, in kg nitrogen or kg phosphate;
 - v. Formation of tropospheric ozone, in kg NOx or kg ethene; and depletion of nonrenewable energy resources, in MJ.
 - 3) For 1) and 2) above, if a product is also sourced (extracted, manufactured, purchased) within 100 miles of the site, it is valued as two times the whole product.



- 4) For 1) and 2) above, structure and enclosure materials may not constitute more than 30% of the value of compliant building products.
- h. The number or percentage of products for which Sourcing of Raw Materials has been documented, with fractional or multiplied values as indicated below. If a product used in the Project has documented Sourcing of Raw Materials, submit one of the following:
 - 1) Corporate sustainability report (CSR). Submit one of the following:
 - i. Manufacturer's self-declared report: valued as half of a product
 - ii. Third-party verified CSR which include environmental impacts of extraction operations and activities associated with the manufacturer's product and the product's supply chain: valued as one whole product:
 - 1. Global Reporting Initiative (GRI) Sustainability Report
 - 2. Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises
 - 3. U.N. Global Compact: Communication of Progress
 - 4. ISO 26000: 2010 Guidance on Social Responsibility
 - 5. Other USGBC approved programs meeting the CSR criteria
 - 2) Documentation of at least one of the responsible extraction criteria below:
 - i. Extended producer responsibility program, valued as half of a product
 - ii. Bio-based materials, valued as one whole product
 - iii. Certified Wood: Wood-based materials include all materials made from wood, including engineered wood products and wood-based panel products, valued as one whole product
 - iv. Material Reuse: Materials may be salvaged, refurbished, or reused, valued as one whole product.
 - v. Recycled content. The sum of post-consumer recycled content plus one-half the pre-consumer recycled content, based on cost, valued as one whole product.
 - vi. Other USGBC approved programs meeting leadership extraction criteria
 - 3) For 1) and 2) above, if a product is also sourced (extracted, manufactured, purchased) within 100 miles of the site: valued as two times the whole product.
 - 4) For 1) and 2) above, structure and enclosure materials may not constitute more than 30% of the value of compliant building products. Products meeting multiple criteria may only be counted once.
- i. The number or percentage of products for which Material Ingredients have been disclosed, with fractional or multiplied values as indicated below. If a product used in the Project discloses its Material Ingredients, submit one of the following:
 - 1) Chemical inventory of the product to at least 0.1% (1000 ppm), documented by one of the following:
 - i. Manufacturer Inventory
 - ii. Health Product Declarations (HPDs)
 - iii. Cradle to Cradle (C2C) certifications
 - iv. Declare product labels
 - v. ANSI/BIFMA e3 Furniture Sustainability Standard (Furniture may be included, providing it is included consistently in all MR Credits.)
 - 2) Documentation of compliance with one of the following material ingredient optimization criteria programs:
 - i. GreenScreen benchmarks
 - ii. Cradle to Cradle certifications



- iii. REACH optimizations
- iv. Other USGBC approved programs meeting building product optimization criteria
- 3) Documentation that the product is sourced from a manufacturer that meets all of the below supply chain optimization criteria:
 - i. Manufacturer engages in validated and robust safety, health, hazard and risk programs which at a minimum document at least 99% (by weight) of the ingredients used to make the building product or building material
 - ii. Manufacturer provides independent third party verification of the following conditions for their supply chain, at a minimum:
 - 1. Processes are in place to communicate and transparently prioritize chemical ingredients along the supply chain according to available hazard, exposure and use information to identify those that require more detailed evaluation
 - 2. Processes are in place to identify, document, and communicate information on health, safety and environmental characteristics of chemical ingredients
 - 3. Processes are in place to implement measures to manage the health, safety and environmental hazard and risk of chemical ingredients
 - 4. Processes are in place to optimize health, safety and environmental impacts when designing and improving chemical ingredients
 - 5. Processes are in place to communicate, receive and evaluate chemical ingredient safety and stewardship information along the supply chain
 - 6. Safety and stewardship information about the chemical ingredients is publicly available from all points along the supply chain
- 4) For 2) and 3) above, if a product is also sourced (extracted, manufactured, purchased) within 100 miles of the site: valued as two times the whole product. Products compliant with both 2) and 3) may only be counted once.
- 5) For 1), 2), and 3) above, structure and enclosure materials may not constitute more than 30% of the value of compliant building products.
- 2. LEED v4 Indoor Environmental Quality Credit Low-Emitting Materials Calculator (EQ Calculator). With each relevant product submittal, the Contractor is responsible for the completion of the EQ Calculator, which can be found on USGBC's website. The Contractor must maintain an updated EQ Calculator throughout the Project duration for all applicable products and submit the updated calculator on a monthly basis.
 - a. The EQ Calculator must record information for all relevant products as outlined below. Include the following documentation. Detailed requirements are listed in b. j. below.
 - 1) Volume used of all field applied interior adhesives, sealants, paints & coatings.
 - 2) VOC content of all field-applied interior adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon, less water.
 - 3) General Emissions Evaluation for more than 90 percent of all field-applied interior paints, coatings, adhesives, and sealants, by volume, and for 100 percent of all flooring, ceilings, walls, and thermal and acoustic insulation.
 - 4) Composite Wood Evaluation for all composite wood not covered by other categories.
 - 5) Furniture Evaluation for 90% of all furniture, by cost.
 - 6) For schools/healthcare only: Exterior-Applied Products Evaluation for 90% of all exterior applied materials, measured by volume. All batt insulation products must contain no added formaldehyde.



- b. VOC REQUIREMENTS, GENERAL: The following materials must meet the listed compliance requirements for emissions and content standards, for all applicable categories. All products must comply with each applicable threshold requirement. Refer to LEED BD+C Reference Guide, EQ Credit Low-Emitting Materials for additional guidance.
 - General Emissions Requirements: Products must demonstrate they have been tested and determined compliant in accordance with California Department of Public Health (CDPH), Standard Method v1.1-2010 or v1.2-2017, using the applicable exposure scenario, and stating the range of total VOCs (TVOC) after 14 days measured as specified in the CDPH Standard Method v1.1 as follows:
 - i. 0.5mg/m3 or less;
 - ii. between 0.5 and 5.0 mg/m3; or,
 - iii. 0.50 mg/m3 or more
 - 2) No product may contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bioacculmulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception will be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which must be less than or equal to 1% by weight of the product.
 - 3) No product may contain the following:
 - i. methylene chloride
 - ii. 1,1,1-trichloroethane
 - iii. benzene
 - iv. toluene
 - v. ethylbenzene
 - vi. vinyl chloride
 - vii. naphthalene
 - viii. 1,2-dichlorobenzene
 - ix. di (2-ethylhexyl) phthalate
 - x. butyl benzyl phthalate
 - xi. di-n-butyl phthalate
 - xii. di-n-octyl phthalate
 - xiii. diethyl phthalate
 - xiv. dimethyl phthalate
 - xv. isophorone
 - xvi. antimony
 - xvii. cadmium
 - xviii. hexavalent chromium
 - xix. lead
 - xx. mercury
 - xxi. formaldehyde
 - xxii. methyl ethyl ketone
 - xxiii. methyl isobutyl ketone
 - xxiv. acrolein
 - xxv. acrylonitrile
 - 4) No product may contain more than 1.0% by weight of sum total of volatile aromatic compounds.
- c. VOC REQUIREMENTS FOR INTERIOR ADHESIVES AND SEALANTS:
 - 1) For field applications that are inside the weatherproofing system, use adhesives and sealants that comply with the following limits for VOC content when calculated according to South Coast Air Quality Management District (SCAQMD) Rule #1168 requirements in effect on July 1, 2005, and rule amendment date January 7, 2005:



Architectural Applications: Indoor carpet adhesives 50 Carpet pad adhesives 50 Outdoor carpet adhesives 150 Wood flooring adhesives 100 Rubber floor adhesives 60 Subfloor adhesives 50 Ceramic tile adhesives 50 Core base adhesives 50 Core base adhesives 50 Cove base adhesives 50 Cove base adhesives 50 Multipurpose construction adhesives 70 Structural glazing adhesives 100 Single ply roof membrane adhesives 250 Specialty Applications: — PVC welding 510 CPVC welding 510 Adhesive primer for plastic 550 Computer diskette manufacturing 350 Contact adhesive 80 Specialty prose contact adhesive 250 Tire retread 100 Adhesive primer for plastic 550 Computer diskette manufacturing 350 Computer disketter manufacturing 250 Structural wood member adhesive 30		
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Architectural Applications: 1 Indoor carpet adhesives 50 Carpet pad adhesives 50 Outdoor carpet adhesives 150 Wood flooring adhesives 100 Rubber floor adhesives 60 Subfloor adhesives 60 Ceramic tile adhesives 65 VCT and asphalt tile adhesives 50 Dry wall and panel adhesives 50 Cove base adhesives 50 Multipurpose construction adhesives 70 Structural glazing adhesives 100 Single ply roof membrane adhesives 250 Specialty Applications: PVC welding PVC welding 490 ABS welding 325 Plastic cement welding 2250 Adhesive primer for plastic 550 Contact adhesive 80 Special purpose contact adhesive 250 Tire retread 100 Adhesive primer for traffic marking tape 150 Structural wood member adhesives 50 Special purpose contact adhesive 250 Substrate specific adhesives 50 </td <td></td> <td>Content (g/L):</td>		Content (g/L):
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Wood flooring adhesives 100 Rubber floor adhesives 60 Subfloor adhesives 50 Ceramic tile adhesives 50 Caramic tile adhesives 50 Dry wall and panel adhesives 50 Cove base adhesives 50 Cove base adhesives 50 Multipurpose construction adhesives 70 Structural glazing adhesives 100 Single ply roof membrane adhesives 250 Specialty Applications: PVC welding PVC welding 490 ABS welding 325 Plastic cement welding 250 Contact adhesive 80 Special purpose contact adhesive 80 Special purpose contact adhesive 100 Adhesive primer for rlaftic marking tape 150 Structural wood member adhesive 140 Sheet applied rubber lining operations specialty 850 Top and Trim adhesive 250 Substrate Specific Applications: Metal to metal substrate specific adhesives Mood substrate specific adhesives 30	Outdoor carpet adhesives	150
Rubber floor adhesives 60 Subfloor adhesives 50 Ceramic tile adhesives 50 VCT and asphalt tile adhesives 50 Dry wall and panel adhesives 50 Cove base adhesives 50 Multipurpose construction adhesives 50 Structural glazing adhesives 100 Single ply roof membrane adhesives 250 Specialty Applications: ************************************	Wood flooring adhesives	100
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	Other sealant primer	750



Other	
Other adhesives, adhesive bonding primers, adhesive	250
primers or any other primers	

2) For field applications that are inside the weatherproofing system, a minimum of 90 percent of adhesives and sealants, by volume, must comply with the requirements of the CDPH "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

d. VOC REQUIREMENTS FOR INTERIOR PAINTS AND COATINGS:

 For field applications that are inside the weatherproofing system, use paints and coatings that comply with the following limits for VOC content when calculated according to the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or the SCAQMD Rule #1113, effective June 3, 2011.

Product Type:	Allowable VOC
	Content (g/L):
Bond Breaker	350
Clear wood finishes - Varnish	275
Clear wood finishes – Sanding Sealer	275
Clear wood finishes - Lacquer	275
Colorant – Architectural Coatings, excluding IM	50
coatings	
Colorant – Solvent Based IM	600
Colorant - Waterborne IM	50
Concrete – Curing compounds	100
Concrete – Curing compounds for roadways & bridges	350
Concrete surface retarder	50
Driveway Sealer	50
Dry-fog coatings	50
Faux finishing coatings - Clear topcoat	100
Faux finishing coatings – Decorative Coatings	350
Faux finishing coatings - Glazes	350
Faux finishing coatings - Japan	350
Faux finishing coatings – Trowel applied coatings	50
Fire-proof coatings	150
Flats	50
Floor coatings	50
Form release compounds	100
Graphic arts (sign) coatings	150
Industrial maintenance coatings	100
Industrial maintenance coatings – High temperature IM	420
coatings	
Industrial maintenance coatings – Non-sacrificial anti-	100
graffiti coatings	
Industrial maintenance coatings – Zinc rich IM primers	100
Magnesite cement coatings	450
Mastic coatings	100
Metallic pigmented coatings	150



Multi-color coatings	250
Non-flat coatings	50
Pre-treatment wash primers	420
Primers, sealers and undercoaters	100
Reactive penetrating sealers	350
Recycled coatings	250
Roof coatings	50
Roof coatings, aluminum	100
Roof primers, bituminous	350
Rust preventative coatings	100
Stone consolidant	450
Sacrificial anti-graffiti coatings	50
Shellac- Clear	730
Shellac – Pigmented	550
Specialty primers	100
Stains	100
Stains, interior	250
Swimming pool coatings – repair	340
Swimming pool coatings – other	340
Traffic Coatings	100
Waterproofing sealers	100
Waterproofing concrete/masonry sealers	100
Wood preservatives	350
Low solids coatings	120

- 2) For field applications that are inside the weatherproofing system, 90 percent of paints and coatings must comply with the requirements of the CDPH's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- e. LOW-EMITTING MATERIALS, FLOORING: Flooring must comply with the requirements of the CDPH's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- f. LOW-EMITTING MATERIALS, COMPOSITE WOOD: Composite wood, agrifiber products, and adhesives must be made using ultra-low-emitting formaldehyde (ULEF) resins as defined in the CARB's "Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products" or must be made with no added formaldehyde.
- g. LOW-EMITTING MATERIALS, CEILINGS, WALLS, THERMAL, AND ACOUSTIC INSULATION: Ceilings, walls, and thermal and acoustic insulation must comply with the requirements of the CDPH's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- h. LOW-EMITTING MATERIALS, FURNITURE: At least 90 percent of furniture, measured by cost, will be tested in accordance with ANSI/BIFMA Standard Method M7.1-2011; comply with ANSI/BIFMA e3-2011 Furniture Sustainability Standard, Sections 7.6.1 and 7.6.2, using either the concentration modeling approach or the emissions factor approach; and model the test results using the open plan, private office, or seating scenario in ANSI/BIFMA M7.1, as appropriate.
- i. LOW-EMITTING MATERIALS, EXTERIOR APPLIED MATERIALS (HEALTHCARE/ SCHOOLS ONLY): At least 90 percent of exterior applied materials, measured by volume, must comply with the requirements of the CDPH's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."



- 1) The following materials are prohibited and do not count toward total percentage compliance:
 - a) Hot-mopped asphalt for roofing.
 - b) Coal tar sealants for parking lots and other paved surfaces.
- j. LOW-ÉMITTING MATERIALS, ADDITIONAL LOW-EMITTING REQUIREMENTS: If the applicable regulation requires subtraction of exempt compounds, any content of intentionally added exempt compounds larger than 1% weight by mass (total exempt compounds) must be disclosed.
 - If a product cannot reasonably be tested as specified above, testing of VOC content must comply with ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2.
 - 2) Methylene chloride and perchloroethylene may not be intentionally added in adhesives, sealants, paints or coatings.
- 3. BACK-UP DOCUMENTATION: For each material listed in the Disclosure and Optimization Calculator or the EQ Calculator, provide and submit in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, including but not limited to the documentation to certify the material's LEED Building attributes, as applicable:
 - a. INSTALLATION ON LOCATION: Submit indication of the installation location of products other than adhesives, sealants, paints and coatings. Installation locations should be categorized as one of the following:
 - 1) Ceiling
 - 2) Wall
 - 3) Floor
 - 4) Subfloor
 - 5) Built-In Cabinetry
 - 6) Free-Standing Cabinetry
 - 7) Vertical Structural Elements
 - 8) Overhead Structural Elements
 - b. RECYCLED CONTENT: Submit published product literature or letter of certification on the manufacturer's letterhead certifying the amounts of post-consumer and/or post-industrial content.
 - c. REGIONAL SOURCING (WITHIN 100 MILES): Submit 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, manufactured, distributed 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 100 miles of the Project site, provide the percentage (by weight) that these materials comprise in the complete product.
 - d. BUILDING PRODUCT DISCLOSURE AND OPTIMIZATION: Submit published third-party or manufacturer's product literature or letter of certification, on the third-party or manufacturer's letterhead, certifying the documented disclosure and optimization information.
 - e. VOC EMISSIONS AND CONTENT: Submit Material Safety Data Sheets (MSDS), for all applicable products. Applicable products include, but are not limited to adhesives, sealants, carpets, paints and coatings, flooring, composite wood, ceilings, walls, thermal and acoustic insulation, furniture, and for healthcare and schools, exterior applied products. MSDS must indicate the VOC emissions and content of products submitted. (If an MSDS does not include a product's VOC emissions and content, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer must be submitted in addition to the MSDS to



indicate the VOC emissions and content). Submit product third-party certificates and test reports, stating the testing methodology and the model, to include units that are consistent with those required. For wet-applied products, the manufacturer's documentation must state each product's classification and application according to the referenced standard's definition.

- 4. PRODUCT CUT SHEETS: Submit product cut sheets with the Contractor's or sub-contractor's stamp, confirming that the submitted products are the products installed in the Project.
- 5. FSC-CERTIFIED WOOD: If FSC-Certified Wood is used in the Project, submit:
 - a. Copies of vendor's invoices itemizing all new wood purchases, showing the cost for each line item.
 - b. For FSC-certified products, the vendor invoice must list product's FSC content percent and its Chain-of-Custody (CoC) certification number.
 - c. For FSC-certified products, submit the product and producer's CoC certificates.
 - d. For FSC-certified products modified on-site, submit on-site installer's CoC certification.
 - e. For assemblies, submit the percentage (by cost and by weight) of the assembly that is FSCcertified wood and published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the percentage that is FSC-certified wood.
- 6. HIGH ALBEDO PAVING AND WALKWAY MATERIALS: For paving and walkway materials made from concrete or brick, submit published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying a minimum 3-year aged Solar Reflectance (SR) value of 0.28. If 3-year aged value information is not available, submit published product literature or letter verifying an initial SR value of at least 0.33 at installation.
- 7. HIGH ALBEDO ROOFING MATERIALS: For exposed roofing membranes, pavers, and ballast products, submit published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the following minimum Solar Reflectance Index (SRI) values, calculated according to ASTM E 1980. Reflectance will be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance will be measured according to ASTM E 408 or ASTM C 1371. Vegetated roof surfaces are exempt from the SRI criteria.
 - a. 82 for initial SRI, or 64 for 3-year aged SRI for low-sloped roofing applications (slope $\leq 2:12$)
 - b. 39 for initial SRI or 32 for 3-year aged SRI for steep-sloped roofing applications (slope > 2:12)
- 8. LOW MERCURY LAMPS: For all fluorescent, compact fluorescent and HID lamps installed in the Project, submit the total number of each lamp type and submit published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the following information. Preheat, T-9, T-10 and T-12 fluorescents or mercury vapor high-intensity discharge (HID) lamps must not be installed in the Project. For healthcare projects only, probe-start metal halide HID lamps must not be installed in any interior spaces.

Lamp	Maximum Mercury Content (milligram)
T-8 fluorescent, eight-foot	10 mg
T-8 fluorescent, four-foot	3.5 mg
T-8 fluorescent, U-bent	6 mg
T-5 fluorescent, linear	2.5 mg
T-5 fluorescent, circular	9 mg
Compact fluorescent, nonintegral ballast	3.5 mg
Compact fluorescent, integral ballast	3.5 mg, ENERGY STAR qualified
High-pressure sodium, up to 400 watts	10 mg
High-pressure sodium, above 400 watts	32 mg

a. The mercury content or content range per lamp in milligrams or picograms, meeting the following criteria;



- 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.
- 9. EXIT SIGNS: Illuminated exit signs must not contain mercury, and must use less than 5 watts of electricity.
- 10. CONCRETE: Submit concrete mix design for each mix, designated by a distinct identifying code or number and signed by a Professional Engineer licensed in the state of New York.
- 11. INTERIOR LIGHTING FIXTURES: For each lighting fixture type installed within the building's weather barrier, submit 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.
- 12. EXTERIOR LIGHTING FIXTURES: For each lighting fixture type installed on site, submit 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.
- 13. ALTERNATIVE TRANSPORTATION: Submit 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.
- 14. WATER CONSERVING FIXTURES: For all water consuming plumbing fixtures and fittings, submit manufacturer's cut sheets showing maximum flow rates and/or flush rates.
- 15. ENERGY SAVING APPLIANCES: Submit 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.
- 16. GLAZING: For glazing in any windows, doors, storefront and window wall systems, curtainwall systems, skylights, and partitions, submit manufacturer's cut sheets indicating the following:
 - a. Glazed area.
 - b. Visible light transmittance.
 - c. Solar heat gain coefficient.
 - d. Fenestration assembly u-factor.
- 17. VENTILATION: Submit manufacturer's cut sheets for the following:
 - a. Carbon dioxide monitoring systems, if any, installed to measure outside air delivery.



- b. Air filters: for detailed requirements refer to Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS.
- 18. REFRIGERATION: For all refrigeration equipment, submit manufacturer's cut sheets indicating the following:
 - a. Equipment type.
 - b. Equipment life. Default values specified by the 2007 ASHRAE Applications Handbook will be used unless otherwise demonstrated by the manufacturer's guarantee and an equivalent long-term service contract.
 - c. Refrigerant type.
 - d. Refrigerant charge in pounds of refrigerant per ton of gross cooling capacity.
 - e. Tested refrigerant leakage rate, in percent per year. A default rate of 2% will be used unless otherwise demonstrated by test data.
 - f. Tested end-of-life refrigerant loss, in percent. A default rate of 10% will be used unless otherwise demonstrated by test data.

1.7 LEED BUILDING SUBMITTAL REQUIREMENTS:

- A. The LEED Building Submittal information must 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.
- B. All final LEED Building Submittal information with back-up documentation must be submitted within two (2) months of the Project's substantial completion. If in the Project's LEED review, the USGBC or their third party reviewer requires additional documentation as it relates to the LEED Building Submittals, the Contractor must provide the requested documentation within two (2) weeks.

1.8 LEED ACTION PLANS:

- A. Construction Waste Management Plan- Refer to Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL for detailed requirements.
- B. Construction IAQ Management Plan- Refer to Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS for detailed requirements.
- C. Erosion and Sedimentation Control (ESC) Plan:
 - 1. The Plan must be in accordance with the New York State Department of Environmental Conservation (NYSDEC)'s New York State Standards and Specifications for Erosion and Sediment Control (Blue Book) or the 2012 EPA Construction General Permit, whichever is more stringent.
 - 2. The Plan must be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.
 - 3. Detailed requirements: ESC Plan
 - a. Include the Stormwater Pollution Prevention Plan, if required.
 - b. Identify the party responsible for Plan monitoring and documentation. The party must be regularly on site.
 - c. Describe all site work that will be implemented on the Project and include timing of implementation.
 - d. Submit site plan with location of ESC measures, including, but not limited to, stormwater quantity controls, stormwater quality controls, stabilized construction entrances, washdown areas, inlet/catch basin protection and perimeter controls.



- e. Establish and clearly delineate construction buffer zones to avoid soil compaction and other construction damage to greenfields.
- f. Describe the inspection and maintenance protocols of the ESC measures. Submit a construction schedule indicating weekly site review.
- g. Describe reporting and documentation measures.
- 4. Detailed requirements: ESC Tracking Log
 - a. Note date of major rain events, describe damage, describe any repairs or maintenance of specific control measures performed, and note responsible party.
 - b. Note date and findings of weekly site review, describe any repairs or maintenance performed, and note responsible party. Submit date-stamped photographs, inspection reports or other recording processes.
 - c. Submit monthly.
- 5. Implementation
 - a. Before Demolition and/or Construction begins, the Contractor will 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 monthly, and for assembling the required LEED documentation.
 - b. The Contractor is responsible for the provision, maintenance, and repair of all ESC measures. Any problems identified in site inspections must be resolved in a timely manner.
 - c. Demonstration. The Contractor must provide on-site instruction of proper construction practices required to prevent erosion and sedimentation.
 - d. All subcontractors must promptly notify the ESC Representative if damage to an ESC measure is observed.
 - e. Meetings. Urgent or ongoing ESC issues must be discussed at weekly on-site job meetings.
- 6. All projects, including zero lot line buildings and projects that cause minimal or even no exterior site disturbance, must have ESC Plan that meets requirements.
- 7. Contractor must save such original documents for the life of the Project plus seven (7) years.

1.9 QUALITY ASSURANCE:

- A. The Contractor must 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 monthly, and for assembling the required LEED documentation. The Contractor must facilitate measurements taken by authorized parties on site for LEED compliance verification purposes.
- B. Responsibilities of Contractor's Subcontractors: The Contractor is 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 is responsible for distributing the LEED v4 MR Credits Calculator for Building Product Disclosure and Optimization, the LEED v4 EQ Credit Low-Emitting Materials Calculator, and any other forms or templates required for the subcontractors to record LEED documentation. The Contractor is also responsible for collecting and compiling Building Product Disclosure and Optimization and Low-Emitting Materials information into packages as described in Section 01 33 00 SUBMITTAL PROCEDURES.
- D. Meetings: Sustainable design and construction issues must be discussed at the following meetings in accordance with Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION:
 - 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

1.10 REFERENCES:

- A. New York State Standards and Specifications for Erosion and Sediment Control, amended November 2016: <u>http://www.dec.ny.gov/docs/water_pdf/2016nysstanec.pdf</u>
- B. 2012 EPA Construction General Permit: <u>https://www.epa.gov/npdes/epas-2012-construction-general-permit-cgp-and-related-documents</u>
- C. South Coast Air Quality Management District (SCAQMD), Rule 1168: www.aqmd.gov
- D. South Coast Air Quality Management District (SCAQMD), Rule 1113: <u>www.aqmd.gov</u>
- E. CDPH Standard Method v1.1-2010: <u>www.cal-iaq.org</u>
- F. ISO 17025: <u>www.iso.org</u>
- G. ISO Guide 65: <u>www.iso.org</u>
- H. CARB 93120 ATCM: arb.ca.gov/toxics/compwood/compwood.htm
- I. ANSI/BIFMA M7.1 Standard Test Method for Determining VOC Emissions from Office Furniture Systems, Components and Seating: <u>bifma.org</u>
- J. ANSI/BIFMA e3-2011 Furniture Sustainability Standard: bifma.org
- K. ISO 14021–1999, Environmental labels and declarations—Self Declared Claims (Type II Environmental Labeling): <u>www.iso.org</u>
- L. ISO 14025–2006, Environmental labels and declarations (Type III Environmental Labeling): www.iso.org
- M. Declarations—Principles and Procedures): <u>www.iso.org</u>
- N. ISO 14040–2006, Environmental management, Life cycle assessment principles, and frameworks: www.iso.org
- O. ISO 14044–2006, Environmental management, Life cycle assessment requirements, and guidelines: <u>www.iso.org</u>
- P. International Standard ISO 21930–2007 Sustainability in building construction—Environmental declaration of building products: <u>www.iso.org</u>
- Q. Federal Trade Commission, Guides for the Use of Environmental Marketing Claims, 16 CFR 260.7 (e): <u>www.ftc.gov/bcp/grnrule/guides980427.htm</u>
- R. Global Reporting Initiative (GRI) Sustainability Report: <u>www.globalreporting.org/</u>
- S. Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational
- T. Enterprises: www.oecd.org/daf/internationalinvestment/guidelinesformultinationalenterprises/
- U. U.N. Global Compact, Communication on Progress: www.unglobalcompact.org/participation/report/cop
- V. ISO 26000-2010 Guidance on Social Responsibility: www.iso.org/iso/home/standards/iso26000.htm
- W. Forest Stewardship Council: <u>www.ic.fsc.org</u>
- X. Sustainable Agriculture Network: <u>www.sanstandards.org</u>
- Y. The Rainforest Alliance: www.rainforest-alliance.org/
- Z. ASTM Test Method D6866: www.astm.org/Standards/D6866.htm
- AA. Chemical Abstracts Service: www.cas.org/



- BB. Health Product Declaration: www.hpd-collaborative.org/
- CC. Cradle-to-Cradle CertifiedCM Product Standard: www.c2ccertified.org/product_certification
- DD. Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): <u>www.echa.europa.eu/support/guidance-on-reach-and-clp-implementation</u>
- EE. GreenScreen: www.greenscreenchemicals.org/method/greenscreen-list-translator
- PART II PRODUCTS (Not Used)
- PART III EXECUTION (Not Used)

END OF SECTION 01 81 13.04



SECTION 018113.10 ENVIRONMENTALLY PREFERABLE PURCHASING (EPP) COMPLIANCE

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.10

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 all equipment, material and product purchasing to comply with the requirements of New York City Environmentally Preferable Purchasing (EPP) "Minimum Standards for Construction Products", as established by the Mayor's Office of Contract Services (MOCS). Refer to their website for further guidance.
- B. All sections in the Project Specifications with applicable equipment, materials and products will follow all requirements of this section. In the event of any conflict or inconsistency between this section and the Specifications, the more stringent requirements will prevail.
- C. This Section includes:
 - 1. Definitions
 - 2. Administrative Requirements

Department of

Design and

Construction

- 3. Action Submittals
- 4. Informational Submittals
- 5. Products, Materials

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 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.

Term	Definition
Environmentally	The standard that refers to a list of equipment, materials and products that
Preferable Purchasing	may be specified in construction contracts covered by the EPP laws and
(EPP) Minimum	provides the applicable minimum standards referenced in the laws.
Standards for	
Construction Products	See EPP Minimum Standards for Constructions Products available on
	MOCS' website for a comprehensive list of all applicable definitions.



1.5 ADMINISTRATIVE REQUIREMENTS:

- A. At no additional cost to the City of New York, designate an individual who will be responsible for the communication of progress of EPP activities with the Commissioner on a regular basis and for the quality of all EPP-related materials and preparation, coordination and assembly of the supporting documentation.
- B. Scope and Applicability: Action submittals and informational submittals are required for all installed equipment, materials and products that require EPP compliance. Provide all required submittals in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.
- C. Distribution and Compilation: The Contractor must coordinate with all affected trades and is responsible for his/her subcontractors complying with the EPP requirements and for providing required EPP documentation as required for the project. The Contractor is responsible for distributing the forms or templates required for the subcontractors to record EPP documentation. The Contractor is also responsible for collecting and compiling information into packages as described in Section 01 33 00 SUBMITTAL PROCEDURES.
- D. The Contractor must respond in a timely manner to questions and requests from the Commissioner, Design Consultant and MOCS regarding EPP requirements that are the responsibility of the Contractor. Document responses as informational submittals.

1.6 ACTION SUBMITTALS:

- A. General Requirements:
 - EPP Documentation Submittals for applicable and compliant product data, as stated in the EPP Minimum Standards for Construction Products, is to be documented in the form of a Vendor Survey and supporting manufacturer's data sheets highlighting EPP compliance-related data. Include in the Vendor Survey the anticipated quantity of product purchased and cost per unit data. See attached sample Vendor Survey form.
 - Compliance with EPP requirements will be used as one criterion to evaluate product selection. Assemble EPP Documentation Submittal information into one package per contract specification section(s) (or per subcontractor). Incomplete or inaccurate EPP Documentation submittals may be used as the basis for the rejection of products or assemblies.
 - 3. Update the quantities and costs in the Vendor Survey once products are approved and purchased and document as information submittal.

1.7 INFORMATIONAL SUBMITTALS

- A. For each registered contract, the Contractor must maintain a Master Vendor Survey, an updated tracking log of all equipment, materials and products purchased on a contract that are required to comply with EPP. Submit the Master Vendor Survey on a monthly basis and update the costs once products are purchased.
 - 1. Upon request by MOCS, submit the Master Vendor Survey and supporting documents.
- B. EPP Progress Reports: Concurrent with each Application for Payment, submit reports of purchasing activities for each of the EPP-applicable equipment, materials and products listed in Sub-section C below.
- C. Project Materials Cost Data: For Vendor Survey and EPP Progress Reports, include breakout of costs for the following categories of items:
 - 1. Appliances.
 - 2. Architectural Coatings.
 - 3. HVAC Equipment.



- 4. Lighting Products.
- 5. Miscellaneous Products Construction.
- 6. Plumbing Fixtures.

PART II – PRODUCTS

2.1 MATERIALS:

- A. Detailed Requirements. This sub-section defines the information and documents to be provided for each EPP-applicable equipment, material and product type, as identified in each specification section:
 - 1. Appliances Residential:

All energy-using products for which the United States Environmental Protection Agency and the United States Department of Energy have developed energy efficiency standards for compliance with the Energy Star program shall be ENERGY STAR labeled. The following residential appliances shall comply with this requirement:

- a. Clothes Washers
- b.Dehumidifiers
- c. Dishwashers, Standard-Sized
- d. Freezers, Upright, Chest and Compact
- e.Refrigerators and Refrigerator-Freezers, Standard-Sized and Compact

Microwave Ovens shall comply with the following requirements:

- a.Recommended Standby Levels: 2 watts or less
- b.Best Available Standby Level: 2 watts or less
- 2. Architectural Coatings:
 - a. For the products listed below, the maximum content of Volatile Organic Compounds (VOCs) shall be determined according to the American Society for Testing and Materials test method D 5116 (Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products).

Architectural Coating	Maximum Concentration of VOC in Grams per Liter
Clear Wood Coating – Clear-Brushing	275
lacquers	
Clear Wood Coating – Sanding Sealers	275
(Other than Lacquers)	
Clear Wood Coating –Varnishes	275
Floor Coatings	100
Lacquers - Pigmented	275
Primers for Flat Paint	100
Primers for Non-Flat Paint	150
Rust Preventative/Anti-Corrosive Paint	250

b.Any product listed below that is compliant with Part 205 of Title Six of the New York Codes, Rules and Regulations meets the standard required under EPP Minimum Standards for Construction Products. The maximum content of VOCs for these products shall be determined according to the test method required under part 205.6 of such part.


Architectural Coating	Maximum Concentration of VOC in Grams per Liter
Clear Wood Coating – Conversion	725
Varnishes	
Clear Wood Coating – Lacquers	550
(Including Lacquer Sanding Sealers)	
Concrete Bond Breakers	350
Concrete Curing Compounds	350
Concrete Surface Retarders	780
Dry Fog Coatings	400
Faux Finishing Coatings	350
Fire-Resistive Coatings	350
Fire-Retardant Coatings	650
Fire-Retardant Coatings - Opaque	350
Flat Paint	100
Form Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High Temperature Coatings	420
Industrial Maintenance (IM) Coatings	340
Low Solids Coatings	120
Magnesite Cement Coatings	450
Mastic Texture Coatings	300
Metallic Pigmented Coatings	500
Multi-Color Coatings	500
Nonflat High-Gloss Coatings	250
Nonflat Paint	150
Pre-Treatment Wash Primers	420
Primers, Sealers, and Undercoaters	200
Quick-Dry Enamels	250
Quick-Dry Primers Sealers and	200
Undercoaters	200
Recycled Coatings	250
Roof Coatings	250
Roof Coatings (Bituminous)	300
Roof Primers (Bituminous)	350
Shellacs – Clear	730
Shellacs – Opaque	550
Specialty Primers Sealers and	350
Undercoaters	
Stains	250
Swimming Pool Coatings and Swimming	340
Pool Repair and Maintenance Coatings	
Thermoplastic Rubber Coatings and	550
Mastics	
Waterproofing Concrete / Masonry	400
Sealers	
Waterproofing Sealers	250
Wood Preservatives	350



c. The products listed below shall be recovered material and comply with the Postconsumer Content and Total Recovered Materials Content requirements.

Architectural Coating	Post-consumer Content (%)	Total Recovered Materials Content (%)
Latex Paint – Consolidated	100	100
Latex Paint – Reprocessed White, Off-White and Pastel Colors	20	20
Latex Paint – Reprocessed Grey, Brown, Earthtones and Other Dark Colors	50-99	50-99

3. HVAC Equipment: Commercial and Residential

a.Commercial

All energy-using products for which the United States Environmental Protection Agency and the United States Department of Energy have developed energy efficiency standards for compliance with the Energy Star program shall be ENERGY STAR labeled. The following Commercial HVAC Equipment shall comply with this requirement:

- 1. Air Conditioners, Air-Cooled
- 2. Air Conditioners, Gas/Electric Package Units
- 3. Heat Pumps, Air Source

Chillers shall comply with the following Part Load Optimized Chillers IPLV and Full Load Optimized Chillers IPLV requirements:

Туре	Compressor Type and Capacity	Part Load Optimized Chillers IPLV (kW/ton) Required	Full Load Optimized Chillers IPLV (kW/ton) Required
Air-Cooled	Scroll (30 – 60 tons)	0.86 or less	1.23 or less 1.1
Air-Cooled	Reciprocating (30 – 150 tons)	0.90 or less	1.23 or less 1
Air-Cooled	Screw (70 – 200 tons)	0.98 or less	1.23 or less 0.94
Water-Cooled	Centrifugal (150 – 299 tons)	0.52 or less	0.59 or less
Water-Cooled	Centrifugal (300 – 2,000 tons)	0.45 or less	0.56 or less
Water-Cooled	Rotary Screw (>150 tons)	0.49 or less	0.64 or less

b.Residential

All energy-using products for which the United States Environmental Protection Agency and the United States Department of Energy have developed energy efficiency standards for compliance with the Energy Star program shall be ENERGY STAR labeled. The following Residential HVAC Equipment shall comply with this requirement:

- 1. Air Conditioners, Central (<65,000 Btu/h)
- 2. Air Conditioners, Central, Gas/Electric Package Units (<65,000 Btu/h)
- 3. Air Source Heat Pumps (<65,000 Btu/h)



- 4. Boilers and Boiler/Hot Water Heaters (<300,000 Btu/h)
- 5. Ceiling Fans
- 6. Furnaces and Furnace/Hot Water Heaters (<340,000 Btu/h)
- 7. Ground Source Heat Pumps (Geothermal)
- 8. In-Line Ventilating Fan
- 9. Programmable Thermostats
- 10. Range Hood and Bathroom /Utility Room Ventilating Fans
- 11. Room Air Cleaners
- 12. Room Air Conditioners
- 4. Lighting Products

a. The following lighting products shall comply with the corresponding BEF requirement:

Product Type	Number of Lamps	Required BEF
Ballast, Fluorescent, Four-Foot, Linear T12, 34-Watts	1	2.64 or higher
Ballast, Fluorescent, Four-Foot, Linear T12, 34-Watts	2	1.41 or higher
Ballast, Fluorescent, Four-Foot, Linear T12, 34-Watts	3	0.93 or higher
Ballast, Fluorescent, Eight-Foot, Linear T12, 60- Watts	2	0.80 or higher
Ballast, Fluorescent, Four-Foot, Linear T8, 32-Watts	1	2.54 or higher
Ballast, Fluorescent, Four-Foot, Linear T8, 32-Watts	2	1.44 or higher
Ballast, Fluorescent, Four-Foot, Linear T8, 32-Watts	3	1.44 or higher
Ballast, Fluorescent, Four-Foot, Linear T8, 32-Watts	4	0.73 or higher
Ballast, Fluorescent, Eight-Foot, Linear T8, 59-Watts	2	0.80 or higher
Ballast, Fluorescent, Four-Foot, U-Bent T12, 34- Watts	1	2.64 or higher
Ballast, Fluorescent, Four-Foot, U-Bent T12, 34- Watts	2	1.41 or higher
Ballast, Fluorescent, Four-Foot, U-Bent T12, 34- Watts	3	0.93 or higher
Ballast, Fluorescent, U-Tube, U-Bent T8, 32-Watts	1	2.54 or higher
Ballast, Fluorescent, U-Tube, U-Bent T8, 32-Watts	2	1.44 or higher
Ballast, Fluorescent, U-Tube, U-Bent T8, 32-Watts	3	0.93 or higher
Ballast, Fluorescent, U-Tube, U-Bent T8, 32-Watts	4	0.73 or higher

b.All energy-using products for which the United States Environmental Protection Agency and the United States Department of Energy have developed energy efficiency standards for compliance with the Energy Star program shall be ENERGY STAR labeled. The following Lighting Products shall comply with this requirement:

- 1. Exit Signs
- 2. Luminaires, Residential



c. Luminaires, Downlight, With Compact Fluorescent Lamps (13-32 Lamp Wattage) shall comply with the following LER requirements:

Luminaire Type (NEMA Designation)	Required LER
Open Optics	29 or higher
Baffled Optics	21 or higher
Lensed Optics	24 or higher

d.Luminaires, Downlight, With Metal Halide Lamps (<150 Watts) shall comply with the following LER requirements:

Luminaire Type (NEMA Designation)	Required LER
Open Optics	35 or higher
Lensed Optics	30 or higher

e.Luminaires, Fluorescent shall comply with the following LER requirements:

Luminaire Type (NEMA Designation)	Number of Lamps	Required LER
Lensed (FL)	2	62 or higher
Lensed (FL)	3	61 or higher
Lensed (FL)	4	61 or higher
VDT-Preferred Louvered (FP)	2	50 or higher
VDT-Preferred Louvered (FP)	3	51 or higher
VDT-Preferred Louvered (FP)	4	54 or higher
Four-Foot (FW)	2	63 or higher
Four-Foot (FW)	4	62 or higher
Four-Foot (FS)	1	70 or higher
Four-Foot (FS)	2	70 or higher
Four-Foot (FI)	1	67 or higher
Eight-Foot (FI)	2	68 or higher

f. Luminaires, Industrial HID, With High Pressure Sodium Lamps (<150 Lamp Wattage) shall comply with the following LER requirements:

Upward Efficiency	Lamp Wattage	Closed Fixture (HR) LER Required	Open Fixture (HR) LER Required
0%	150-399	58 or higher	68 or higher
0%	400-999	63 or higher	84 or higher
0%	>1000	N/A	N/A
1%-10%	150-399	64 or higher	63 or higher
1%-10%	400-999	82 or higher	89 or higher
1%-10%	>1000	N/A	109 or higher
11%-20%	150-399	N/A	78 or higher
11%-20%	400-999	N/A	94 or higher
11%-20%	>1000	N/A	N/A
>20%	150-399	75 or higher	77 or higher
>20%	400-999	N/A	N/A

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>20%	>1000	N/A	N/A

- 5. Miscellaneous Products Construction
 - a. For the products listed below, the maximum content of Volatile Organic Compounds (VOCs) shall be determined according to the American Society for Testing and Materials test method D 5116 (Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products). The products may not contain any volatile organic compound in any concentration exceeding that specified below. Products that are compliant with the Green Label Plus program of the Carpet and Rug Institute are also compliant with this standard.

Carpet Adhesives			
Volatile Organic	24-Hour Testing	14-Day Testing Maximum	
Compound	Maximum Emission	Emission Factor	
	Factor (µg/m2•hr)	(µg/m2•hr)	
Formaldehyde	50	31	
2-ethyl-1-hexanol	300	300	
Total Volatile Organic	800	N/A	
Compounds			
Carpet Cushions			
Volatile Organic	24-Hour Testing	14-Day Testing Maximum	
Compound	Maximum Emission	Emission Factor	
	Factor (µg/m2•hr)	(µg/m2•hr)	
Butylated Hydroxytoluene	300	N/A	
Formaldehyde	50	N/A	
4-Phenylcyclohexene	50	N/A	
(4PCH)			
Total Volatile Organic	1000	N/A	
Compounds			
Carpets			
Volatile Organic	24-Hour Testing	14-Day Testing Maximum	
Compound	Maximum Emission	Emission Factor	
	Factor (µg/m2•hr)	(µg/m2•hr)	
Formaldehyde	50	30	
4-Phenylcyclohexene	50	17	
Styrene	410	410	
Total Volatile Organic	500	N/A	
Compounds			

b. The products listed below shall comply with the Recycled Post-consumer Content and Total Recovered Materials Content requirements.

Carpet Cushion –				
Bonded Polyurethane				
Material	Recovered Post-	Total Recovered		
	consumer Content (%)	Materials Content (%)		
Old Carpet Cushion	15-50	15-50		
Carpet Cushion – Jute				
Material	Recovered Post-	Total Recovered		
	consumer Content (%)	Materials Content (%)		
Burlap	40	40		
Carpet Cushion – Rubber				
Material	Recovered Post-	Total Recovered		
	consumer Content (%)	Materials Content (%)		
Tire Rubber	60-90	60-90		



Carpet Cushion – Synthetic Fibers		
Material	Recovered Post- consumer Content (%)	Total Recovered Materials Content (%)
Carpet Fabrication Scrape	No Range Recommended	100
Cement and Concrete		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Cenospheres	No Range Recommended	Minimum 10% (by volume)
Coal fly Ash	No Range Recommended	No Range Recommended
GGBF Slag	No Range Recommended	No Range Recommended
Silica Fume	No Range Recommended	5-10% of cementitious
	5	material (dry weight basis)
Channelizers		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Plastic	25-90	No Range Recommended
Rubber (base only)	100	No Range Recommended
Delineators – Fixed		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Plastic	25-90	No Range Recommended
Rubber (base only)	100	No Range Recommended
Steel (BOF, base only)	16	25-30
Steel (BOF, base only)	67	100
Delineators – Flexible		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
	25-85	No Range Recommended
Floor Tiles		
Material	Recovered Post-consumer Content (%)	Total Recovered Materials Content (%)
Rubber	90-100	No Range Recommended
Plastic	No Range Recommended	90-100
Insulation - Cellulose		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Post-consumer Paper	75	75
Insulation - Foam-In-Place		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Recovered Material	No Range Recommended	5
Insulation - Glass Fiber Re	inforced	
Material	Recovered Post- consumer Content (%)	Total Recovered Materials Content (%)
Recovered Material	No Range Recommended	6
Insulation - Laminated Pap	erboard	
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Post-consumer Paper	100	100
Insulation - Perlite Compos	sition Board	
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Post-consumer Paper	23	23



Insulation - Phenolic Rigid	Foam	
Material	Recovered Post-	Total Recovered
matorial	consumer Content (%)	Materials Content (%)
Recovered Material	No Bange Becommended	5
Insulation - Plastic Non-w	oven Batt	5
Matorial	Recovered Post-	Total Recovered
Waterial	consumer Content (%)	Matorials Contont (%)
Pacayarad and/or Past	No Pango Pocommondod	
consumer Plastic	No Kange Recommended	100
Insulation - Plastic Rigid F	oam Polyisocyanurate/Poly	urethane: Rigid Foam
Matorial	Recovered Post-	Total Recovered
Wateria	consumer Content (%)	Materials Content (%)
Recovered Material	No Range Recommended	
Insulation - Structural Fibo	rboard	3
Material	Recovered Post	Total Recovered Materials
Wateria	consumer Content (%)	Contont (%)
Recovered Material	No Pongo Pocommondod	20 100
Nedular Threshold Dampa	No Kange Recommended	80-100
Motorial	Pagevered Past	Total Bacovarad Materiala
wateria	Recovered Post-	Contont (%)
Steel (BOE)	tonsumer Content (%)	
Steel (BOF)	16	25-30
Steel (EAF)	6/	100
Aluminum	No Range Recommended	10
Rubber	100	100
Nonpressure Pipe		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Steel (BOF)	16	25-30
Steel (EAF)	67	100
Plastic (HDPE)	100	100
Plastic (PVC)	5-15	25-100
Cement	No Range Recommended	No Range Recommended
Playground Equipment		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Plastic	90-100	100
Plastic Composite	50-75	95-100
Steel (BOF)	16	95
Steel (EAF)	50-100	95-100
Restroom Dividers/Partitio	ns, Steel	
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Steel (from BOF)	16	25-30
Steel (from EAF)	67	100
Roofing Materials		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Steel (BOF)	16	25-30
Steel (EAF)	67	100
Aluminum	20-95	20-95
Fiber (felt) or Fiber	50-100	50-100
Composite		
Rubber	12-100	100
Plastic or Plastic/Pubber	100	100
Composite		
Composite		



Wood/Plastic Composite	No Range Recommended	100
Cement	No Range Recommended	No Range Recommended
Shower Dividers/Partitions	s, Steel	
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Steel (from BOF)	16	25-30
Steel (from EAF)	67	100
Traffic Barricades		
Material	Recovered Post-	Total Recovered
	consumer Content (%)	Materials Content (%)
Plastic (High Density	80-100	100
Polyethylene [HDPE], Low-		
Density Polyethylene		
[LDPE], Polyethylene		
terephthalate [PET])		
Steel (BOF)	16	25-30
Steel (EAF)	67	100
Fiberglass	No Range Recommended	No Range Recommended

c. All energy-using products for which the United States Environmental Protection Agency and the United States Department of Energy have developed energy efficiency standards for compliance with the Energy Star program shall be ENERGY STAR labeled. The following Construction Products shall comply with this requirement:

- 1. Entry or Patio Doors, Residential
- 2. Residential Skylights
- 3. Residential Windows & Tubular Daylighting Devices
- 4. Roof Products

d. Electric Motors shall comply with the following Nominal Efficiencies requirements:

Nominal Efficiencies for Induction Motors Rated 600 Volts or Less (Random Wound)						
Motor Siz	Oper (ODF	n Drip ?)	Proof	Totally Enclosed Fan-Cooled (TEFC)		
6-pole (1200 rpm)	4-pole (1200 rpm)	2-po (1200 rpm)	le)	6-pole (1200 rpm)	4-pole (1200 rpm)	2-pole (1200 rpm)
1	82.5	85.5	77.0	82.5	85.5	77.0
1.5	86.5	86.5	84.0	87.5	86.5	84.0
2	87.5	86.5	85.5	88.5	86.5	85.5
3	88.5	89.5	85.5	89.5	89.5	86.5
5	89.5	89.5	86.5	89.5	89.5	88.5
7.5	90.2	91.0	88.5	91.0	91.7	89.5
10	91.7	91.7	89.5	91.0	91.7	90.2
15	91.7	93.0	90.2	91.7	92.4	91.0
20	92.4	93.0	91.0	91.7	93.0	91.0
25	93.0	93.6	91.7	93.0	93.6	91.7
30	93.6	94.1	91.7	93.0	93.6	91.7
40	94.1	94.1	92.4	94.1	94.1	92.4
50	94.1	94.5	93.0	94.1	94.5	93.0
60	94.5	95.0	93.6	94.5	95.0	93.6
75	94.5	95.0	93.6	94.5	95.4	93.6
100	95.0	95.4	93.6	95.0	95.4	94.1

ENVIRONMENTALLY PREFERABLE PURCHASING (EPP) COMPLIANCE 018113.10 - 11



125	95.0	95.4	94.1	95.0	95.4	95.0
150	95.4	95.8	94.1	95.8	95.8	95.0
200	95.4	95.8	95.0	95.8	96.2	95.4
250	95.4	95.8	95.0	95.8	96.2	95.8
300	95.4	95.8	95.4	95.8	96.2	95.8
350	95.4	95.8	95.4	95.8	96.2	95.8
400	95.8	95.8	95.8	95.8	96.2	95.8
450	96.2	96.2	95.8	95.8	96.2	95.8
500	96.2	96.2	95.8	95.8	96.2	95.8

Nominal Efficiencies for Induction Motors Rated Medium Voltage or Less (Form Wound)								
Motor Siz	Motor Size (HP)Open Drip-Proof (ODP)Totally Enclosed Fan-Cooled (TEFC)					iclosed ed (TEFC)		
6-pole (1200 rpm)	4-pole (1200 rpm)	2-pol (1200 rpm)	2-pole 6-pole (1200 (1200 rpm) rpm)				pole 200 m)	2-pole (1200 rpm)
250-500	95.0	95.0	94.5		95.0		95.0	95.0

6. Plumbing Fixtures.

The plumbing fixtures shall comply with the following Water Efficiency requirements:

Plumbing Fixture	Water Efficiency Requirement
Lavatory Faucets	< 2.0 gallons per minute
Showerheads, Residential and	< 2.2 gallons per minute
Commercial	
Toilets, Residential and Commercial	< 1.6 gallons per flush
Urinals, Residential and Commercial	< 1.0 gallons per flush

PART III - EXECUTION (Not Used)

END OF SECTION 018113.10



EPP VENDOR SURVEY FORM

Instructions: In the space provided, indicate the following: (1.) Choose Construction for the EPP Book Used (2.) Choose the product type from the drop-down menu; (3.) Choose the product detail from the drop-down menu; (4.) Identify the specific item under Product Description; (5.) Enter the number of products per unit; (6.) Enter the cost per unit; (7.) Enter the units purchased; (8.) Enter the total cost.

Return completed spreadsheet to the contracting agency in the accompanying letter. Thank you.

Agency Acronym	Environmental Preferable Purchasing Information			Q	Quantity and Cost Information				
, ioi oli yili	EPP Book Used	Product Type	Product Details	Product Description	Products Per Unit	Cost Per Unit	Units Purchased	Total Cost	Comments
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
DDC								\$0.00	
TOTAL					0.00	\$0.00	0.00	\$0.00	



(No Text on This Page)



SECTION 01 81 13.13 VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED v3 BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.13

PARTI- 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:

Α.

- 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 will 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 will 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:
 - 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 v3 BUILDINGS
 - I. Section 01 81 19 INDOOR AIR QUALITY FOR LEED BUILDINGS



1.4 DEFINITIONS:

Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Α. Conditions not otherwise defined herein

ADHESIVE	 Any substance used to bond one surface to another by attachment. Includes adhesive primers and adhesive bonding primers. A. 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.
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).
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.
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.
FLOOR COATING	Opaque coating applied to flooring. Excludes industrial maintenance coatings.
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.



MUTAGEN	A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarding as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification of Chemicals Which Cause Mutations in Germ Cells (United Nations Economic Commission for Europe, Globally Harmonized System of Classification and Labeling of Chemicals).				
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.				
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. 				
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.				
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.).				
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).				
SEALANT	Any material with adhesive properties, formulated primarily to fill, seal, or waterproof gaps or joints between surfaces. Includes sealant primers and caulks.				



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.
STAIN	Clear semi-transparent/opaque coating formulated to change the color but not conceal the grain pattern or texture of the substrate.
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.
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.
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 must 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, must 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, <u>www.aqmd.gov</u>
- B. Rule 1113 "Architectural Coatings", amended 9 July 2004: South Coast Air Quality Management District (SCAQMD), State of California, <u>www.aqmd.gov</u>
- C. Green Seal Standard GS-11- "Paints", of Green Seal, Inc., Washington, DC, www.greenseal.org
- D. Green Seal Standard GC-03- "Anti-Corrosive Paints", of Green Seal, Inc., Washington, DC, www.greenseal.org

1.7 VOC REQUIREMENTS FOR INTERIOR ADHESIVES, SEALANTS, PAINTS AND COATINGS:

- A. GENERAL: Unless otherwise specified herein, the VOC content of all interior adhesives, sealants, paints and coatings (herein referred to as "products") must not be in excess of **250 grams per liter.**
- B. No product may contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bioacculmulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception must be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which must be less than or equal to 1% by weight of the product.



- C. No product will 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

1.

2.

- 25. acrylonitrile
- D. No product will 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 must not exceed the limits defined in <u>Rule 1168 "Adhesive and Sealant</u> <u>Applications"</u> 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:

Arch	itectural 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
ĥ.	Drywall and panel adhesive	50
i.	Cove base adhesive	50
j.	Multipurpose construction adhesive	70
k.	Structural glazing adhesive	100
Spec	ialty Applications:	
a.	PVC welding	510

VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED v3 BUILDINGS



	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
	ĥ.	Structural Wood Member Adhesive	140
	i.	Sheet Applied Rubber Lining Operations	850
	j.	Top and Trim Adhesive	250
3.	Substra	te Specific Applications:	
	a.	Metal to metal	30
	b.	Plastic foams	50
	C.	Porous material (except wood)	50
	d.	Wood	30
	e.	Fiberglass	80
4.	Aeroso	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 ty	pes)
			70% VOC's by weight

VOC REQUIREMENTS FOR INTERIOR SEALANTS: 1.9

- Α. The volatile organic compound (VOC) content of sealants, or sealant primers used in this project must 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.
- Β. 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
lant Primer:		

- Sealant Primer: 2.
 - Architectural Nonporous 250 a.
 - Architectural Porous 775 b.
 - 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.) must meet the VOC limitations of the Green Seal Paint Standard GS-11, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:
 - 1. Volatile Organic Compounds:
 - a. The VOC concentrations (in grams per liter) of the product must 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 must 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 must 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 must 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 must 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 must 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.	Shella	IC:		
	a.	Clear	730	
	b.	Pigmented	550	
3.	Stains	;	250	
4.	Floor	Coatings	100	
5.	Water	proofing Sealers	250	
6.	Sandi	ng Sealers	275	
7.	Other	Sealers	200	
The	e calcul	lation of VOC must exclu	de water and tintin	g 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 must 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 13.03 SUSTAINABLE REQUIREMENTS FOR LEED v3 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



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SECTION 01 81 19 INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 19

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 CONSTRUCTION IAQ MANAGEMENT GOALS FOR THE PROJECT:

A. The City of New York has determined that this Project must 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, and poor housekeeping, must 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. Division 9 (of the Specifications): Finishes.
- C. 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 LEED Rating System, as specified in Section 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS or Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 BUILDINGS.
- D. Refer to the Addendum to identify whether this project is designed to comply with Section 01 81 13.13 VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED v3 BUILDINGS.
- E. Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS.

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.

Design Consultant	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.



Volatile Organic Compounds (VOCs)	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 VOCs are harmful, but many of those contained within building products contribute to the formation of smog and may irritate building occupants by their smell or health impact.
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 VOCs emitted by "source" materials and release them over a prolonged period of time.
Materials that act as "sources" for VOC contamination	Products with high VOC contents that emit VOCs 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", Second Edition, 2007, The Sheet Metal and Air Conditioner Contractors National Association (SMACNA). (703) 803-2980, <u>www.smacna.org</u>.
- B. ANSI/ASHRAE 52.2-2007, "Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size", <u>www.ashrae.org.</u>

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 will not be allowed if such changes compromise the stated LEED building performance criteria.

1.7 CONSTRUCTION IAQ MANAGEMENT PLAN:

- A. The Contractor must prepare a Construction IAQ Management Plan in coordination with each Subcontractor and submit the Construction IAQ Management Plan to the Commissioner for approval in accordance with Section 01 33 00 SUBMITTAL PROCEDURES. The Construction IAQ Management Plan must meet the following criteria:
 - 1. Construction activities must be planned to meet or exceed the minimum requirements of SMACNA's "IAQ Guidelines for Occupied Buildings under Construction", Second Edition, 2007.
 - 2. Absorptive materials must be protected from moisture damage when stored on-site and after installation.
 - 3. The planned operation of air handlers during construction must be described. 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 grille and return or transfer duct inlet opening, such that there is no bypass around the filtration media, as determined by ASHRAE 52.2-2007.
 - 4. Filtration media must be replaced immediately prior to occupancy. Filtration media must have a MERV of 13 as determined by ASHRAE 52.2-2007.
 - 5. A sequence of finish installation plan "Plan" must be developed, highlighting measures to reduce the absorption of VOCs by materials that act as "sinks".



- 6. The use of tobacco products is prohibited inside the building and within 25 feet of the building entrance during construction.
- 7. A flush-out or air testing must be performed.
- 8. Upon approval of the finish installation plan by the Commissioner, it must 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. Detailed requirements of the Construction IAQ Management Plan are 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 must be organized in accordance with the SMACNA format, and must address measures to be implemented in each of the five categories (including subsections). All subsections must 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, 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.
 - 7) To reduce debris and contamination to mechanical systems, do not store materials in mechanical rooms.
 - b. Source Control
 - 1) Protect stored on-site or installed absorptive or porous materials. Store materials in dry conditions indoors, under cover, and off the ground or floor.
 - 2) Do not use wet or damaged porous materials in the building. Materials which become contaminated through direct exposure to moisture from precipitation, plumbing leaks, or condensation must be replaced by the Contractor, at no additional cost to the City of New York.
 - 3) Use low-toxicity and low-VOC materials to the greatest extent possible.
 - 4) 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.
 - 5) Prevent exhaust fumes from idling vehicles, equipment and fossil-fueled tools from entering the building.
 - 6) Containers housing toxic materials and materials with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications, must be closed when not in use.
 - 7) Enforce the no-smoking job site policy.



- c. Pathway Interruption
 - 1) Depressurize work areas which 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.
 - 6) Provide walk-off mats at entryways to reduce introduced dirt and pollutants.
 - 7) Use dust guards and collectors on saws and other tools.
- 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.
 - 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 high-efficiency particulate filters. Activities which produce high levels of dust must 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) Keep materials organized to improve job safety as well as indoor air quality.
- 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.
 - Review of the appropriate components of the Construction IAQ Management Plan must be a regular action topic at weekly site coordination meetings. Implementation of the Plan must be documented in the meeting minutes.
- 2. Protection of Materials from Moisture Damage: As part of the "Source Control" section of the Construction IAQ Management Plan, measures to prevent installed materials or material stored onsite from moisture damage must be described. This section must also describe corrective measures to be taken if moisture damage does occur to absorptive materials during the course of construction (see Section 1.7 B.1.b).
- 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 must be provided.



The description must 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 must be installed after the installation of materials or finishes which have high short-term emissions of VOCs, 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. Pre-Occupancy Phase: Perform either a flush-out or air sample testing (Options 1 or 2, respectively), as follows:
 - **OPTION 1**—Flush-Out a.

Construction

- 1) Perform flush-out using either Path 1 or Path 2.
 - i. Path 1: After construction ends, prior to occupancy and with all interior finishes installed, install new filtration media and 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 no higher than 80 degrees F and relative humidity no higher than 60%.
 - ii. Path 2: 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 must be ventilated at a minimum rate of 0.30 cfm/sg.ft. of outside air or the design minimum outside air rate determined in IEQ Prerequisite: Minimum Indoor Air Quality Performance, whichever is greater. During each day of the flush-out period, ventilation must begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions must be maintained until a total of 14,000 cu.ft./sg.ft. of outside air has been delivered to the space.
- 2) Commissioning can occur during flush-out, at the discretion of the Commissioner, provided none of the commissioning procedures introduce contaminants into the space and none of the flush-out procedures circumvent the commissioning process. Complete testing and balancing of the HVAC system after the flush-out is complete. Refer to Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS.
- 3) If even partial construction work occurs during the flush-out, the flush-out must be started again from the beginning for that space. If multiple, discrete HVAC systems operate independently, flush-out may be completed in portions of the building as work is completed in each area served by a given system.

OR

- **OPTION 2** Air Testing b.
 - 1) Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with current versions of the United States Environmental Protection Agency "Compendium of Methods for the Determination of Air Pollutants in Indoor Air" or ISO methods, as additionally detailed in the USGBC "LEED BD+C Reference Guide."



2) Demonstrate that the contaminant maximum concentrations listed below are not exceeded.

CONTAMINANT	MAXIMUM CONCENTRATION
Formaldehyde	27 parts per billion
Particulates (PM10 for all buildings; PM25 for buildings in EPA nonattainment areas, or local equivalent)	PM10: 50 micrograms per cubic meter PM25: 15 micrograms per cubic meter
Ozone (for buildings in EPA nonattainment areas)	0.075 parts per million
Total Volatile Organic Compounds (TVOC)	500 micrograms per cubic meter
Target chemicals listed in the California Department of Public Health (CDPH) Standard Method c1.1, Table 4-1, except formaldehyde	CDPH Standard Method v1.1-2010, Allowable Concentrations, Table 4-1
Carbon Monoxide (CO)	9 part per million and no greater than 2 parts per million above outdoor levels

- 3) The air sample testing must be conducted as follows:
 - i. All measurements must 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.
 - ii. The building must 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 required to be in place for the testing.
 - iii. Prior to air sample testing, all punch-list items that would generate VOCs or other contaminants, the testing and balancing of the HVAC system and finalization of all cleaning must be completed. Use low-emitting cleaning products and vacuum cleaners with HEPA filtration.
 - iv. 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 must 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.
 - v. Air samples must 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.
 - vi. 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.
- 6. Implementation and Coordination: Before Demolition and/or Construction begins, the Contractor must implement the Construction IAQ Management Plan, coordinate the Construction IAQ Management Plan with all affected trades, and 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 Construction IAQ Management Plan with the Commissioner monthly 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 must distribute copies of the Construction IAQ Management Plan in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.
- b. Instruction: The Contractor must provide on-site instruction of appropriate site management to all Contractor's Subcontractors.
- c. Monitoring: The Construction IAQ Representative must monitor the implementation of the Construction IAQ Management Plan.

1.8 SUBMITTALS:

- A. Submit the following LEED-required records and documents in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and, as applicable, Section 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS or Section 01 81 13.04 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v4 BUILDINGS.
- B. A copy of the Construction IAQ Management Plan as defined in Sub-Section 1.7 herein.
- C. IAQ Tracking Log
 - 1. Note date of observed major Construction IAQ issues, describe any damage, describe any repairs or maintenance of specific control measures performed and note responsible party.
 - 2. Note date and findings of weekly site review, describe any repairs or maintenance performed, and note responsible party. Provide date-stamped photographs, inspection reports or other recording processes.
 - 3. Submit log monthly.
- D. Product cut-sheets for all filtration media used during construction and installed immediately prior to occupancy, with MERV values highlighted. Cut sheets must be submitted with the Contactor's or Subcontractor's "approved" stamp as confirmation that the products are the products installed on the Project.
- E. PHOTOGRAPHS: Submit to the Commissioner 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 of each IAQ measure. The photographs must 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 must include integral date stamping, and must 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.
- F. A copy of the Project's "Testing, Adjusting and Balancing" (TAB) report, if applicable.

1.9 QUALITY ASSURANCE:

- A. The Contractor will be responsible for preparing and implementing the Construction IAQ Management Plan and must coordinate and incorporate the work of its Subcontractors in the IAQ Management Plan. Include the Construction IAQ Management Plan requirements in contract agreements with Subcontractors. Familiarize Subcontractors with the Construction IAQ Management Plan and how the Construction IAQ Management Plan will affect their daily activities. Hold a Subcontractors' orientation meeting to review the Construction IAQ Management Plan requirements.
- B. Responsibility of Subcontractors: Subcontractors for this Project will be responsible for cooperating with the Contractor in the preparation and implementation of the Construction IAQ Management Plan.



C. Include construction IAQ progress check-ins as a regular item in weekly Subcontractor meetings and safety meetings. Provide a copy of the plan on site, posted in an easily accessible area.

PART II – PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 81 19



SECTION 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS

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. The OPR and BOD documents 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. General Requirements for building enclosure commissioning are addressed in a separate specification.
- B. This Section includes:
 - 1. Definitions
 - 2. Commissioning Team
 - 3. City's Responsibilities
 - 4. Contractor's Responsibilities
 - 5. CxA Responsibilities
 - 6. Commissioning Documentation
 - 7. Submittals
 - 8. Coordination
 - 9. Execution

1.3 RELATED SECTIONS:

- A. System-Specific Commissioning requirements indicated in other sections of the Project Specifications for specific requirements for commissioning systems.
- B. This Project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning must be in accordance with ASHRAE and USGBC LEED procedures, and specific commissioning requirements of the Project Specifications, whichever is more stringent. The Contractor must 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 OWNER'S PRE-ACCEPTANCE ORIENTATION
 - 6. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS
 - 7. Section 01 91 15 GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING

ENCLOSURE



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.

Basis of Design (BOD)	A document, prepared by the Design Consultant, 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.
Checklists	Forms that outline the step-by-step process that must be executed to fulfill the test requirements and to verify that materials, equipment, assemblies and systems are installed in accordance with the Contract Documents. The CxA must develop the checklists; the Contractor must complete them.
Commissioning	Commissioning is a systematic process of ensuring and documenting that the building systems have been installed in the prescribed manner, are functionally checked and capable of being operated and maintained to perform with the design intent and have documentation to support proper installation and operation. The process does not eliminate or reduce the responsibility of the installing subcontractors to provide a finished product.
Commissioning Agent (Aka Commissioning Authority) (CxA)	Consultant under separate contract with the City of New York to provide Commissioning services for this Project. The CxA must not be an employee of the Contractor, nor will the CxA have any interest in the Contract.
Commissioning Plan	A document developed by the CxA that outlines the organization, schedule, roles and responsibilities, allocation of resources, and documentation requirements of the commissioning process.
Deferred Performance Tests	Performance tests that are performed, at the discretion of the CxA, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design, or other site conditions that disallow the test from being performed.
Design Consultant	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.
Factory Testing	Testing of equipment on-site or at the factory, by factory personnel, with or without the City's representative.
Functional Performance Test (FPT)	Functional performance testing includes the dynamic functions and operations of equipment and systems using manual or monitoring methods under various levels of operation. Systems are tested under various modes, such as during low cooling loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarms, power failure, etc. The systems are run through all the control system's sequences of operation and components are verified to respond as the sequences state. Such tests must be performed as per the protocol written by the CxA which definines the methods, personnel and expectations.
Issue (or Deficiency)	A condition in the installation or function of a component, piece of equipment, or system that is not in compliance with the Contract Documents.



Issues Log	A formal and ongoing record of problems, deficiencies or concerns that have been raised by members of the Commissioning Team during the course of commissioning. The Issues Log is the primary tracking tool to address all Commissioning Issues by concerned parties. All Issues must be addressed and resolved by the concerned parties before the closeout of the Project. This log tracks the resolution performed and date of closure of each Issue.
Master Equipment List (MEL)	A complete listing of all commissioned building equipment, including details such as make, model, location, ID Tag number, etc. that is taken from submittals and is the basis from which checklists will be generated. The MEL is a spreadsheet which is also used as a tracking tool for all milestones of the commissioning process, such as the creation and performance of checklists, startup of equipment, TAB work, etc.
Monitoring	The recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or the trending capabilities of control systems.
Owner (City of New York) Contracted Tests	Tests paid for by the City of New York outside of the Contractor's Contract and for which the CxA does not provide oversight. These tests will not be repeated during functional testing if properly documented.
Owner's Project Requirements (OPR)	A document, prepared by the Design Consultant 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.
Pre-functional (Installation) Checklists	A list of items to inspect and elementary component tests to conduct to verify proper installation of equipment, provided by the CxA to the Contractor. Installation checklists are primarily static inspections and procedures to prepare equipment or systems for initial operation. Pre-functional (Installation) checklists augment, and are combined with, the manufacturer's startup checklist. The Checklists are filled out by the Contractor and reviewed by the CxA.
Sampling	Functional testing for a percentage of the total number of identical or near-identical pieces of equipment.
Seasonal Performance Tests	Functional tests that are deferred until, or performed again when, the system(s) will experience climate conditions close to their design conditions.
Startup	The initial starting or activating of equipment, including executing construction checklists.
Systems, Subsystems, Equipment, and Components	Where these terms are used together or separately, they mean "as-built" systems, subsystems, equipment, and components.
Systems Manual	A system-focused composite document that includes the Operation and Maintenance Manual, and additional information of use to the owner during the occupancy and operations phase.
Testing, Adjusting and Balancing (TAB)	Testing, adjusting, and balancing of the Heating Hot Water (HHW), Chilled Water (CHW) and Heating, Cooling, and Ventilation Airflow distribution system flows and pressures as specified in Contract Documents by a subcontractor certified to perform such work.
Test Requirements	Requirements specifying what modes and functions, etc. must be tested on any given piece of equipment or any given system (integrated or standalone). The test requirements are not the detailed test procedures. The test requirements for each system are specified in the respective Contract Documents.



Trending	Monitoring using the building controls system, and analysis of the data gathered over a period of time
	period of time.

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 will 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. Design Consultant and other concerned entities.

1.6 CITY'S RESPONSIBILITIES:

- A. Provide the OPR and BOD documentation to the CxA for use in developing the Commissioning Plan; systems manual; operation and maintenance orientation plan; and testing plans and checklists.
- B. Assign operation and maintenance personnel to participate in Commissioning Team activities.
- C. Provide full details and results of any Owner- contracted tests relevant to the current Project.

1.7 CONTRACTOR'S RESPONSIBILITIES:

- A. The Contractor must provide utility services required for the commissioning process.
- B. As a member of the Commissioning Team, the Contractor and Subcontractors must assign representatives with expertise and authority to act on behalf of the Contractor and its Subcontractor 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. Provide all factory acceptance test reports to the CxA through the Commissioner.
 - 4. Respond to any additional specific information requests from the CxA. CxA may request additional documentation necessary for the commissioning process. Requests by CxA may precede, be concurrent with, or follow normal submittals.
 - 5. Ensure the cooperation and participation of all Subcontractors and manufacturers of equipment to be commissioned.
 - 6. Verify and confirm that components, equipment, and system are functioning as per design prior to CxA witnessing testing.
 - 7. Perform testing required in the Commissioning schedule as per the Commissioning process test procedures provided by the CxA, providing no less than 48 hours' notice to the CxA through the Commissioner.
 - 8. Complete installation checklists as Work is completed and return to CxA through the Commissioner.



- 9. Provide written responses to the CxA through the Commissioner for resolution of Issues recorded in the Issues Log within five (5) business days.
- 10. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
- 11. Submit operation and maintenance manuals for systems and subsystems, and equipment in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS. Such documents must be submitted prior to functional testing.
- 12. Submit As-Built documents in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.
- 13. Provide orientation sessions for operations and maintenance personnel (sessions will be witnessed by the CxA) in accordance with Section 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION. Provide no less than 48 hours' notice to the CxA, through the Commissioner. Video record and edit orientation sessions and provide an electronic recording to the CxA and Commissioner no later than two (2) weeks after the orientation session occurs. Edit as requested by the Commissioner.

1.8 COMMISSIONING AGENT'S (CxA) RESPONSIBILITIES:

- A. Organize and lead the Commissioning Team.
- B. Prepare a construction-phase Commissioning Plan. Collaborate through the Commissioner 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. Update the Commissioning Plan during construction as required.
- 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 Commissioner, in accordance with Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION, to convene Commissioning Team meetings for the purpose of coordination, communication and conflict resolution; discuss progress of the commissioning processes.
- E. At the beginning of the construction phase, coordinate with the Commissioner'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 orientation sessions, TAB Work, testing, and Project completion.
- F. Perform site visits to observe and inspect construction as described in the Commissioning Plan. 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 and distribute project-specific test and inspection procedures and checklists and maintain MEL.
- H. Verify air and water systems balancing by sampling, reviewing completed reports and selected site observation. Coordinate submittal reviews with the Commissioner so that the comments are combined into a single review and submitted to the Contractor.
- I. Coordinate with the Commissioner to witness and document tests, inspections and systems startup, as per the Commissioning Plan.



- J. Maintain an Issues Log and a record of functional testing. Report all Issues as they occur to the Commissioner.
- K. Compile test data, inspection reports and certificates, and include them in the systems manual and Commissioning Report.
- L. Certify date of acceptance and startup for each item of equipment for start of warranty periods.
- M. 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.
- N. Review agenda for orientation; witness and confirm orientation session conforms with agenda and Contract Documents; review recording of demonstration and orientation sessions provided by the Contractor on USB drive or other electronic media as requested by the Commissioner and provide appropriate comments for editing.
- O. Return to the site ten (10) months into the twelve (12)-month guaranty period, to review with facility staff the current building operation and the condition of outstanding Issues related to the original and seasonal commissioning. Interview facility staff and identify problems or concerns they have with operating the building as originally intended.
- P. Prepare Commissioning Reports.
- Q. Assemble the final commissioning documentation, including the Commissioning Report and Systems Manual.
- R. Perform all CxA tasks as defined by LEED and the NYC Energy Conservation Code; prepare LEED submittal documents and preliminary and final Commissioning Reports as required by the NYC Energy Conservation Code.

1.9 COMMISSIONING DOCUMENTATION:

The Contractor must assist the CxA in the development and compiling of the following Commissioning Documentation:

- A. Index of Commissioning Documents: The CxA will prepare an index including the storage location of each document.
- B. Commissioning Plan: A document prepared by the CxA that outlines the schedule, allocation of resources, roles and responsibilities, and documentation requirements of the Commissioning process.
- C. Test Checklists: The 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, but must include without limitation:
 - 1. Identification of tested item
 - 2. Date of test
 - 3. Indication of whether the record is for a first test or retest following correction of a problem or Issue
 - 4. Dated signatures of the person performing the test and of the witness if applicable
 - 5. Deficiencies and Issues, if any, generated as a result of the test



- D. 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.
- E. Test and Inspection Reports: The 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 must compile test and inspection reports and test and inspection certificates and include them in systems manual and Commissioning Report.
- F. Corrective Action Documents: The 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 must retest systems and equipment requiring corrective action. The CxA will document retest results.
- G. Issues Log: The 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. The Issues Log will identify, at a minimum:
 - 1. The party responsible for correcting the Issue,
 - 2. The person documenting the Issue resolution,
 - 3. The exact location of the Issue (floor and room),
 - 4. The applicable system component,
 - 5. A detailed description of the Issue,
 - 6. The Issue status, and
 - 7. The date the Issue was discovered and the date the Issue was resolved.
- H. Commissioning Report: The 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. The Commissioning Report must include:
 - 1. An executive summary, including participants and their roles, a brief building description, an overview of the commissioning and testing scope, and a general description of testing and verification methods,
 - 2. Installation/Pre-Functional Checklists,
 - 3. Start-up reports,
 - 4. Functional Test documentation,
 - 5. Trend Log Analysis,
 - 6. The final Issues Log, with all Issues identified through the commissioning process, identifying which, if any, Issues remain unresolved,
 - 7. The Commissioning Plan,
 - 8. Commissioning progress and field reports,
 - 9. Commissioning review documents, and
 - 10. Record of owner's orientation.
- I. Systems Manual: The 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. Submittal of shop drawings, product data, samples, etc., relevant to commissioning must be provided to the CxA as requested. Such submittals must be in compliance with Section 01 33 00 SUBMITTAL PROCEDURES.
- B. As-Built Contract Record Drawings and Operating and Maintenance Manuals relevant to commissioning must be provided to the CxA as requested. Such submittals must be in compliance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.
- C. All demonstration and orientation submittals relevant to commissioning must be provided to the CxA as requested. Such submittals must be in compliance with Section 01 79 00 DEMONSTRATION AND OWNER'S PREACCEPTANCE ORIENTATION.
- D. Completed Prefunctional (Installation) Checklists must be provided to the CxA prior to equipment startup.

1.11 COORDINATION:

- A. Coordination of Commissioning is the responsibility of all Commissioning Team members.
- B. Coordinating Meetings: The CxA will coordinate with the Commissioner'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. Commissioner and Contractor must ensure that all required Commissioning Team members attend.
- C. Construction Documents: The Contractor, through the Commissioner, will furnish copies of all construction documents, addenda, change orders and appropriate submittals and shop drawings to the CxA.
- D. Pre-testing Meetings: The CxA will coordinate with the Commissioner 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. Commissioner and Contractor must ensure that all required Commissioning Team members attend.
- E. Testing Coordination: Contractor must coordinate schedule times with the Commissioning Team, through the Commissioner, for tests, inspections, obtaining samples, and similar activities. The CxA will advise the Commissioning Team as to 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.
- F. Manufacturers' Field Services: The Contractor must coordinate manufacturers' field services, as per the Commissioning Plan.
- G. The CxA will regularly apprise the Commissioner of progress, pending problems and/or disputes, as well as provide regular status reports on progress with each system.

PART II – PRODUCTS

2.1 TEST EQUIPMENT

- A. All industry standard test equipment required for performing the specific tests must be provided by the Contractor responsible for testing. Any proprietary Vendor-specific test equipment must be provided by that Vendor or Manufacturer.
- B. Special equipment, tools, instruments, software, and equipment communication network access hardware and software (only available from Vendor, specific to the piece of equipment) required for testing equipment according to the Contract Documents must be included at no extra cost to the City and must be turned over



to the City at Project close-out, except for stand-alone data logging equipment that may be used by the CxA.

- C. Any portable or handheld setup and/or calibration devices required to initialize the control system must be made available by the control vendor for use by the CxA at no additional cost to the City.
- D. The instrumentation used in the commissioning process must comply with the following:
 - 1. Be of sufficient quality and accuracy to test and/or measure system performance within the tolerances required
 - 2. Be calibrated at the manufacturer's recommended intervals with calibration tags permanently affixed to the instrument
 - 3. Be maintained in good repair and operating condition throughout use duration on this Project
 - 4. Be immediately recalibrated or repaired if dropped and/or damaged in any way during this Project.

PART III – EXECUTION

3.1 COMMISSIONING PROCESS

- A. The following provides an overview of the Commissioning tasks during Project construction and the general order in which they occur.
 - 1. Construction-phase Commissioning begins with a Commissioning Kickoff Meeting, conducted by the CxA through the Commissioner in accordance with section 01 31 00 PROJECT MANAGEMENT AND COORDINATION, where the Commissioning process is reviewed with all the Commissioning Team Members.
 - 2. Additional meetings may be required throughout construction, scheduled by the CxA through the Commissioner in accordance with 01 31 00 PROJECT MANAGEMENT AND COORDINATION with necessary parties attending, to plan, scope, coordinate and schedule future activities and resolve open Issues.
 - 3. The CxA will review the Contractor submittals concurrent with the Commissioner and provide comments to the Commissioner for inclusion in their review. The reviewed submittals will include all commissioned equipment information, including detailed startup procedures, and coordination drawings that include commissioned equipment and systems, control drawings and sequences, and interfaces and interlocks between systems.
 - 4. The CxA works with the Commissioner and Contractor in developing Pre-functional and Functional Test documentation formats.
 - 5. Periodically throughout the construction process, the CxA will perform site visits to observe component and system installations.
 - 6. The checkout and performance verification generally proceeds from component level to equipment to systems and intersystem levels. Pre-functional (Installation) Checklists are to be completed before equipment startup. Equipment startup must be completed before TAB. TAB must be completed before the Functional Performance Checklists.
 - 7. The Contractor must, with guidance from the CxA, execute and document the Pre-Functional (Installation) Checklists and perform startup and initial checkout of equipment and systems. The CxA documents that the checklists and startup are completed according to the approved plans. This will include the CxA witnessing selected assembly markups, portions of the startup of selected equipment, and spot checking the Pre-Functional (Installation) Checklists.
 - 8. The CxA develops specific equipment and system Functional Checklists. The Contractor receives a copy of the procedure through the Commissioner. The CxA may request additional design


narrative from the Commissioner and Controls Contractor, depending on the completeness of the Basis of Design and sequences provided within the design documents.

- 9. The Functional Checklists are executed by the Contractor and witnessed and documented by the CxA.
- 10. Items of non-compliance in material, installation startup, and operation are corrected and the equipment or system is rechecked. The CxA will maintain an Issues Log to track Issues and Issue resolution.
- 11. The CxA will review the Operation & Maintenance documentation for completeness.
- 12. Commissioning, excluding the Warranty Walkthrough and any seasonal testing at the written direction of the Commissioner, must be completed prior to Substantial Completion.
- 13. The CxA reviews the orientation documentation. The orientation schedules and agenda are provided by the subcontractors. The CxA verifies that orientation is completed, attended by the appropriate City of New York personnel, is thorough and provides all necessary information required to operate and service the equipment or system.
- 14. Deferred testing/checkouts are conducted, as specified or required in the Contract Documents.

3.2 COMMISSIONING PLAN AND SCHEDULE

- A. Commissioning Plan: The Commissioning Plan provides guidance in the execution of the commissioning process. After the initial construction phase Commissioning kickoff meeting, the CxA will update the plan. This plan is a living document that must evolve and expand as the Project progresses. The Commissioning Plan must include:
 - 1. Description of the facility and Project.
 - 2. Description of the commissioning process and associated deliverable documents.
 - 3. Description of equipment and systems to be commissioned.
 - 4. Description of schedules for testing procedures along with identification of parties involved in performing and verifying tests.
 - 5. Sample rates for equipment to be tested.
 - 6. Identification of task items that must be completed before the next operation can proceed.
 - 7. Description of responsibilities of Commissioning Team members.
 - 8. Description of observations to be made and reported on during testing and witnessing of testing by all parties involved in the Project.
- B. Commissioning Schedule: Contractor must provide construction schedules to the CxA, in accordance with Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION. The CxA will develop and submit a schedule identifying the commissioning process and provide commissioning scheduling information to the Commissioner and Contractor for review and planning activities. The Contractor must incorporate the CxA's activities into the Project schedule.

3.3 TESTING PROCEDURES

A. The CxA will determine and document the acceptance procedures for each system within disciplines. The acceptance procedures must incorporate the commissioning standards and successful testing results as referred to throughout the Specifications.



- B. The CxA will provide performance checklists and performance checkout data sheets for each system based on actual system configuration. Special emphasis must be placed on checkout procedures that must conclusively determine actual system performance and compliance with the OPR and BoD.
- C. The Contractor and appropriate Vendor(s) must be informed of what tests are to be performed and the expected results. The Commissioning Plan must address the test requirements and be distributed to all parties involved with that system.
- D. Prior to Functional Testing, the Contractor must provide the following:
 - 1. Contractor must certify in writing that commissioned systems, subsystems, and equipment have been installed, calibrated and started, and are operating according to the Contract Documents.
 - 2. Contractor must certify in writing that all relevant instrumentation and control systems have been completed and calibrated; are operating according to the Contract Documents; and that pretest set points have been recorded.
 - 3. Contractor must certify in writing that TAB procedures have been completed, and that the TAB report has been submitted, discrepancies corrected, and corrective work approved.
 - 4. Contractor must perform tests for system and intersystem performance only after CxA and Commissioner have approved the completed testing checklists for systems, subsystems, and equipment.
- E. The Functional Performance tests must be performed by the Contractor and Vendor(s) with oversight by the CxA. The CxA must witness, verify, and document these tests.
 - 1. Functional Performance Tests must include operating the systems and components through each of the written sequences of operation, other significant modes of miscellaneous alarms, power failure, and security alarm when impacted by and interlocked with commissioned equipment, as detailed in the Commissioning Plan.
 - 2. Checklists must be completed comprehensively and to the extent necessary to enable the CxA to assure the Commissioner that the systems perform as per the OPR, BOD, and Contract Documents.
 - 3. If a test is failed for any reason and retesting is required, the Contractor must provide retesting at no additional cost to the City.
 - 4. If a test must be witnessed more than twice by the Commissioning Agent due to repeated failure to perform as per the design documents, the Contractor must be responsible for the Commissioning Agent's fee for witnessing repeated tests beyond the second incidence. Such fee will be negotiated between the Commissioning Agent and the Commissioner.
 - 5. After testing, Contractor must return settings to normal operating conditions.

3.4 OPERATION & MAINTENANCE MANUALS

- A. General
 - 1. The CxA must review the Operation & Maintenance manuals provided by the Contractor for completeness of the document. The review process will verify that Operation & Maintenance instructions meet Specifications and are included for all commissioned equipment furnished by the Contractor.
 - 2. Published literature will be specifically oriented to the provided equipment, indicating required operation and maintenance procedures, parts lists, assembly / disassembly diagrams and related information.



- 3. The Contractor must incorporate the standard technical literature into system-specific formats for this facility as designed and as actually installed. The resulting Operation & Maintenance information must be system-specific, concise, to the point and tailored specifically to this facility. The CxA must review these documents as necessary for final corrections by the Contractor.
- 4. Contractor must submit Operations & Maintenance Manuals for each piece of equipment for review no later than 45 days after submittal approval.
- B. The Operation & Maintenance Manual review and coordination efforts must be completed prior to Owner orientation sessions, as these documents are to be utilized in the orientation sessions.
- C. System Operations Manual
 - 1. The CxA must prepare and deliver these documents with inputs from the Contractor. The Contractor must provide all required documents to the CxA, through the Commissioner. The required documents must be described in the Commissioning Plan and Contract Documents. Typically, the manual includes the following:
 - a. System, subsystem, and equipment descriptions
 - b. Commissioned systems single line diagrams (to be provided by Mechanical, Electrical, Plumbing, and Building Management System (BMS) subcontractors).
 - c. As built sequences of operations, control drawings and original set points (to be provided by Design Consultant and BMS subcontractor).
 - d. Operating instructions for integrated building systems (to be provided by Mechanical and BMS subcontractors).
 - e. Recommended schedule of maintenance requirements and frequency (to be provided by subcontractors).
 - f. Recommended schedule for calibrating sensors and actuators (to be provided by BMS subcontractor).

3.5 DEMONSTRATION AND INSTRUCTION

- A. The Contractor must schedule and coordinate instruction sessions for the facility's staff for each commissioned system. Demonstrations must be held per Contract Documents, along with the appropriate schematics, handouts and visual / audio orientation aids onsite with equipment.
- B. The equipment vendors must provide instruction on the specifics of each major equipment item including philosophy, troubleshooting and repair techniques.
- C. The Contractor must record and edit demonstration and orientation sessions, and provide these records to the CxA, through the Commissioner.
- D. For additional direction pertinent to instruction, refer to other specific divisions for demonstration and instruction requirements.

3.6 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 suitable loads / conditions were unavailable during the performance testing stages (in other words; the requirement for testing is warranted), and at the written direction of the Commissioner.
- B. The CxA will return to the site approximately ten (10) months into the twelve (12)-month guaranty period and interview the occupants and maintenance staff, review the operation of the building, provide recommendations for installation and operational problems and document warranty and operational Issues in the Issues database.



3.7 RECORD DRAWINGS

A. The CxA must review the as built Contract Documents to verify incorporation of both design changes and as-built construction details. Discrepancies noted must be corrected by the appropriate party.

END OF SECTION 01 91 13



(No Text This Page)



SECTION 01 91 15 GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 91 15

PARTI – 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 Owner's Project Requirements (OPR) and Basis of Design (BOD) documents 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 SECTION INCLUDES

- A. This section includes the commissioning requirements for the Building Enclosure systems. Refer to "Exterior Enclosure Commissioning" in other sections of the Project Specifications for specific requirements regarding Building Enclosure Commissioning.
 - 1. The commissioning requirements for the Building Enclosure systems given in this section are entirely separate from, and in addition to, the Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS for this Project. The Contractor, and his/her Suppliers, Subcontractors, Vendors, etc., are required to participate in both commissioning processes as required.

1.3 DESCRIPTION

- A. Building Enclosure Commissioning (BECx) is a systematic process of ensuring all building enclosure systems responsible for environmental separation perform as per the OPR and BOD. The BECx process is intended to verify and document proper installation and performance of building enclosure materials and systems in accordance with the Contract Documents.
- B. Commissioning does not take away from, or reduce, the Contractor's responsibility to provide a finished and fully functioning product and installation.
- C. This section will in no way diminish the responsibility of the Contractor in performing all aspects of work and testing as outlined in the Contract Documents. Any requirements outlined in this section are in addition to requirements outlined in the Contract Drawings and Specifications.

1.4 RELATED WORK

- A. Specific BECx requirements are given in this Section. The following Project Specification sections are related to the commissioning work specified in this section:
 - 1. Basic Concrete Requirements: Refer to Division 03
 - 2. Basic Metal Requirements: Refer to Division 05
 - 3. Basic Waterproofing, Roofing, Air Barrier and Insulation Requirements: Refer to Division 07
 - 4. Basic Fenestrations Requirements: Refer to Division 08
 - 5. Basic Finishing Requirements: Refer to Division 09



1.5 DEFINITIONS AND ABBREVIATIONS

A. Refer to Article 2 of the Contract and Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS for terms, words, and expressions not otherwise defined herein.

Approval	Acceptance that a material or system has been properly installed and is functioning in tested modes according to the Contract Documents.
Building Enclosure Commissioning Agent (BECA)	BECA directs and coordinates day-to-day BECx commissioning activities.
Building Enclosure Testing Agency (BETA)	Building Enclosure Testing Agency whom is an independent agency retained by the Contractor and approved by the Commissioner, fully accredited by the appropriate governing body for each of the materials, components or systems to be tested or evaluated for compliance with requirements of the Contract Documents and as directed by the BECA. Documentation of such certification must be submitted to and approved by the Commissioner prior to the start of any work by the BETA.
Commissioning	Commissioning is a systematic process of ensuring and documenting that the building systems have been installed in the prescribed manner, are functionally checked and capable of being operated and maintained to perform with the design intent, and have documentation to support proper installation and operation. The process does not eliminate or reduce the responsibility of the installing subcontractors to provide a finished product.
Commissioning Agent (CxA)	Refer to Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS for Definition.
Commissioning Plan	Refer to Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS for Definition.
Deficiency	Condition of a building enclosure material or system that is not in compliance with Contract Documents (that is, does not perform properly or does not comply with design intent).
Design Consultant	Refer to Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS for Definition.
Simulated Condition	Condition created for testing component or system (e.g., applying pressure differential across the building enclosure concurrent with water spray to simulate a wind driven rain).
Mock-up	The activities where systems or materials are initially constructed and tested.

1.6 COORDINATION

- A. Building Enclosure Commissioning Team: Members of the Building Enclosure Commissioning Team will consist of:
 - 1. CxA
 - 2. BECA
 - 3. BETA
 - 4. Commissioner
 - 5. Contractor, and all Building Enclosure Subcontractors
 - 6. Design Consultant
- B. Management: City of New York will contract services of the BECA through a separate contract. The BECA will direct and coordinate commissioning activities and report to the Commissioner. All members of the



Building Enclosure Commissioning Team must cooperate to fulfill contracted responsibilities and objectives of the Contract Documents.

C. Scheduling: BECA must work with the Building Enclosure Commissioning Team to establish required commissioning activities to incorporate into the preliminary commissioning schedule. The Contractor must integrate commissioning activities into master construction schedule, in accordance with Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION. Necessary notifications are to be made in a timely manner in order to expedite commissioning.

1.7 SUBMITTALS

- A. Contractor must provide documentation required for commissioning work in accordance with Section 01 33 00 SUBMITTAL PROCEDURES. At minimum, documentation must include, but not be limited to:
 - 1. Submittal of shop drawings, product data, samples, etc., relevant to BECx and as requested by the BECA. Such submittals must be in compliance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.
 - 2. As-Built Record Drawings and Operation and Maintenance Information relevant to BECx and as required by the BECA. Such submittals must be in compliance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.
 - 3. All demonstration and orientation submittals relevant to BECx and as requested by the BECA. Such submittals must be in compliance with Section 01 79 00 DEMONSTRATION AND OWNER'S PREACCEPTANCE ORIENTATION.
 - 4. Performance data, any performance test procedures, and installation and checkout materials.
- B. The Contractor must provide all submittals to the Design Consultant, as per Section 01 33 00 SUBMITTAL PROCEDURES. The Design Consultant will transmit all building enclosure related submittals to the BECA for concurrent review.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 SYSTEMS TO BE COMMISSIONED

A. Building Enclosure systems to be commissioned may include, but are not limited to, Roof waterproofing, including garden roof systems, all penetrations, and transitions; skylights and other sloped glazing; exterior walls, including the air barrier system, water management systems, and thermal insulation; punched windows, window walls, curtain walls, storefronts, glazed entries, doors, and louvers; sealants, expansion joints, and control joints; flashings, including all transitions and end-dams; terrace, balcony, and deck waterproofing; below-grade waterproofing, including drainage, waterproofing and damp proofing; below slab floor barriers; interface and transition conditions between exterior enclosure components and systems; smoke controls and fire separation and stopping; and any other special building enclosure systems, equipment, and controls. Refer to the Contract Documents for clarity.

3.2 RESPONSIBILITIES OF COMMISSIONING TEAM MEMBERS DURING CONSTRUCTION PHASE

- A. Responsibilities of the Design Consultant include without limitation the following:
 - 1. Review BECA comments on construction documents and shop drawings.
 - 2. Assist in dispute resolution regarding building enclosure items.
 - 3. Review BECA reports.
 - 4. Incorporate BECA Submittal Review Comments into response on submittals.
- B. Responsibilities of the BECA include the following without limitation:



- 1. Review and comment on Mock-up construction and testing plan as provided by Contractor.
- 2. Development of BECx Plan.
- 3. Review of building enclosure shop drawings and submittals, including "approved equal" requests, through the Commissioner in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.
- 4. Attend combined pre-construction and BECx kick-off meeting.
- 5. Develop construction checklists for the building enclosure for the Contractor's use.
- 6. Observe the construction of a building enclosure Mock-up.
- 7. Witness the testing of a building enclosure Mock-up.
- 8. Project meetings / conference calls / coordination.
- 9. Field monitor installation of exterior enclosure components.
- 10.Update field report log.
- 11.Update BECx Plan.
- 12. Advise on Requests for Information.
- 13. Assist with the preparation of LEED paperwork.
- 14. Prepare systems manual, with required inputs and documentation from the Contractor in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.
- 15. Complete Maintenance Plan, with required inputs and documentation from the Contractor in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.
- 16.Prepare training manual, with required inputs and documentation from the Contractor in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.
- 17. Prepare final BECx record and enclosure commissioning close-out documents.
- 18. Develop on-going BECx Plan.
- C. Responsibilities of the Contractor and Building Enclosure Subcontractors include without limitation the following:
 - 1. Review BECx Plan and FPT specification.
 - 2. Attend commissioning kick-off meeting and other Building Enclosure Commissioning Team meetings.
 - 3. Incorporate commissioning activities into the construction schedule.
 - 4. Periodically update Commissioning activities in the construction schedule.
 - 5. Notify Commissioner and BECA of work completion.
 - 6. Verify building enclosure materials and assemblies are ready for functional testing.
 - Retain the services of an approved independent BETA; submit qualifications of independent BETA to Commissioner for approval; coordinate all activities and deliverables of this BETA; ensure all BETA deliverables are provided to the Building Enclosure Commissioning Team.
 - 8. Attend all required material and systems testing.
 - 9. Execute all periodic maintenance or repairs required on started systems from initial Mock-up of equipment to Final Acceptance by Commissioner to prevent material warranties from being voided.
 - 10. Submit maintenance logs of all interim maintenance or repair tasks performed by Contractor.



- 11.Ensure installation work is complete, is in compliance with Contract Documents, and is ready for Functional Performance Testing. FPT test results will be documented by BECA.
- 12.Ensure resolution of non-compliance and deficiencies in construction or test results. Obtain written documentation of completion from the appropriate subcontractors.
- 13. Provide letters of compatibility for adjacent building enclosure materials and assemblies.
- 14. Facilitate all repairs and retesting of failed condition at no additional cost to the City of New York.
- 15. Provide all warranty information to BECA.
- D. Responsibilities of the BETA include without limitation the following:
 - 1. Attend Commissioning kick-off meeting and other Building Enclosure Commissioning Team meetings.
 - 2. Provide on-site technician and equipment to complete Mock-up and field Functional Performance Testing.
 - 3. Prepare and submit reports to the Commissioner at the conclusion of all testing.
 - 4. Perform retesting and prepare corresponding reports.

3.3 BUILDING ENCLOSURE COMMISSIONING TEAM (BECx) MEETINGS

- A. BECx meetings will be held periodically, as determined by the Commissioner and recommended by BECA.
- B. Discussions held in BECx meetings must include, but not be limited to: system/materials, mock-up/field, progress, scheduling, testing, documentation, deficiencies, and problem resolution.
- C. The Contractor must attend BECx meetings, and must ensure the attendance of required subcontractors, as requested.

3.4 REPORTING

- A. BECA will provide status reports to the Commissioner. The Commissioner will provide such status reports to the Contactor, CxA, Design Consultant, and other entities as needed.
- B. BECA will submit non-compliance and deficiency reports to Commissioner. The Commissioner will provide such reports to the Contractor, CxA, Design Consultant, and other entities as needed.
- C. BECA will provide a final summary report to Commissioner and CxA.

3.5 MOCK-UP AND FINAL CONSTRUCTION

A. Prior to Functional Performance Testing or concealment of functional performance layers within the building enclosure, the Contractor must verify that all assemblies are complete, including deficiency long items, and all Contract requirements are met.

3.6 FUNCTIONAL PERFORMANCE TESTING

- A. Objectives and Scope
 - 1. The objective of Functional Performance Testing is to demonstrate that the building enclosure is performing according to documented design intent and Contract Documents. Functional Performance Testing ensures and documents that the building enclosure systems are fully operational. Additionally, during Functional Performance Testing, areas of deficient performance are identified and corrected, improving building enclosure system performance.
- B. Development of Test Procedures



- 1. The purpose of a specific test is to verify and document compliance of the installed enclosure systems with the OPR. Building Enclosure Functional Performance Test Protocols are provided in other sections of the Project Specifications for specific requirements regarding BECx.
- C. Coordination and Scheduling
 - Contractor must provide sufficient notice to BECA, through the Commissioner, regarding completion schedule for materials and systems. Testing to be performed in conjunction with site visits. Contractor must schedule Functional Performance Tests with Commissioning Team. BECA must witness and document functional testing of equipment and systems. BETA, as retained by the Contractor, must execute tests under direction of BECA.
 - 2. Successful completion of Mock-up functional performance testing must occur prior to full production installation of building enclosure materials and systems.

3.7 DOCUMENTATION, NON-CONFORMANCE, AND APPROVAL OF TESTS

- A. Documentation
 - 1. BECA must witness and document results of FPT.
- B. Non-Conformance
 - 1. BECA must record results of functional testing. Deficiency or non-conformance issues must be noted and reported to the Commissioner. The Commissioner must provide such non-conformance reports to the CxA, Design Consultant, Contractor, and other entities, as needed.
 - 2. Corrections of minor deficiencies identified may be made during tests at the discretion of the Commissioner and as recommended by the BECA. In such cases, deficiency and resolution must be documented.
 - 3. Every effort must be made to expedite testing and minimize unnecessary delays, while not compromising integrity of tests.
 - 4. Deficiencies are handled in the following manner:
 - a) BECA documents deficiencies and notes Contractor's response and intentions. A finding of deficiency will not end the testing process.
 - b) BECA submits deficiency report to the Commissioner. The Commissioner will provide such deficiency report to the CxA, Contractor, Design Consultant, and other entities as required.
 - c) Contractor corrects deficiency and certifies that material or assembly is ready to be retested.
 - d) Contractor informs Commissioner of retesting schedule for coordination with the BECA.
 - e) Contractor reschedules test with the Commissioner and BETA at no additional cost to the City of New York.
 - f) If a test must be witnessed more than twice by the BECA due to repeated failure to perform as per the design documents, the Contractor must be responsible for the BECA's fee for witnessing repeated tests beyond the second incidence. Such fee will be negotiated between the BECA and the Commissioner.
- C. Testing
 - 1. Costs for all testing and retesting required for the Project will be the responsibility of the Contractor. The Contractor is to provide access to the test specimens to the Commissioning Team, through the Commissioner.



3.8 COMMISSIONING DOCUMENTATION

- A. Final Report Details
 - 1. Final BECx Report must include an executive summary, list of participants and roles, brief building description, overview of Commissioning and testing scope, and general description of testing and verification methods. Report must contain evaluation regarding:
 - a) Conformance to Specifications and design intent.
 - b) Material/system installation.
 - c) Functional performance.
 - 2. All outstanding non-compliance items must be specifically listed.
 - 3. Recommendations for improvement to system or operations, future actions, etc. must also be listed.

END OF SECTION 01 91 15



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

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

Contract for Furnishing all Labor and Material Necessary

Contractor	
Dated	, 20
Approved as to Form	
Certified as to Legal Authonity	
Acting Corporation Counsel	
Dated	, 20
	·
Entered in the Comptroller's Office	
First Assistant Bookkeeper	
Dated	, 20

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

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

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

CONTRACT NO. 1 HVAC WORK

Queensboro Hill Branch Library HVAC Replacement

LOCATION: 60-05 Main St. BOROUGH: Queens, NY 11355 CITY OF NEW YORK

Contractor

Dated

Approved as to Form Certified as to Legal Authority

Acting Corporation Counsel

Dated

Entered in the Comptroller's Office

First Assistant Bookkeeper





Department of Design and Construction



, 20

, 20

FMS ID: LQQBHHVAC

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

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

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

CONTRACT NO. 1 HVAC WORK

Queensboro Hill Branch Library HVAC Replacement

LOCATION: BOROUGH: CITY OF NEW YORK

60-05 Main St. Queens, NY 11355

Contractor	
Dated	, 20
Approved as to Form Certified as to Legal Authority	
Acting Corporation Counsel	
Dated April 28	, 20 22
Entered in the Comptroller's Office	
First Assistant Bookkeeper	

Department of Design and Construction

RW 04.28.2022



, 20

Dated

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PROJECT ID:

LQQBHHVAC



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

VOLUME 3 OF 3

ADDENDUM TO THE GENERAL **CONDITIONS**

SPECIFICATIONS

FOR FURNISHING ALL LABOR AND MATERIALS NECESSARY AND REQUIRED FOR:

Queensboro Hill Branch Library HVAC Replacement

LOCATION: **BOROUGH: CITY OF NEW YORK** 60-05 Main St. **Queens, NY 11355**

CONTRACT NO. 1

HVAC WORK

FOR: **Queens Public Library**

BY: WSP

Date:

April 20, 2022





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 #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Branch Library HVAC Replacement

PROJECT DESCRIPTION: This Project This project consists of a HVAC system replacement at library branch. Electrical power, lighting, fire alarm, BMCS controls and structural systems will also be upgraded to facilitate new HVAC units. Interior finishes will be upgraded to support the HVAC distribution system replacements.

PROJECT LOCATION:	60-05 Main St.
BOROUGH:	Queens
CITY OF NEW YORK	
ZIP CODE:	11355
COMMUNITY BOARD #:	7

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

This project includes MEP Requirements.

The General Commissioning Requirements for MEP Systems are found in Section 01 9113 of the DDC Standard General Conditions.

Other specific Commissioning Requirements can be found in the Project Specification Sections.

IV. PROJECT MANAGEMENT



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 E 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-</u> Section	Sub-Section	Applies	Does not Apply	Applies as Amended
01 1000	1.4 (B)	Scope and Intent / LEED		X	
	1.4(C)	Scope and Intent / Commissioning	Х		
01 3216.10		Project Schedules (Method A)	х		
01 3216.20		Project Schedules (Method B)		x	
01 3216.30		Project Schedules (Method C)		Х	
	1.7 Q	Cost Loaded Schedule		X	
01 3233		Photographic Documentation	X		
01 3300	1.7 (A-D)	LEED Submittals		X	
01 3503		General Mechanical Requirements	Х		
01 3506	3.2 (A-B)	Electrical Conduit System Including Boxes (Pull, Junction and Outlet)	Х		
	3.3 (A-E)	Electrical Wiring Devices	Х		
	3.4 (A-I)	Electrical Conductors and Terminations	Х		
	3.5 (A-B)	Circuit Protective Devices	Х		
	3.6 (A-J)	Distribution Centers	Х		
	3.7 (A-I)	Motors	X		
	3.8 (A-I)	Motor Control Equipment	Х		
01 3591		Historic Treatment Procedures		Х	
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water		Х	
	3.2 (B)	Temporary Water Facilities / Temporary Water – Work in Existing Facilities	Х		
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained Toilet Units	Х		
	3.3 (C)	Temporary Sanitary Facilities / Existing Toilets	Х		
	3.4 (B) 1	Temporary Power, Lighting, and Site Lighting / Connection to Utility Lines		X	
	3.4 (B) 2	Temporary Power, Lighting, and Site Lighting / Connection to Existing Electrical Power Service	Х		
	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	Х		
	3.8 (A)	DDC Field Office / Office Space in Existing Building	X		

FMS # LQQBHHVAC Date: 2/3/22

<u>Section</u>	<u>Sub-</u> Section	Sub-Section	Applies	Does not Apply	Applies as Amended
01 5000	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	Х		
	3.17(B)	Project Rendering	X		
	3.18 (A-	Security Guards / Fire Guards on Site	х		
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		Х	
	3.4 (A-B)	Borings		Х	
	3.12 (A- D)	Sleeves and Hangers	Х		
	3.13 (A)	Sleeve and Penetration Drawings	x		
	3.15 (A)	Location of Partitions	х		
01 7419	1.5 (C)	Waste Management Performance Requirements / LEED Certification		X	
01 7900		Demonstration and Owner's Pre-Acceptance Orientation	Х		
01 8113.03		Sustainable Design Requirements for LEED v3 Buildings		X	
01 8113.04		Sustainable Design Requirements for LEED v4 Buildings		X	
01 81 13.10		Environmentally Preferable Purchasing (EPP) Compliance		x	
01 8113.13		VOC Limits for Adhesives, Sealants, Paints and Coatings for LEED v3 Buildings		X	
01 8119		Indoor Air Quality Requirements for LEED Buildings		Х	
01 9113		General Commissioning Requirements for MEP Systems	X		
01 9115		General Commissioning Requirements for Building Enclosure		X	

AMENDED SECTIONS/SUB-SECTIONS

The Contractor is advised that the amended Sub-Sections set forth below are included in the General Conditions and apply to the Project.

ADDITIONAL SECTIONS/SUB-SECTIONS

The Contractor is advised that the additional Sub-Sections set forth below are included in the General Conditions and apply to the Project.

VIII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT

Refer to the PASSPort Questionnaire for Special Experience Requirements.

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) <u>Owner</u>: Wherever the term "Owner" is used in the Specifications and/or the Contract Drawings, such term shall mean the City of New York.
- (2) <u>Other Entities</u>: 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) <u>Architect / Engineer</u>: 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) <u>Products / Manufacturers</u>: 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) <u>Proprietary Items</u>: If the Documents section in PASSPort contains a Notice which identifies a particular product from a designated manufacturer as a "Sole Source Product, the Contractor shall be required to provide such specified product. In such case, no substitution or "approved equal" will be permitted.
- (5) <u>Special Experience Requirements</u>: Special Experience Requirements for the Project, if any, are set forth in the PASSPort Questionnaire. Special Experience Requirements may apply to Contractors, subcontractors, installers, fabricators, applicators, erectors, specialists, manufacturers and/or suppliers. Refer to DDC General Conditions Section 014000 Article 1.7.C for applicable Special Experience qualification levels. If the Specifications and/or the Contract Drawings contain any Special Experience Requirement that is not set forth in the PASSPort Questionnaire, 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 as noted in DDC General Conditions Section 014000 Quality Requirements, Article 1.7.B, except as described in paragraph (b) below.
 - (b) Any Special Experience Requirement that pertains to the abatement of hazardous materials must not be subject to the deletion and/or revision set forth above. Such Special Experience Requirement will remain in full force and effect.
 - (c) 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) <u>Alternate Bids</u>: If the agency is requesting the submission of Alternate Bids, a Notice regarding such Alternate Bids is set forth in the Documents section in PASSPort. In the event of any conflict or inconsistency between (1) the Notice regarding Alternate Bids set forth in the Documents section in PASSPort and (2) a provision in the Specifications and/or the Contract Drawings regarding Alternate Bids, the Notice set forth in the Documents section in shall prevail. If the agency is not requesting the submission of Alternate Bids, as indicated by the absence of a Notice in the Documents section in PASSPort, and the Specifications and/or the Contract Drawings contain any provision regarding Alternate Bids, such provision is deemed deleted.
- (7) <u>Contractor Retained Engineer</u>: 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) <u>LEED Related Provisions</u>: If the Specifications and/or the Contract Drawings require the Contractor to purchase FSC certified wood, rapidly renewable materials, or materials within 500 miles (LEED v3) or 100 miles (LEED

v4), 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 (LEED v3) or 100 miles (LEED v4), 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) <u>Guarantees</u>: 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) <u>Warranties</u>: Requirements for Warranties are set forth in Schedule B, which is included in the Addendum to the General Conditions.
 - (a) The term "manufacturer's warranty" as described in this article encompasses the following terms as indicated in the Specifications: "Manufacturer's Warranty", "Manufacturer's Special Warranty", "Special Warranty", "Special Finish Warranty", "Manufacturer's Special Warranty for a (product, assembly)."
 - (b) 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.
 - (c) 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.
 - (d) 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) <u>Exculpatory Provisions</u>: 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) <u>Insurance</u>: 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) <u>Indemnification</u>: 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) <u>Dispute Resolution</u>: 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) <u>Payment to Other Entities</u>: 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) <u>General Conditions</u>: 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) <u>Standard Construction Contract</u>: 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	The Contractor must obtain a bid security in the amount indicated to the right.	Required provided the TOTAL BID PRICE s Bid Form is \$1,000,000. or more. Certified Check: 2% of Bid Amount or Bond: 10% of Bid Amount	set forth on the
Information For Bidders	Performance ar Payment Bonds	nd S	For Contracts in the amount of \$1,000,000. Performance and Payment Bonds must each be in amount equal to 100% of the Contract	00 or more, ch t Price.
Information For Bidders	Department of Design and Construction Safety Requirements	The Contractor must provide the safety personnel as indicated to the right	 Project Safety Representative Dedicated, full-time Project Safety Representation 	sentative
Article 14 Contract	Time of Substantial Completion	Consecutive Calendar Days	480 CCD	
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	\$600	
Article 17 Contract	Sub- Contracts	Not to exceed Percent of Contract Price	60%	
Article 21	Retainage	Percent of	If 100% bonds are required	5%
Contract		VOUCHEI	If 100% bonds are not required, and Contract Price is \$1,000,000 or less If 100% bonds are not required, and Contract Price is more than \$1,000,000	5% 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 Ge	neral Conditions
Article 75 Contract	Compensation t be Paid to Contractor	0	Amount for which the Contract was Awarded	ł:
Article 79 Contract	MWBE Program	1	See M/WBE Utilization Plan in the PASSPor M/WBE Considerations Section.	t Procurement

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

<u>Note</u>: 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).

Types of Insurance (per Article 22 in its entirety, including listed paragraph)		Minimum Limits and Special Conditions
Commercial General Liability	Art. 22.1.1	This Contract requires Commercial General Liability Insurance (CGL) that is at least as broad as ISO Form CG 00 01 (see Section 22.1.1 of the New York City Standard Construction Contract).
		The minimum limits shall be $\$1,000,000.00$ per occurrence and $\$2,000,000.00$ per project aggregate applicable to this Contract unless the Work requires a permit from the Department of Buildings and greater limits of Commercial General Liability Insurances are required pursuant to 1 RCNY section 101-08.
		Additional Insureds: 1. City of New York, including its officials and employees, with coverage at least as broad as ISO Forms CG 20 10 and CG 20 37, and
		2. All person(s) or organization(s), if any, that Article 22.1.1(b) of the Contract requires to be named as Additional Insured(s), with coverage at least as broad as ISO Form CG 20 26. The Additional Insured endorsement shall either specify the entity's name, if known, or the entity's title (e.g., Project Manager).
		3. Queens Public Library

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Types of Insurance (per Article 22 in its entirety, including listed paragraph)		Minimum Limits and Special Conditions
 Workers' Compensation Disability Benefits Insurance Employers' Liability Jones Act U.S. Longshoremen's and Harbor V Act 	Art. 22.1.2 Art. 22.1.2 Art. 22.1.2 Art. 22.1.3 Workers Compensation Art. 22.1.3	 Workers' Compensation, Employers' Liability, and Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction. <u>Note</u>: 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. Jones Act and U.S. Longshoremen's and Harbor Workers' Compensation Act: Statutory per U.S. law.
■ Builders' Risk	Art. 22.1.4	 100 % of total value of Work Contractor the Named Insured; the City both an Additional Insured and one of the loss payees as its interests may appear. If the Work does not involve construction of a new building or gut renovation work, the Contractor may provide an installation floater in lieu of Builders Risk insurance. Note: Builders Risk Insurance may terminate upon Substantial Completion of the Work in its entirety.
Commercial Auto Liability	Art. 22.1.5	\$1,000,000.00 per accident combined single limit If vehicles are used for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
□ Contractor's Pollution Liability Art. 22.1.6	<pre>\$ per occurrence \$ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2 3</pre>
□ Marine Protection and Indemnity Art. 22.1.7(a)	<pre>\$ per occurrence \$ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2 3</pre>
 Hull and Machinery Insurance Art. 22.1.7(b) Marine Pollution Liability Art. 22.1.7(c) 	<pre>\$ per occurrence \$ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2 3 each occurrence Additional Insureds:</pre>
[OTHER] Art. 22.1.8	Additional Insureds: 1. City of New York, including its officials and employees, and 2. 3. 3. \$

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Types of Insurance (per Article 22 in its entirety, including listed paragraph)		Minimum Limits and Special Conditions
[OTHER]	Art. 22.1.8	\$ per occurrence
□ Collision Liability/Towers Liability		 \$ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2 3
[OTHER]	Art. 22.1.8	\$ per occurrence
□ Railroad Protective Liability -		<pre>\$ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2 3</pre>
[OTHER] ■ Asbestos Liability	Art. 22.1.8	Only required of the Contractor or Subcontractor performing any required asbestos removal.
		 \$1,000,000 each occurrence, \$2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal. Additional Insureds: City of New York, including its officials and employees.

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

[OTHER]	Art. 22.1.8		
Boiler Insurance		\$200,000	
[OTHER]	Art. 22.1.8	\$1,000,000 per occurrence	
 [OTHER] Art. 22.1.8 Professional Liability In the event any section of the Specifications requires the Contractor to engage a Professional Engineer to provide design and/or engineering services, the Engineer engaged by the Contractor, as well as any sub consultant(s) performing professional services, shall provide Professional Liability Insurance. 		The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of \$1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer. Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a	
OTHER]	Art. 22.1.8	\$10,000,000 per Occurrence and	
Umbrella/Excess Liability Insurance		\$10,000,000 in Aggregate	
The Contractor shall provide Umbrella/Excess Liability Insurance in the minimum amounts shown to the right. The policy terms and condition should be at least as broad as the underlying policies. The underlying policies should comply with the insurance provision as outlined by the contract. Defense cost should be in addition to the limit of liability. The City of New York, including its officials and employees, should be included as additional insured as respects to the noted project.			

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.

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_____

Relating to Article 22 - Insurance

PART IV. Address of Commissioner

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit

30-30 Thomson Avenue, 4th Floor

Long Island City, New York 11101

SCHEDULE B

Guarantees and Warranties

(Reference: Section 01 7839, Article 2.7 of the DDC Standard General Conditions)

GUARANTY FROM CONTRACTOR

(1) **Contractor's Guaranty Obligation:** The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with the Contract), except for the areas of Work set forth below:

- Roofing, Waterproofing, and Joint Sealant Work. For these types of work, the guarantee period shall be (2) two years.
- Trees and/or Plant Material. For trees and/or plant material furnished and installed, the guarantee period shall be (2) two years. During the guarantee period, the Contractor shall provide all maintenance services set forth in the Specifications.

(2) Guaranty Period: The obligation of the Contractor, and its Surety under the Performance Bond, is limited to the period(s) of time specified above.

(3) Other Provisions Deemed Deleted: In the event the Specifications and/or the Contract Drawings contain any provisions regarding guaranty requirements, such provisions are deemed deleted and replaced with the guaranty requirements set forth in this Schedule B.

WARRANTY FROM MANUFACTURER

(1) **Contractor's Obligation to Provide Warranties:** The items of material and/or equipment for which manufacturer warranties are required are listed below. For each item of material and/or equipment listed below, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth below and will be replaced or repaired within such specified period. The Contractor shall deliver all required warranties to the Commissioner.

(2) Required Warranties:

Specification Number	Material or Equipment War	ranty Period
075216	Modified Bituminous Membrane Roo	fing 2 years
233400	Fans	5 years
238600	Electric Motor Controllers	5 years
260923	Lighting Control Devices	5 years
262416	Panelboards	2 year
265000	Luminaires and Accessories	5 years
283100	Fire Alarm Life Safety System	2 years

(3) Application: The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.

- (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.

(4)

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.

ARCHITECTURAL DRAWINGS:

DM-801 GROUND FLOOR REFLECTED CEILING REMOVALS PLAN

A-801 GROUND FLOOR REFLECTED CEILING PLAN

A-802 CEILING DETAILS

ENERGY CODE COMPLIANCE DRAWINGS

EN-001.00	MECHANICAL ENERGY CODE COMPLIANCE SHEET #1
EN-002.00	MECHANICAL ENERGY CODE COMPLIANCE SHEET #2

MECHANICAL DRAWINGS:

M-001.00	MECHANICAL SCOPE OF WORK AND NOTES
M-002.00	MECHANICAL LEGEND AND ABBREVIATIONS
M-100.00	MECHANICAL FIRST FLOOR - DEMOLITION PLAN
M-101.00	MECHANICAL ROOF - DEMOLITION PLAN
M-200.00	MECHANICAL FIRST FLOOR PLAN - NEW CONSTRUCTION
M-201.00	MECHANICAL FIRST FLOOR MEZZANINE PLAN - NEW CONSTRUCTION
M-202.00	MECHANICAL ROOF PLAN - NEW CONSTRUCTION
M-400.00	MECHANICAL PART PLAN AND SECTIONS
M-500.00	MECHANICAL AIR AND WATER RISER DIAGRAM
M-600.00	MECHANICAL SCHEDULES
M-700.00	MECHANICAL DETAILS
M-701.00	MECHANICAL DETAILS
M-800.00	MECHANICAL CONTROLS SHEET #1
M-801.00	MECHANICAL CONTROLS SHEET #2

ELECTRICAL DRAWINGS:

E-001 ELECTRICAL DRAWING LIST, SCOPE OF WORK, SYMBOL LIST AND SCHEDULES

E-100 ELECTRICAL LIGHTING AND POWER PLAN LEVEL - DEMOLITION

E-200 ELECTRICAL LIGHTING AND POWER PLAN LEVEL - 1 NEW

E-201 ELECTRICAL LIGHTING AND POWER PLAN ROOF LEVEL - NEW

FA-001 FIRE ALARM DRAWING LIST, SCOPE OF WORK, SYMBOL LIST, FIRE ALARM MATRIX AND PARTIAL RISER

FA-200 FIRE ALARM PLAN LEVEL 1

FA-201 FIRE ALARM PLAN ROOF LEVEL

STRUCTURAL DRAWINGS: S-100.00 ROOF PART FRAMING PLAN GENERAL NOTES, SECTION AND TYPICAL DETAIL
SCHEDULE D

Electrical Motor Control Equipment

(Reference: 01 3506, Article 3.8 of the DDC Standard General Conditions)

Requirements for electrical motor equipment may be included in one or more sections of the Specifications for the Contract for the Project. Schedule D set forth below delineates specific information for electrical motor control equipment. In the event of any conflict between the Specifications and this Schedule D, Schedule D shall take precedence; provided, however, in the event of an omission from Schedule D (i.e., Schedule D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from Schedule D shall have no effect and the Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

DB Disconnect Circuit Breaker (Switch) **P** Pilot Light

TS Thermal Switch

MS Magnetic Starter

CMS Comb. Mag. Starter

P Pilot Light
 F Firestat

T Thermostat

AL Alternator

BG Break Glass Station **HOA** Hand-Off Auto. **PB** Push Button Station **RO** Remote "off"

Equip. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
AC-1	MER- Mezz.	1	3	208/1	VFD	
AC-2	MER- Mezz.	1	15	208/3	VFD	
ACCU-1	Roof	1	15.7A	208/1	DB	
ACCU-2	Roof	1	42A	208/3	DB	
RF/SX-1	MER- Mezz	1	1	208/3	VFD	
RF/SX-2	MER- Mezz.	1	5	208/3	VFD	
TX-1	Roof	1	1/4	115/1	DB	
FPP-1	MER- Mezz.	1	1/6	115/1	DB	With ECM Motor
FPP-2	MER Mezz.	1	1	208/3	DB	With ECM Motor

SCHEDULE E

Separation of Trades

NOT USED FOR SINGLE CONTRACTS

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SECTION 01 72 00

PROTECTION OF EXISTING CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the work of protection of existing construction as shown on the Drawings and specified herein, including, but not limited to, the following:
 - 1. Document elements to be protected before installing protection.
 - 2. Protect in place elements indicated on Drawings.
 - 3. Where roofing, gutters, flashings or other waterproofing elements are removed during construction, provide temporary enclosures, membranes, and/or coverings to prevent damage from natural elements such as precipitation and wind and to prevent dust and debris from entering the structure. Enclosures and coverings should resist damage from high winds. Under no circumstances shall any opening in the building envelope due to removals be left unprotected or open to weather at the end of a work shift.
 - 4. Provide all shoring and bracing to protect all elements, including elements and materials to remain in place and elements and materials to be removed and reinstalled, from displacement, unaccustomed loads, harmful vibration, and other adverse affects of work under this Contract.
 - 5. Provide all scaffolding, hoists, platforms, cranes, and other facilities and equipment to properly provide (including but not limited to installing, maintaining, and removing) protection as specified.
 - 6. Provide all drop-cloths, masking, and temporary barriers as required to protect adjacent building elements from paint splatters/overruns, roofing membrane compounds, windborne liquids, etc., used in the course of construction.
 - 7. Coordinate work of this Section with work specified in other sections to ensure that protection is installed, maintained, altered, and removed as required to



prevent damage resulting from work of other sections, to avoid conflict with work of other sections, and so as not to inhibit work of other sections.

B. Intent: It is the specific intent of this Section to provide for the protection in place of elements, materials, and finishes of the building, without damaging, or deteriorating portions of the building or disturbing the site. All work required to fulfill this intent shall be included in work of this Section.

1.3 QUALITY ASSURANCE:

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Qualification of Personnel: Personnel for work of this Section shall meet the following requirements. The City of New York's decision as to whether the personnel proposed by the Contractor for work of this Section meet the requirements of this Section shall be final.
 - 1. Mechanics: Work of this Section shall be carried out by skilled mechanics who have at least three (3) years' experience with protection work similar to that required by this Section for this Project and have performed work requiring the same skills and of the same type and complexity as the work they are performing on this Project.
- C. Responsibility for Damage to Historic Building Material Resulting from Protection Work: Contractor shall be responsible for replacement in kind of all building elements, materials, and finishes damaged or deteriorated as a result of work of this Section.
 - 1. Restoration and replacement shall be made using materials and methods as directed by the Commissioner and shall be performed by firms and personnel skilled and experienced in the restoration and replacement of these elements, materials, and finishes to the Commissioner's satisfaction.
 - 2. Restored and replaced elements, materials, and finishes that do not result in elements, materials, and finishes equal in every way to the existing elements before work began will be rejected, and the Commissioner shall have the right to have rejected elements, materials, and finishes restored or replaced to match original elements before work began with all costs for restoration and replacement paid by the Contractor at his own expense.
- D. Professional Engineer Qualifications: Licensed in New York State and regularly engaged in performing work on existing historic buildings similar to that required on this Project.
- E. Laws, Codes, and Regulations: Perform all work of this Section in compliance with all applicable federal, state, and local laws, codes, and regulations.



- F. Standards: Comply with the following standards.
 - 1. National Fire Protection Association (NFPA) 241 "Safeguarding Building Construction and Demolition Operations," latest edition.
- G. Pre-protection Conference: Conduct conference at Project site with representatives of City of New York, Commissioner, Contractor, all subcontractors, and other parties affected by the work prior to beginning work.

1.4 SUBMITTALS:

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".
- B. Schedule for Installation and Removal of Protection: Detailed schedule, including starting and ending dates for each activity. Show coordination with schedules for work of other sections.
- C. Design of Shoring, Bracing, Scaffolding, and Other Materials and Equipment for Support and Access: Detailed drawings showing all shoring, bracing, scaffolding, and other materials and equipment proposed for use in work of this Section prepared, signed, and sealed by a Professional Engineer licensed in the state of New York. Drawings shall include all details required to completely understand proposed systems for support and access. Submit calculated and assumed loads and all calculations used to design systems.
- D. Protection Plan: Detailed plan for executing the work of this Section. Include specific details of materials and procedures to be used.
- E. Shop Drawings: Drawings at appropriate scales indicating protection of each element, material, and finish to be protected showing extent of protection, materials to be used, and details of installation, including anchoring and fastening. Details shall be at least half-size.
- F. Documentation of Existing Conditions: Photographs showing existing conditions of all elements to be protected. Key photographs to drawings. Submit images as "jpeg" files in high resolution (one megabyte each, minimum) on DVD disks (2 copies of each set of disks). Label each image to comply with approved system of identification. Include key drawings, photographs, and schedules identifying all units and assemblies in both hard copy and on the first disk of each set. Clearly show all conditions that might be misconstrued as damage caused by installing or removing protection or damage from inadequate protection. Do not begin protection work until Commissioner has approved documentation.
 - 1. Carefully document all materials and conditions in areas where elements are to be removed and reinstalled. Reinstallation of salvaged and new materials shall match originals exactly.



G. Product Literature: Submit manufacturer's published technical data for each product to be used in work of this Section including recommendations for application and use, test reports and certificates verifying that product complies with specified requirements, and Material Safety Data Sheets (MSDS).

1.5 PROJECT CONDITIONS:

- A. Continuing Operations: Site will remain open and occupied during work of this Contract. Provide all measures necessary to avoid disrupting occupants and operations in occupied portions of the site.
- B. Maintain access to existing entrances and other facilities in use.
- C. Prevention of Fire and Spread of Fire: Take all precautions necessary to prevent fire and spread of fire.
 - 1. Do not use flame- or heat-generating devices for work of this Section under any circumstances.
 - 2. All protection materials shall be flame retardant and fire resistant.
- D. Contract Drawings
 - 1. The Drawings are two-dimensional representations of three-dimensional objects and do not show all surfaces. Perform work on all surfaces of projections, reveals, returns, ornament, and other elements associated with areas on which work is indicated.
 - 2. Field-measure dimensions of existing and in-place elements before preparing shop drawings or beginning work. Contractor is responsible for all dimensions.
- E. Coordination: Coordinate protection work with work of other sections to ensure that elements and finishes to be protected are protected at all times and that the protection does not adversely affect performance of work specified under other sections. Alter, remove, remove and reinstall, and otherwise adjust protection and provide additional protection to ensure that elements and finishes are protected at all times and that work of other sections is not impeded.

PART 2 - PRODUCTS

2.1 **PROTECTION AND SUPPORT MATERIALS:**

A. General: Provide materials to protect existing elements, materials, and finishes in place suitable for use intended and approved by Commissioner.



- 1. Non-staining Materials: Use only non-staining materials in contact with materials and finishes to be protected. Separate materials that might in any way stain or otherwise alter surfaces using approved separation materials.
- 2. Vapor-Permeable Materials: Use only materials that do not encourage moisture formation against surfaces to be protected and that allow condensed water vapor, precipitation, and other forms of moisture to escape without damaging or deteriorating materials and finishes to be protected.
- 3. Protection from Abrasive Materials: Provide appropriate approved materials to separate elements and materials to be protected from materials that might scratch or abrade them.
- B. Resilient Materials: Paper, corrugated cardboard, foam board, foam insulation, bubble wrap, mover's quilts, terry cloth, Homasote board, sheet rubber, and other suitable soft, nonabrasive materials approved by Commissioner.
 - 1. Paper Slip Sheet: 5-lb./square red rosin-sized building paper conforming to FS UU-B-790, Type I, Style 1b.
- C. Rigid Materials: Wood boards, plywood, oriented strand board, and other suitable hard materials capable of resisting impacts.
 - 1. Cladding: Plywood, 3/4-inch-thick CDX, fire-retardant-treated.
- D. Framing Materials: Dimensioned lumber, engineered lumber, cold-formed metal framing, and other material suitable for supporting protective materials.
 - 1. Metal studs and runners or framing of fire-retardant-treated dimensioned lumber.
- E. Fasteners: Stainless steel screws designed for fastening wood members to wood and metal substrates, as applicable, for fastening metal elements to metal elements, and for fastening other protective materials to supporting structure or substrate. All screws shall be non-staining and compatible with substrate and adjacent materials.
- F. Adhesives: Adhesives used for installing protective materials shall be non-staining and reversible. Following removal of adhesive, there shall be no evidence that adhesive was applied and substrate shall be in same condition as before adhesive application, without damage or deterioration.
- G. Paint: Exterior grade primer and enamel finish coat.
- H. Sealant: Acrylic latex. Provide sealant accessories as required to obtain optimum sealant configuration and performance, without staining of finished surfaces to be retained.



- I. Temporary waterproofing membranes:
 - 1. Self-Sealing Waterproof Membrane: Polyethylene-sheet-backed rubberized asphalt membrane, 40 mils thick.
 - 2. Separation Membrane: EPDM Sheet membrane, ASTM D 3253, 60 mils thick.
 - 3. Plastic sheeting: polyethylene sheet, min. 3.5 mils thick.
 - 4. Roofing felt: Min. 30lb, asphalt saturated felt, ASTM D226, Type II.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS:

A. Refer to DDC General Conditions for execution requirements.

3.2 PREPARATION:

- A. Existing Utilities: Maintain all utility services and protect them against damage during protection operations.
- B. Prepare and Submit Protection Plan and Shop Drawings: Develop and detail methods to protect elements, materials, and finishes without drilling holes into or otherwise altering existing elements, materials, and finishes to remain.
- C. Prepare and Submit Design of Shoring, Bracing, Scaffolding, and Other Materials and Equipment for Support and Access: Coordinate shoring, bracing, and means of support and access with Protection Plan to ensure that no elements, materials, or finishes will be damaged or deteriorated as a result of work of shoring, bracing, or means used to support or access work.
- D. Prepare and Submit Documentation: Record conditions of all elements and materials to be protected using a digital camera. Key photographs to drawings. Submit images as "jpeg" files in high resolution. Label each image to comply with approved system of identification. Include key drawings, photographs, and schedules identifying all units and assemblies in both hard copy and on the first disk of each set. Ensure that photographs document all existing conditions that might be misconstrued as being damage or deterioration resulting from work of this Section or work of other sections.

3.3 INSTALLING PROTECTION:

A. Temporary Support: Provide and maintain temporary shoring and bracing required to ensure that no elements or materials to remain, elements and materials to be selectively demolished, or elements and materials to be removed and salvaged are displaced or subject to undue stresses and to provide for optimum installation of protective materials and systems.

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- B. Installation of Protection: Install protection to prevent damage or deterioration of materials indicated on Drawings and to comply with approved Protection Plan and Shop Drawings.
 - 1. Do not alter, damage, or deteriorate elements, materials, and finishes to be protected or other building fabric to which protective coverings and materials are attached.
 - 2. Install protection so that it can be removed without leaving evidence that it was installed.
- C. Resilient Materials: Provide resilient materials adjacent to elements and finishes to be protected to protect surfaces and finishes from scratches, gouges, abrasion, and other damage caused by rigid protective materials or by other actions during construction.
 - 1. Use water-vapor-permeable materials, provide for ventilation, and otherwise ensure that no moisture is held against elements and materials being protected and that any moisture that enters or condenses is able to escape without damaging building fabric.
- D. Rigid Materials: Provide hard, rigid materials to prevent impact damage and damage from work on adjacent materials. Reinforce sheet materials using framing and support materials to ensure that protection will remain in place and withstand stresses, including stresses from construction operations and stresses from natural phenomena, to which it is subjected.
- E. Maintenance: Maintain protection in optimum condition throughout work of this Project. Alter and modify protection to ensure that materials protected remain in place without damage or deterioration and that work specified in other sections can be accomplished.

3.4 REMOVING PROTECTION:

A. General: When the need for protection in each location is over as approved by Commissioner, promptly remove protection and dispose of removed materials off-site in a legal manner. Leave the site in an orderly condition as approved by Commissioner.

END OF SECTION 01 72 00

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SECTION 02 41 19

SELECTIVE DEMOLITION, REMOVAL, AND SALVAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the work of selective demolition, removal, and salvage as shown on the Drawings and specified herein, including, but not limited to, the following:
 - 1. Document elements to be removed and salvaged before removal and provide identification tags.
 - 2. Document elements to remain before beginning selective demolition, removal, and salvage work.
 - 3. Selectively demolish and discard elements indicated on Drawings and/or schedules.
 - 4. Remove and salvage elements indicated on Drawings and/or schedules.
 - 5. Support, secure, and protect elements to be removed and elements to remain.
 - 6. Store all elements removed and salvaged from building on site in protected, secure location. Protect and secure elements from loss or damage.
 - 7. Provide all scaffolding, platforms, bridging, hoists, cranes, lifts and other facilities and equipment to properly accomplish selective demolition, removal, and salvage work.
 - 8. Remove all existing building fabric indicated to be "removed and salvaged," "reused," or "stored" and attach identification tags. Protect and store material.
 - Provide secure weathertight enclosures at openings from which elements are removed. Coordinate work of this Section with work specified in Section 01 72 00 Protection of Existing Construction to ensure proper and optimum completion of the Work.



- B. Intent: It is the specific intent of this Section to provide for the selective demolition of portions of the building and for removal and salvage of portions of the building without dislocating, damaging, or deteriorating portions of the building to remain, building contents, or landscape and other site features. All work required to fulfill this intent shall be included in work of this Section.
- C. Ongoing Public Use of Site: The site, including adjacent buildings and the grounds, will remain open to the public throughout the Work. Contractor shall use reasonable caution to protect the public. Such caution shall include, but shall not be limited to, altering the sequence of construction activities and installation of protective barriers to accommodate public access and special events.

1.3 DEFINITIONS

- A. "Selective Demolition": Carefully demolish existing construction and legally dispose of removed elements and materials off-site.
- B. "Remove": Detach items from existing construction and legally dispose of them offsite, unless indicated to be removed and salvaged.
- C. "Remove and Salvage": Detach items from existing construction and store, package, or otherwise handle items as indicated for replication or restoration and reinstallation. Remove and salvage all items indicated to be removed.
- D. "Existing to Remain": Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Materials specifically indicated to be selectively demolished and removed shall become Contractor's property and shall be removed from Project site. All other materials, including but not limited to those indicated to be salvaged, those indicated to be removed and salvaged, and those indicated to remain in place, shall remain the City of New York's property and shall be handled as indicated.
- B. Historic items, relics, and other items of interest or value to the City of New York that may be encountered during selective demolition, removal, and salvage work remain the City of New York's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the City of New York.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Responsibility for Damage to Existing Building Material to Remain and Existing Building Material To Be Removed and Retained: Contractor shall be responsible for

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replacement in kind of all building elements lost or stolen and for restoration to condition before start of work or replacement in kind of all building elements, materials, and finishes damaged or deteriorated as a result of work of this Section to the satisfaction of the Commissioner.

- 1. Restoration and replacement shall be made using materials and methods as directed by the Commissioner and shall be performed by firms and personnel skilled and experienced in the restoration and replacement of these elements, materials, and finishes to the Commissioner's satisfaction.
- 2. Restored and replaced elements, materials, and finishes that do not result in elements, materials, and finishes equal in every way to the existing elements before work began will be rejected, and the Commissioner shall have the right to have rejected elements, materials, and finishes restored or replaced to match original elements before work began with all costs for restoration and replacement paid by the Contractor at his own expense.
- C. Professional Engineer Qualifications: Licensed in New York State and regularly engaged in performing work on existing historic buildings similar to that required on this Project.
- D. Laws, Codes, and Regulations: All work of this Section shall comply with all applicable federal, state, and local laws, codes, and regulations, including, but not limited to:
 - 1. Federal laws and regulations, including OSHA regulations.
 - 2. Safety requirements of the State and City of New York.
 - 3. Governing EPA notification regulations.
 - 4. All applicable hauling and disposal regulations.
- E. Standards: Comply with applicable requirements and recommendations of the latest editions of the referenced standards listed herein, except as modified by more stringent requirements of the Contract Documents and of applicable laws, codes, and regulations. Where these standards make recommendations or suggestions, such recommendations or suggestions shall be considered mandatory for work of this Contract unless specifically indicated otherwise in Contract Documents. Provide a reference copy of each of the following standards at Project site during periods when work of this Section is being performed. In each case in which there is conflict between requirements of referenced standards; requirements of laws, codes, and regulations; and requirements of this Section, the most stringent or restrictive requirement shall govern.
 - 1. American National Standards Institute (ANSI) A10.6 "Safety Requirements for Demolition Operations," latest edition.

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- 2. National Fire Protection Association (NFPA) 241 "Safeguarding Building Construction and Demolition Operations," latest edition.
- F. Pre-Selective Demolition, Removal, and Salvage Conference: Conduct conference at Project site with the Commissioner, Contractor, all subcontractors, and other parties affected by the work prior to beginning work.

1.6 SUBMITTALS

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".
- B. General: Submit each item in this Article in compliance with the Conditions of the Contract and Division 1 specification sections. Revise and resubmit each item as required to obtain Commissioner's approval.
- C. Design of Shoring, Scaffolding, Hoisting, and Other Materials and Equipment for Support and Access: Detailed drawings showing all shoring, scaffolding, hoisting and lowering equipment, and other materials and equipment proposed for use in work of this Section prepared, signed, and sealed by a Professional Engineer licensed in the state of New York as required.
- D. Schedule of Selective Demolition, Removal, and Salvage Work: Include as part of the general construction schedule a detailed sequence of selective demolition, removal, and salvage work. Include starting and ending dates for each activity.
- E. Protection Plan: Detailed plan for protecting all elements, materials, and finishes of building to remain and all elements and materials to be removed and salvaged from damage and deterioration as a result of the work of this Section. Include specific details of materials and procedures to be used.
- F. Selective Demolition, Removal, and Salvage Plan: Detailed plan for selectively demolishing elements and materials and for removing and salvaging elements and materials. Include details of equipment and procedures to be used for each element and for each material, including, but not limited to, the following:
 - 1. Sequence for performing work of this Section.
 - 2. Procedures for preventing fire and the spread of fire.
 - 3. Procedures for controlling dust.
 - 4. Procedures for controlling noise.
 - 5. Procedures for releasing or freeing materials and elements from existing construction.
 - 6. Procedures for handling and transporting materials and elements removed.

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- 7. Packaging for elements removed and salvaged.
- 8. Storage locations and provisions for security and protection of salvaged elements to be reinstalled.
- G. Documentation of Existing Conditions: Submit documentation showing existing conditions of all elements to be removed and salvaged. Include key drawings and photographs and condition photographs. Submit images as "jpeg" files in high resolution. Label each image to comply with approved system of identification. Include key drawings, photographs, and schedules identifying all units and assemblies in both hard copy and on the first disk of each set. Do not begin selective demolition, removal, and salvage work until Commissioner has approved documentation.
- H. Inventory: After selective demolition, removal, and salvage work is complete, submit a list of items that have been removed and salvaged. Note location of each item or material.
- I. Product Data: Manufacturer's product literature on materials proposed for use in protection, support, packaging, and enclosures.
- J. Disposal of Hazardous Waste: Comply with all Federal, State and Local laws for the disposal of and documentation of disposal of hazardous materials. List landfill, transfer station, or other entity to which debris and discarded material from selective demolition will be sent.

1.7 **PROJECT CONDITIONS**

- A. Continuing Operations: Adjacent buildings and site will remain open and occupied during work of this Contract. Provide all measures necessary to avoid disrupting occupants and operations in occupied portions of building.
 - 1. Contractor shall use reasonable caution to protect the public. Such caution shall include, but shall not be limited to, altering the sequence of construction activities and installation of protective barriers to accommodate public access and special events.
- B. Maintain access to existing walkways and other adjacent facilities in use. Do not close or obstruct walkways or other facilities without written permission from NYC Department of Transportation. Do not interfere with doors providing egress. If required, coordinate temporary closure of doors and windows in advance with NYC Department of Buildings.
- C. Conditions of Structure: The Contractor for the work of this Section shall be held to have visited the site, examined the premises, determined for himself the existing conditions, character of equipment and facilities needed for performance of the work.



- 1. Notify Commissioner if, during course of selective removal and salvage work, conditions are discovered that significantly vary from those shown on Drawings. Do not proceed until authorized by Commissioner.
- 2. The Contractor shall accept the condition of site and structures as found. The City of New York assumes no responsibility for condition of site or structures nor the continuation of condition existing at time of bidding or thereafter.
- D. Prevention of Fire and Spread of Fire: Take all precautions necessary to prevent fire and spread of fire.
 - 1. At all times when torches, open flames, welding equipment, or other heat or spark producing equipment is used and for four (4) hours thereafter, provide a worker with an accepted fire extinguisher in the vicinity (within 20 feet) of the operations using such equipment dedicated solely to the prevention of fire and spread of fire.
 - 2. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - a. Prohibit smoking in construction areas.
 - b. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of NYC Department of Buildings.
 - c. 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.
 - d. 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.
- E. Contract Drawings:
 - 1. The Drawings are two-dimensional representations of three-dimensional objects and do not show all surfaces. Perform work on all surfaces of projections, reveals, returns, ornament, and other elements associated with areas and elements on which work is indicated.



- 2. Where work is required to interface with existing construction, field-measure dimensions of existing and in-place elements before preparing shop drawings or beginning work.
- F. Storage or sale of removed items and materials that are not indicated to be salvaged on-site will not be permitted.
- G. Disposal: On-site storage or sale of removed items and materials that are not indicated to be salvaged will not be permitted.
- H. Utility Service: Maintain all existing utilities in service and protect them against damage during removal and salvage of historic material operations.
 - 1. Maintain fire-protection facilities in service during removal and salvage of historic material operations.

PART 2 - PRODUCTS

2.1 PROTECTION AND SUPPORT MATERIALS

A. General: Provide materials to protect and support existing elements, materials, and finishes in place suitable for use intended and approved by Commissioner.

2.2 PACKAGING MATERIALS

- A. General: Provide materials for packaging and crating elements removed and salvaged suitable for use intended and approved by Commissioner.
- B. Materials for Protecting Elements: Paper, corrugated cardboard, foam board, bubble wrap, plastic peanuts, mover's quilts, terry cloth, and other suitable materials as approved by Commissioner.
- C. Materials for Crating
 - 1. Framing and Bracing: Dimensioned lumber, 2-inch nominal dimension by dimension required for container. Provide thicker lumber as required to ensure sound secure crate that will fully protect stored elements during handling, transportation, and storage.
 - 2. Enclosure: Plywood, minimum 1/2-inch CDX. Provide thicker plywood as required to ensure sound, secure crate.
 - 3. Fasteners: Screws designed for fastening wood members to wood substrate of gauge and length required to ensure sound, secure crate.



2.3 MATERIALS FOR TEMPORARY WEATHERPROOF ENCLOSURES

- A. Comply with requirements of Section 01 72 00 Protection of Existing Construction.
- B. General: Provide materials for temporary weatherproof enclosure suitable for use intended and as accepted by Commissioner.
- C. Framing Members: Metal studs and runners or framing of fire-retardant-treated dimensioned lumber.
- D. Cladding: Plywood, 3/4-inch-thick CDX.
- E. Paint: Exterior grade primer and enamel finish coat.
- F. Sealant: Acrylic latex. Provide sealant accessories as required to obtain optimum sealant configuration.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain all utility services and protect them against damage during selective demolition, removal, and salvage operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by the Commissioner. Provide temporary services during interruptions to existing utilities, as acceptable to the Commissioner.
- C. Immediately restore to service and repair all damage caused by Contractor's workers to existing pipe and conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems.

3.3 PREPARATION

- A. Prepare and submit Design of Shoring, Scaffolding, Hoisting, and Other Materials and Equipment for Support and Access.
- B. Prepare and submit Support Plan.
 - 1. Develop plan to support elements and materials without drilling holes into or otherwise altering existing elements, materials, and finishes.



- C. Prepare and submit Protection Plan.
 - 1. Develop plan to protect elements and materials without drilling holes into or otherwise altering existing elements, materials, and finishes.
- D. Prepare and submit Selective Demolition, Removal, and Salvage Plan.
- E. Examine existing elements and materials to remain and elements to be removed and salvaged and record conditions of all elements and materials in photographs using a digital camera. Ensure that photographs document all conditions that might be misconstrued as being damage or deterioration resulting from work of this Section. Label images using approved system of identification. Submit images as "jpeg" files in high resolution.
- F. Perform regular surveys as the Work progresses to detect hazards resulting from selective demolition, removal, and salvage activities. Engage services of a Professional Engineer licensed in the state of New York to determine whether selective demolition, removal, and salvage work is causing conditions that might lead to displacement, deterioration, or failure of elements and materials indicated to remain.

3.4 POLLUTION CONTROLS

- A. Dust Control: Use temporary enclosures and other suitable methods to limit spread of dust and dirt. Comply with governing environmental protection regulations.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition, removal, and salvage operations. Return adjacent areas to condition existing before work of this Section began.

3.5 SELECTIVE DEMOLITION, REMOVAL, AND SALVAGE, GENERAL

- A. Site Access and Temporary Controls: Conduct removal operations and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from the Commissioner. Provide well-designated alternate routes around closed or obstructed traffic ways as required by governing regulations.



- 2. Erect appropriate temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by NYC Department of Buildings.
- 3. Protect existing site improvements and appurtenances to remain.
- B. Temporary Facilities: Provide the necessary safeguards to prevent accidents, to avoid all necessary hazards and protect personnel, the public, the work, the property, and the site at all times whether or not work is underway, including nights, Saturdays, Sundays, and holidays.
 - 1. Provide, erect, and maintain catch platforms, lights, barriers, netting, bridging, weather protection, warning signs, and other items as required for proper protection of the workmen engaged in demolition, removal, and salvage operations, occupants of the building, the public, and adjacent property. Contractor shall promptly repair any damage caused by Contractor's operations at no additional cost.
 - 2. Contractor shall be responsible for any and all damages that may arise or occur to any party whatsoever by reason of the neglect in providing lights, guards, barriers, or any other safeguards to prevent damage to property, life, and limb.
- C. Weatherproof Enclosures: Provide weatherproof enclosures for protection of interior areas of existing building.
- D. Temporary Shoring and Bracing: Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being selectively demolished or removed.
 - 1. Strengthen existing supports or add new supports when required to ensure stability and prevent movement during progress of selective demolition, removal, and salvage work.
- E. Procedure: Remove existing construction as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition, removal, disassembly, and salvage systematically, in a logical manner, and in compliance with the approved Selective Removal, Demolition, and Salvage Plan.
 - 2. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces.
 - 3. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.



- 4. Remove members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
- 5. Locate selective demolition, removal, and salvage equipment and remove debris and materials so as not to impose excessive loads on roofs, supporting walls, or framing.
 - a. Shore, brace, and otherwise support roofs, walls, and framing during selective demolition, removal, and salvage work as required to ensure that work of this Section does not impose undue loads on existing building fabric. Comply with requirements of Section 01 72 00 Protection of Existing Construction.
- 6. Dispose of demolished and removed items and materials promptly.
- 7. Return all building elements, materials, and finishes that are to remain to condition existing before selective demolition, removal, and salvage operations began.

3.6 SELECTIVE DEMOLITION

A. General: Selectively demolish and remove, and dispose of legally offsite, elements and materials indicated.

3.7 REMOVAL AND SALVAGE

- A. General: Identify, remove, salvage, and crate elements and materials indicated. Compile inventory of all elements removed and salvaged.
- B. Identification and Labeling: Assign elements identification numbers as approved by Commissioner. Tag element or label element in permanent manner on surface that will be concealed when element is reinstalled. Note number on drawing showing element.
 - 1. Contractor to sort and identify salvaged slate tiles by location to ensure replication matching original pattern(s).
- C. Removal of Sheet Metal Elements: Salvage portions of sheet metal elements to be used as models for replication. Carefully remove fasteners and anchors. Separate sheets as necessary to avoid damage during handling and transportation. Crate salvaged elements for transportation to shop.
- D. Crating and Storage: Wrap elements in protective materials and crate elements, ensuring that the elements will not move within crates. Clearly label crates indicating the contents. Store elements in secure onsite location protected from moisture and high humidity.



3.8 PROTECTION OF ELEMENTS DAMAGED DURING WORK OF THIS SECTION

- A. General: If elements of existing building indicated to remain are damaged or deteriorated during work of this Section, notify Commissioner and identify, label, photograph, and document elements and crate and store in designated secure location.
- B. Notification: Notify Commissioner immediately following damage to elements and materials indicated to remain.
- C. Identification and Labeling: Assign elements identification numbers as approved by Commissioner.
 - 1. Identify each piece of elements that are broken into two or more pieces. Ensure that all pieces of each individual element remain together.
- D. Documentation: Photograph elements to document overall elements and details of damage or deterioration resulting from work of this Section. Key detail photographs to overall photographs and key overall photographs to drawings showing location of elements. Submit documentation to Commissioner.

3.9 DISPOSAL OF DEMOLISHED AND REMOVED MATERIALS

- A. General: Promptly dispose of demolished and removed materials not to be salvaged. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off City of New York's property and legally dispose of them. Pay any and all fees associated with disposal work. Leave the site in an orderly condition as approved by Commissioner.

END OF SECTION 02 41 19.



SECTION 028013 – GENERAL CONTRACTOR WORK NOVEMBER 2017 VERSION

ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

1.01 SCOPE FOR ASBESTOS ABATEMENT WORK

- A. The "General Conditions" apply to the work of this Section.
- B. The asbestos abatement contractor shall remove asbestos containing materials as needed to perform the other work of this Contract when discovered during the course of work. When required, the asbestos abatement contractor shall replace the ACM with non-asbestos containing materials. An allowance of \$15,000.00 for the **General Contractor** is herein established for this incidental work when so ordered and authorized by the Commissioner.
- C. All work shall be done in accordance with the applicable provisions of the rules and regulations of the asbestos control program as promulgated by Title 15 Chapter I of RCNY and New York State Department of Labor Industrial Code Rule 56 cited as 12 NYCRR Part 56, whichever is more stringent as per latest amendments to these laws and as modified herein by these specifications.
- D. All disposal of asbestos contaminated material shall be per Local Law 70/85.
- E. The asbestos abatement contractor's attention is directed to the fact that certain methods of asbestos abatement are protected by patents. To date, patents have been issued with respect to "negative pressure enclosure" or "negative-air" or "reduced pressure" and "glove bag".
- F. The asbestos abatement contractor shall be solely responsible for and shall hold the Department of Design and Construction and the city harmless from any and all damages, losses and expenses resulting from any infringement by the asbestos abatement contractor of any patent, including but not limited to the patents described above, used by the asbestos abatement contractor during performance of this agreement.
- G. "Asbestos" shall mean any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumingtonite-grunerite), crocidolite (riebeckite), tremolite, anthrophyllite and actinolite.
- H. Prior to starting, the asbestos abatement contractor must notify the Commissioner of the Department of Design and Construction if he/she anticipates any difficulty in performing the Work as required by these Specifications. The asbestos



abatement contractor is responsible to prepare and submit all filings, notifications, etc. required by all City, State and Federal regulatory agencies having jurisdiction.

The asbestos abatement contractor is responsible for submitting the Asbestos Project Notification Form (ACP-7 Form) to the Department of Environmental Protection, Asbestos Control Program, as per Title 15, Chapter I of RCNY and to the NYSDOL as per Industrial Code Rule 56.

The asbestos abatement contractor is responsible for preparing, and submitting Asbestos Variance Application (ACP-9). If a Variance is required, the asbestos abatement contractor is responsible to retain a NYSDOL Asbestos Project Designer, as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required variance.

The 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 general contractor is responsible for retaining a registered 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 <u>requests</u> authorization to work in other then regular working hours and such authorization is <u>granted</u> 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 <u>authorized</u> by the Commissioner, the work shall be done at no additional cost to the City.
- J. The Commissioner may <u>order</u> 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 be approved through the Department's Request for Subcontractor Approval, administered by the Agency Chief Contracting Office (ACCO), Vendor Integrity Unit. The asbestos abatement contractor must demonstrate compliance with the special experience requirements set forth in subparagraphs (1) through (6) below. Such documentation shall include without limitation, all required licenses, certificates, and documentation.
 - 1. The asbestos abatement contractor must, whether an individual, corporation, partnership, joint venture or other legal entity, demonstrate for the three year period prior to the work that it has been licensed by the New York State Department of Labor (NYSDOL), as an "Asbestos Abatement Contractor". The asbestos abatement contractor shall submit copies of the asbestos abatement contractors NYSDOL License for the past three years
 - 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 submit a list of five (5) asbestos abatement projects of similar size and complexity. The aggregate cost of these projects must be at least \$1,000,000 in each of the three years.
 - 4. For each project submitted to meet the experience requirements set forth above, the asbestos abatement contractor must submit the following information for the project; name and location of the project; name title and telephone number and email address of the owner or the owner's representative who is familiar with the asbestos abatement contractor's work; brief description of the scope of work completed as a prime or subasbestos 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, certified 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. The Department may also conduct an inspection of the asbestos abatement contractor's facility to verify if the contractor has equipment and staffing to perform the work.

- 6. The asbestos abatement contractor must submit a copy of their Corporate Health and Safety Plan for review and acceptance. A Job Hazard Analysis (JHA) for the specific work conducted must be included.
- B. Throughout the specifications, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics thereof. Provide materials or workmanship that meet or exceed the specifically named codes or standards where required by these specifications.
- C. Site Investigation: Asbestos abatement contractor shall inspect all the specifications and related drawings, and will investigate and confirm the site conditions affecting the work, including, but not limited to (1) through (5) below. The asbestos abatement contractor will attend a walkthrough site inspection with the department's Project Manager and the Third-Party Air Monitor prior to the work. Such walkthrough will be scheduled at the Department's convenience.
 - 1. Physical considerations and conditions of both the material and structure. These considerations include any obstacles or obstructions encountered in accessing or removing the material.
 - 2. Handling, storage, transportation and disposal of the material.
 - 3. Availability of qualified and skilled labor.
 - 4. Availability of utilities.
 - 5. Exact quantities of all materials to be disturbed and/or removed

1.03 ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITIES

The asbestos abatement contractor will visit the subject location within one (1) working day of notification to ascertain actual work required. If the project is identified as being "urgent", then work shall commence no later than 48 hours from the time of notification. In this event, the asbestos abatement contractor shall immediately notify when applicable EPA NESHAPS Coordinator, NYSDOL Asbestos Control Bureau and NYCDEP



Asbestos Control Program of start of the work and file the necessary Asbestos Notifications and any applicable Variance Applications with the regulatory agencies cited above.

In the event that the project is not classified as "urgent" the asbestos abatement contractor shall notify the EPA NESHAPS Coordinator, NYSDOL and NYCDEP by submitting the requisite asbestos project notification forms, postmarked 10 days before activity begins if 260 linear feet or more and/or 160 square feet or more of asbestos containing material will be disturbed.

The following information must be included in the notification:

- A. Name and address of building City or operator;
- B. Project description:
 - 1. Size square feet, number of linear feet, etc;
 - 2. Age date of construction and renovations (if known);
 - 3. Use i.e., office, school, industrial, etc.
 - 4. Scope repair, demolition, cleaning, etc.
- C. Amount of asbestos involved in work and an explanation of techniques used to determine the amount;
- D. Building location/address, including Block and Lot numbers;
- E. Work schedule including the starting and completion dates;
- F. Abatement methods to be employed;
- G. Procedures for removal of asbestos-containing material;
- H. Name, title and authority of governmental representative sponsoring project.

1.04 WORK INCLUDED IN UNIT PRICE

The asbestos abatement contractor will be paid a basic unit price of **\$25.00** per square feet for the removal and disposal of asbestos containing material and replacement of the same with non-asbestos containing materials.

Unit price shall include all costs necessary to do the work of this Contract, including but not limited to: labor, materials, equipment, utilities, disposal, insurance, overhead and profit.



1.05 <u>AIR MONITORING – ASBESTOS ABATEMENT CONTRACTOR</u>

- A. "Air Sampling" shall mean the process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the N1OSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Standard and Technology which are utilized for lower detectability and specific fiber identification.
- B. Air monitoring of asbestos abatement contractor's personnel will be performed in conformance with OSHA requirements, (All costs associated with this work are deemed included in the unit price.).
- C. Qualifications of Testing Laboratory:

The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).

Note: Work area air testing and analysis before, during and upon completion of work (clearance testing) will be performed by a Third Party Air Monitor under separate Contract with the City.

1.06 THIRD PARTY MONITORING AND LABORATORY

- A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.
- B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM).
- C. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.
- D. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the asbestos abatement contractor.

1.07 PAYMENT REQUEST DOCUMENTATION

- B. The following information shall be included for each payment request:
 - 1. Description of work performed.
 - 2. Linear footage and pipe sizes involved.
 - 3. Square footage for boiler & breaching insulation removed.
 - 4. Square footage of non pipe and boiler areas removed, patched, enclosed, sealed, or painted.
 - 5. Square footage of encapsulation, sealing, patching, and painting involved.
 - 6. Total cost associated with compliance with the assigned task.
 - 7. Architectural, Electrical, HVAC, Plumbing, etc. work incidental to the Asbestos Abatement Work.
 - 8. A certified copy (in form 4312-39) to the Comptroller or Financial Officer of the New York City to the effect that the financial statement is true.
 - 9. A signed copy (in form 6506q-6) of certificate of compliance with nondiscriminatory 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.

MMB	Department of
	Design and
	Construction

PIPE INSULATION	PIPE SIZE	SQUARE FOOTAGE
SIZE O.D.	O.D.	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 <u>METHOD OF PAYMENT</u>

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.

 $100 \ge 0.65 = 65 \text{ sq.ft.}$ $65 \ge 0.65 = 65 \text{ sq.ft.}$

 $100 \ge 2.62 = 262 \text{ sq.ft.}$ $262 \ge \text{unit price} = \text{Payment}$

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 S.F. X (1.5) X the Unit Price = Payment

- C. **REMOVAL, DISPOSAL AND REPLACEMENT OF TANK INSULATION:** (all types including removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.
- D. **REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER UPTAKE, & BREACHING INSULATION:** (all types including stiffening angles and wire lath) Payment shall be made at 2.0 times the unit price per square foot.
- E. **REMOVAL, DISPOSAL AND REPLACEMENT OF DUCT INSULATION:** Payment shall be made at 1.0 times the unit price per square foot.
- F. **REMOVAL, DISPOSAL AND REPLACEMENT OF SOFT ASBESTOS CONTAINING MATERIAL:** (Including sprayed-on fire proofing and sound proofing) Payment shall be made at 1.0 times the unit price per square foot of surface area. Area of irregular surfaces must be calculated and confirmed with DDC representative.
- G. **ACOUSTIC PLASTER REPAIR AND/OR ENCAPSULATION:** Payment shall be made at 0.5 times the unit price per square foot.
- H. **PATCHING OR REPAIR** of items listed in A through F will be paid at 0.33 times the unit price per square foot.
- I. REMOVAL, DISPOSAL AND REPLACEMENT OF WATERPROOFING ASBESTOS CONTAINING MATERIAL: (including friable and non-friable waterproofing material from interior and exterior walls, floors, foundations, penetrations, louvers, vents and openings other than windows, doors and skylights) Payment shall be made at 0.5 times the unit price per square foot.
- J. REMOVAL, DISPOSAL AND REPLACEMENT OF ASBESTOS CONTAINING ELECTRICAL WIRING INSULATION: (including friable and non-friable wiring insulation) Payment shall be made at 0.33 times the unit price per square foot.
- K. **PAINTING:** Payment shall be made at 0.05 times the unit price per square foot.
- L. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING PLASTER:** from ceilings and walls, including any wire lath and disposal as asbestos containing waste. Payment shall be made at 0.80 times the unit price per square foot.
- M. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING FLOOR TILES, CEILING TILES, TRANSITE PANELS:** (including any adhesive, glue, mastic and/or underlayment) and disposal as asbestos containing waste. Payment shall be made at 0.40 times the unit price per square foot. If multiple
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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 WORKQUEENSBORO HILL BRANCH LIBRARY
HVAC UPGRADEINCIDENTAL ASBESTOS ABATEMENT
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PLATFORMS: Provisions are made in this Contract to compensate the asbestos abatement contractor for work performed in locations that are difficult to access due to work at elevations that are significantly higher than the normal work level. The unit price for these items will be paid at 1.20 times the unit price described in Paragraphs 1.09, A through R for those portions of the work that are more than twelve (12) feet above the grade for that would be judged as the normal working level.

1.10 GUARANTEE

- A. Work performed in compliance with each task shall be guaranteed for a period of one year from the date the completed work is accepted by the Department of Design and Construction.
- **B.** The Commissioner of The Department of Design and Construction will notify the asbestos abatement contractor in writing regarding defects in work under the guarantee.

1.11 OCCUPANCY OF SITE NOT EXCLUSIVE

Attention is specifically drawn to the fact that contractors, performing the work of other Contracts, may be brought upon any of the work sites of this Contract. Therefore, the asbestos abatement contractor shall not have exclusive rights to any site of his work and shall fully cooperate and coordinate his work with the work of other contractors who may be brought upon any site of the work of this Contract. This paragraph applies to those areas outside the regulated Work Area as defined by Title 15, Chapter I of RCNY.

1.12 <u>SUBMITTALS</u>

- 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



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> 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:

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:



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- 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 <u>UTILITIES</u>

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 <u>FEES</u>

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 05 10 00 STRUCTURAL STEEL

PART I - GENERAL

1.1 RELATED DOCUMENT:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2. SUMMARY

- A. Work included: Structural steel required for this work is indicated on the drawings and includes, but is not limited to the following:
 - 1. Beams
 - 2. Shop or field painting and field touch-up.
 - 3. Surveying of erected steel.
 - 4. All connections.
 - 5. All other work which may reasonably be inferred as making the work of this Section complete.

1.3. SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".

1.4. SUBMITTALS

- A. The Contractor shall retain a Professional Engineer licensed in the State of New York to prepare detailing data regarding all connections.
- B. From the drawings the Contractor shall submit to the Commissioner for approval prior to fabrication full dimensioned drawings of all items in this Section.
- C. Drawings shall include all fabrication, erection plans, member details
 - 1. The Contractor alone shall be responsible for all errors of detailing, fabrication, and for the correct fitting of the structural members.
 - 2. All individual piece drawings shall clearly reference the appropriate job standard and shall clearly show the provided connection reaction or force.
- D. The Contractor shall be responsible for the correct coordination of his work where it comes in conjunction and/or contact with any other work. Dimensions are the responsibility of the Contractor.



- E. Fabrication of any material or performance of any work shall not proceed until shop drawings have been approved by the Commissioner.
- F. Final Drawings: Drawings at completion of the structural steel work shall be submitted.

1.5. QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Standards and Codes
 - 1. Except as modified by the requirements specified herein, the following codes and standards (latest editions and revisions unless noted) shall apply to the work of this Section:
 - a. New York City Building Code.
 - b. AISC "Specification for Structural Steel Buildings."
 - c. AISC "Code of Standard Practice", Latest Edition. As modified within this specification.
 - d. AISC "Specifications for Structural Joints Using ASTM A325 or A490 Bolts," including commentary section.
 - e. American Society for Testing and Materials ASTM Standards.
 - f. AWS "Structural Welding Code," D1.1 including all supplements, addenda, and special rulings applicable to building construction, except amendments to sections or inspection specified herein.
 - g. SSPC "Steel Structures Painting Manual"
 - h. Welding Rules 13 thru 17 New York City Board of Standards and Appeals, Cal. No. 1-38 Sr, Volume II.
 - i. Occupational Safety and Health Act of 1970 (OSHA), as amended to date.
- C. Testing and Inspection:
 - 1. Manufacturer's certification or letter of compliance of bolt, nut, washer and filler material for welding shall be furnished, to the Commissioner.
 - 2. Testing and inspection of structural steel will be performed by an independent testing agency retained and paid for by the City of New York. The inspection service shall be provided with the following:
 - a. A complete set of approved shop and erection drawings.
 - b. Full and ample means of assistance for testing inspection of material.
 - c. Proper facilities, including scaffolding, temporary work platforms, etc., for



inspection of the work in shop and field.

- 3. Each bolting crew and welder shall be assigned an identifying symbol or mark and all shop and field connections shall be so identified that the inspector can refer back to the crew or person making the connection.
 - a. Testing and Calibration: Apparatus and procedure for measuring torque and tension for calibrating wrenches shall be furnished and maintained by the Contractor, and shall be approved by the Commissioner's Inspection Agency. Impact wrenches shall be calibrated each day at beginning of work, each time the bolt size or length of pressure hose is changed, and at such other times as the inspection service may direct.
- 4. Field inspection will consist of, but not limited to the following:
 - a. Certification of welders.
 - b. Inspection and testing of bolting and welding in accordance with Contract Documents, Specifications and Codes.
- 5. All welding inspection for shop and field will, in general consist of complete visual inspection, and the following:
 - a. Magnetic Particle Inspection as per ASTM E709.
 - (1) Manual Fillet Welds Random testing approximately 10% linear inches of weld made.
 - b. Ultrasonic Inspection As per AWS Section 6, Part C and Section 8.15.3.
 - (1) Manual Groove Welds Ultrasonic testing, all welds 100% tension.
 - (2) Tension Welds Ultrasonic inspection of all welds
 - (3) Compression welds automatic 25% of all welds manual all welds.
 - (4) Procedures for testing prior to welding in regard to base material, shall be in accordance with ASTM A-435. Restore (or replace) rejected material at no cost to the City of New York. Restore (or replace) restored material if rejected after welding, at no cost to the City of New York.
 - (5) Liquid penetration as per ASTM E-165, if required.
- 6. Inspection by the Special Inspector engaged by the City of New York does not relieve the Contractor of his responsibility to perform the work and provide the materials required.
- 7. If material or workmanship is rejected by the Special Inspector engaged by the City of New York, the following procedures shall be adhered to:
 - a. Any and all material or workmanship which is rejected at the shop or



building shall be promptly replaced without additional cost to the City of New York.

- b. If arrangements for replacements are not made after seven days, notice of rejection, the Commissioner will have the option to replace rejected material no cost to the City of New York.
- c. Rejected steel shall be removed from the site within three working days of notice of rejection without additional cost to the City of New York.

D. Reports:

- 1. Reports on shop and field welding and bolting and structural steel shall include the following:
 - a. Name of inspectors.
 - b. Description of work.
 - c. Description of type of inspection.
 - d. Type of weld (or bolts).
 - e. Condition of weather.
 - f. Welding operator's name and number.
 - g. Type of welding equipment (or bolt size).
 - h. Total inches of welds made (or bolted locations), inspection, rejection, acceptance.
 - i. Remarks.
- 2. Immediately after tests or inspections have been made, the laboratory shall furnish copies of all tests and inspection reports to the Commissioner.
- 3. Permanent records of the details of all tests shall be maintained by the Special Inspector.
- 4. Laboratory data records and field books shall be available for examination by authorized parties upon request.



PART 2 – PRODUCTS

2.1 MATERIALS

A. All materials shall conform to the requirements of the current editions of the ASTM and other specifications and standards listed below.

2.2 STRUCTURAL STEEL

- A. Steel shall comply with requirements of the following specifications:
 - 1. Steel shall be ASTM A36, A992 Grade 50, or other, as noted on the drawings.
 - 2. A certificate of conformance shall be submitted to the Commissioner by the steel manufacturer certifying that the steel is new steel conforming to the above referenced ASTM specification.

2.3 BOLTS

- A. Bolts shall comply with requirements of the following specifications:
 - 1. High Strength Bolts (carbon steel) ASTM A325.
 - 2. All ASTM A325 bolts shall be preferably cold-forged and with rolled threads. Note: Type 2 A325 bolts are not to be used.
 - 3. All heavy hex nuts for high strength bolts must be ASTM A194 2H or ASTM A563 DH for use with plain (uncoated) bolts or nuts under ASTM A194 or A536 that have a minimum proof stress not below 175,000 psi. No other nuts are acceptable, and nuts must show both the manufacturer's mark and the relevant symbol.

2.4 WASHERS

- A. Round washers shall conform to the American Standard B27, Type B. Washers in contact with high strength bolt heads and nuts shall be hardened in accordance with ASTM Designation A325. Beveled washers shall be furnished in accordance with the specifications of the "Research Council on Riveted and Bolted Structural Joints."
- B. Hardened round washers in contact with high strength bolt heads and nuts must be manufactured to ASTM F436 which requires a hardness of 38 to 45 HRC and must show manufacturer's mark. Washers for use with short slotted or oversized holes on over 1" A490 bolts must also be 5/16" thick or thicker.



2.5 ELECTRODES AND FLUX

A. Electrodes and flux for carbon steel shall be low hydrogen (E70) and shall conform to the requirements of the current edition of the American Welding Society's Standard Code for Welding in Building Construction (D1.1) and current rules and regulations of the New York City Building Code.

2.6 PAINT

A. Paint for coating of steel for exposed exterior structural steel: Tnemec Series 27 FC, Steel-Tech High Performance Epoxy Coating or Sherwin Williams Recoatable Epoxy Primer or approved equal.

2.7 FABRICATION

- A. Size of Holes:
 - 1. Ordinary holes shall be nominal bolt diameter plus 1/16".
 - 2. Members with shear connections only may have elongated holes of nominal bolt diameter plus 3/16" in direction perpendicular to load.
 - 3. Holes, slots and openings required by other trades and contracts shall be provided, together with necessary reinforcing as shown on the drawings. Suitable templates for proper location shall be used.
 - 4. Manual oxygen cutting shall be done only with a mechanically guided torch. Any unguided torch may be used provided cut is not within 1/2" of the finished dimension and final removal is completed by means such as chipping or grinding to produce a surface quality equal to that of the base metal.
 - 5. Exposed exterior structural steel shall have exposed sharp edges and corners ground off smooth and rounded or chamfered. Where water will collect in members, drain holes at low points with chamfered edges shall be provided.

2.8 CONNECTIONS

- A. Connections shall be a minimum of 3/4" dia. with a minimum of 2 bolts. Minimum connections shall conform to appropriate tables headed "Uniform Load Constants" shown in the manual of steel construction of AISC. Composite beam reactions will be greater. Criteria for determining minimum connection capacity required is shown on the structural drawing.
- B. Shop connections not indicated on the structural drawings shall be prepared by fabricator and submitted to the Commissioner for review. Where connections are indicated on the structural drawings, no deviation from the approved type and method thereof shall be made without the approval of the Commissioner. Single angle, one-sided, or other type of eccentric connections will not be permitted unless specifically approved by the Commissioner.



- C. Bolted connections: Bolts shall be driven accurately into the holes without damaging the thread, and bolt heads and nuts shall rest squarely against metal. Bolt heads shall be protected from damage during driving.
 - 1. All bolts shall be drawn up to a bolt tension not less than that specified in Table 3 of the AISC Specification for Structural Joints using ASTM A325 of A490 bolts, and the Specifications for Structural Joints Research Council on Riveted and Bolted Structural Joints. An approved, calibrated, manual or power torque shall be used to obtain the proper torque and tension.
 - 2. Bolts shall be of a length that will extend not less than 1/4" beyond the nuts.
 - 3. All bolts shall be high strength slip critical bolts.
 - 4. In addition to all other requirements, a hardened washer shall be installed between all bolt heads or nuts and material having elongated holes.
- D. Welded Connections:
 - 1. Before welding, particular attention shall be paid to surface preparation, fit up and cleanliness of surface to be welded.
 - 2. Minimum preheat and interpass temperatures for structural steel welding shall be as specified in the American Welding Society Standard for Welding in Building Construction, except that no welding shall be performed when ambient temperature is lower than 0 degrees F. The temperature shall be measured from the side opposite that upon which preheat is applied.
 - 3. Welding shall be done by the American Welding Society's approved methods.
 - 4. The head, input, length and sequence of weld shall be controlled to prevent distortions. The surfaces to be welded and the filler metals to be used shall be subject to inspection before any welding is performed.
 - 5. No welding shall begin until joint elements are bolted in intimate contact and adjusted to dimensions shown on the drawings, or both, with allowance for any weld shrinkage that is expected. Heavy sections and those having a high degree of restraint with low hydrogen type electrodes shall be welded. No members are to be spliced without prior approval of the Commissioner.
 - 6. Welds shall be sounded throughout. There shall be no defect in any weld or welds pass.
 - 7. Welds shall be free from overlap.
 - 8. Craters shall be filled to the full cross section of the weld.
 - 9. Exposed exterior structural steel shall have joints seal welded.



E. The contact surface of high strength bolted and welded connections shall be cleaned and left unpainted. The several pieces forming any built-up or joint shall be straight and close fitting, free from twists, bends or open joints in the finished assembly.

2.9 SHOP PAINTING AND COATING

- A. Preparation:
 - 1. Structural steel exposed to the exterior shall be cleaned in accordance with SSPC-SP6 Commercial Blast Cleaning.
 - 2. All steel shall be cleaned in accordance with SSPC-SP2 Hand Tool Cleaning.
- B. After fabrication, all steel shall receive a shop coat of paint, except for the following:
 - 1. Areas within 2" of field welds.
 - 2. Contact surfaces of high strength bolted friction type connections.
- C. Application:
 - 1. Paint shall be applied to dry surfaces, when temperatures are above dew point, thoroughly and evenly, strict accordance with manufacturer's label instructions, to provide a dry film thickness of 4.0 6.0 mils for exterior steel. Paint shall be dry before handling or loading steel for shipment.
 - 2. Surfaces inaccessible after assembly or erection shall receive a second coat of the shop paint.
- D. Machined surfaces shall be protected by an approved rust-inhibitive coating, readily removable prior to erection, or of a type not requiring removal.
- E. Complete painting details shall be included in the shop drawings.
- F. Field Touch-Up:
 - 1. After erection, all damaged areas in the shop coat, loosened scale, rust, exposed surfaces of bolts, nuts and washers, and all field welds and unpainted areas shall be cleaned to the same standards as the shop coat and painted with the same paint used for the shop coat, at same film thickness.



PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements

3.2 LAYOUT

- A. Installation of Work under this section: The Contractor shall be responsible for the accurate placement of his work in accordance with the location and elevations shown on the drawing.
- B. Dimensions and Levels: Before starting the work, the Contractor shall verify all dimensions and levels.

3.3 ERECTION

- A. Anchor bolts and other required anchorage items shall be verified for proper size and accurate location prior to erection of steel work.
- B. Errors in shop fabrication or deformation resulting from handling and transportation that prevent the proper assembly and structural fitting of parts shall be reported immediately to the Commissioner, and approval of the method of correction shall be obtained. Approved corrections shall be made at no additional cost to the City of New York.
- C. Field connections shall be made as herein before specified.
- D. As erection of the steel progresses, the work shall be fastened securely to take care of all dead load, wind and erection stresses. Poor matching of holes shall be corrected by drilling to the next larger size, and the use of larger size bolts. Welding or re-drilling will not be permitted without approval of the Commissioner. Hammering which will injure or distort the members will not be permitted.
- E. Cutting of Steel: The use of flame, cutting torches, in the field for correction of fabrication errors will not be permitted on any member in the structural framing.

3.4 PLUMBING AND LEVELS

A. All members shall be aligned, leveled and adjusted accurately prior to final fastening. Tolerances shall conform to the AISC Code of Standard Practice except as modified below.

3.5 FIELD PAINTING

- A. Preparation:
 - 1. All steel shall be cleaned in accordance with SSPC-SP2 Hand Tool Cleaning.



B. After erection of structural steel exposed on exterior of building, all abrasions, bolt heads and surfaces left uncoated for welding and bolting shall be touched up with special epoxy-zinc coating or painted with the same paint (at same film thickness) of a different color.

END OF SECTION 05 10 00



SECTION 07 52 16

MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION OF WORK

- A. Provide modified bituminous membrane roofing and all its accessories at areas of HVAC work as per recommendations of Siplast in order to maintain existing roof warranty. Work consists of, but not limited to:
 - 1. Multi-ply SBS-Modified Bitumen Roofing System.
 - 2. Substrate board
 - 3. Vapor retarder
 - 4. Roof insulation
 - 5. Cover board

1.3 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 SUBMITTALS

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures" for all submittals.
- B. Product Data: For each type of product indicated.
- C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Base flashings and membrane terminations.
- D. Samples for Verification: For the following products:
 - 1. Sheet roofing materials, including roofing membrane sheet and membrane cap sheet of color specified.



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- E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of complying with performance requirements.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity meeting the requirements of DDC General Conditions Section 014000 Article 1.7/C/3.
- B. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

1.7 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Take all necessary precautions to prevent fire and spread of fire.
 - 1. At all times when soldering irons or other heat-generating tools or equipment are in use and for four hours thereafter, provide a worker with an approved fire extinguisher dedicated to preventing fire or spread of fire.
- C. Do not use open flames of any kind.



1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, roofing accessories, and other components of membrane roofing system.
 - 2. Warranty Period: to match existing roofing warranty.
- B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, and walkway products, for the following warranty period:
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SBS-MODIFIED ASPHALT-SHEET MATERIALS

- A. SBS-Modified Bituminous Membrane Roofing:
 - 1. Manufacturers: Subject to compliance with requirements, provide products the following manufacturer
 - a. Siplast. No substitutions.
- B. Roofing Membrane Sheet: ASTM D 6163, Grade S, Type II, SBS-modified asphalt sheet (reinforced with polyester fabric); smooth surfaced; suitable for application method specified.
 - 1. Product: Paradiene 20 by Siplast. No substitutions.
- C. Granule-Surface Roofing Membrane Cap Sheet: ASTM D 6163, Grade G, Type II, SBS-modified asphalt sheet (reinforced with polyester fabric); granular surfaced; suitable for application method specified, and as follows:
 - 1. Product: Paradiene 30 FR BW by Siplast. No substitutions.
 - 2. Granule Color: to match existing.

2.2 BASE FLASHING SHEET MATERIALS

A. Backer Sheet: ASTM D 6163/D 6163M, Type I or II, Grade S, SBS-modified asphalt sheet, reinforced with glass fibers smooth surfaced, suitable for application method specified.



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- B. Granule-Surfaced Flashing Sheet: ASTM D 6163/D 6163M, Type II, Grade G, SBSmodified asphalt sheet, reinforced with glass fibers granule surfaced, suitable for application method specified, and as follows:
 - 1. Product: Paradiene 40 FR BW by Siplast. No substitutions.
 - 2. Granule Color: to match existing.
- C. Glass-Fiber Fabric: Woven glass-fiber cloth, treated with asphalt, complying with ASTM D 1668/D 1668M, Type I.
- D. Liquid Flashing System: Parapro 123 Flashing by Siplast. No substitutions.

2.3 AUXILIARY ROOFING MEMBRANE MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
 - 1. Adhesives and Sealants: Comply with VOC limits of NYC Building Code.
 - 2. Bituminous Roof Coatings: Maximum concentration of VOC 300 g/L.
- B. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- C. Roof Vents: As recommended by roof membrane manufacturer.
 - 1. Size: Not less than 4-inch diameter.
- D. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel bars, approximately 1 by 1/8 inch thick; with anchors.
- E. Cold-Applied Asphalt Adhesive: PA-311M Adhesive by Siplast. At all locations receiving Parapro 123 flashing, Siplast SFT Adhesive must be used.
- F. Asphalt Roofing Cement: PA-828 by Siplast. No substitutions.
- G. Mastic Sealant: Polyisobutylene, plain or modified bitumen; nonhardening, nonmigrating, nonskinning, and nondrying.
- H. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate; tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- I. Miscellaneous Accessories: Provide those recommended by roofing system manufacturer.



2.4 VAPOR RETARDER

- A. Self-Adhering-Sheet Vapor Retarder: ASTM D 5147 self-adhesive modified bitumen base ply, 102 mil total thickness; coated with a self-adhesive bitumen layer.
- B. Product: Paradiene 20 SA by Siplast. No substitutions.

2.5 ROOF INSULATION

- A. General: Preformed roof insulation boards, manufactured by roof membrane manufacturer.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 2, Grade 3, felt or glass-fiber mat facer on both major surfaces.
 - 1. Compressive Strength: 25 psi.
 - 2. Size: 48 by 96 inches.
 - 3. Thickness: to match existing board insulation.
- C. Sheathing Panel: Dens Deck Prime Thickness: ¼ inches.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the manufacturer's requirements and other conditions affecting performance of roofing system.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.4 ROOFING MEMBRANE INSTALLATION, GENERAL

A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:



B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.

3.5 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
 - 1. Adhere to substrate in cold-applied adhesive.
 - 2. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
- B. Install roofing membrane sheets so side and end laps shed water.

3.6 VAPOR RETARDER INSTALLATION

- A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 and 6 inches, respectively.
 - 1. Extend vertically up parapet walls and projections to a minimum height equal to height of the insulation and cover board.
 - 2. Seal laps by rolling.
- B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.7 INSULATION INSTALLATION

- A. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- B. Install one lapped base-sheet course and mechanically fasten to substrate according to roofing system manufacturer's written instructions.
- C. Nailer Strips: Mechanically fasten 4-inch nominal-width wood nailer strips of same thickness as insulation perpendicular to sloped roof deck at the following spacing:
 - 1. 16 feet apart for roof slopes steeper than 1 inch per 12 inches but less than 3 inches per 12 inches
- D. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing membrane system with vertical surfaces or angle changes more than 45 degrees.
- E. Install tapered insulation under area of roofing to conform to slopes indicated.



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- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
 - 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
- G. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or more, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
 - 1. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
- H. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- I. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- J. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Fasten insulation according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.
 - 2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

3.8 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
 - 1. Notify Commissioner 48 hours in advance of date and time of inspection.
- B. Perform the following tests:
 - 1. Flood Testing: Flood test each roofing area for leaks, according to recommendations in ASTM D 5957, after completing roofing and flashing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
 - a. Perform tests before overlying construction is placed.
 - b. Flood to an average depth of 2-1/2 inches with a minimum depth of 1 inch and not exceeding a depth of 4 inches. Maintain 2 inches of clearance from top of base flashing.
 - c. Flood each area for 24 hours.



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- d. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.
 - 1) Cost of retesting is the responsibility of the Contractor.
- e. Testing agency shall prepare survey report indicating locations of initial leaks, if any, and final survey report.
- 2. Testing agency shall prepare survey report indicating locations of initial discontinuities, if any.
- C. Test Cuts: Remove test specimens to evaluate problems observed during qualityassurance inspections of roofing membrane as follows:
 - 1. Determine approximate quantities of components within roofing membrane according to ASTM D 3617/D 3617M.
 - 2. Examine test specimens for interply voids according to ASTM D 3617/D 3617/M and to comply with criteria established in Appendix 3 of ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing."
 - 3. Repair areas where test cuts were made according to roofing system manufacturer's written instructions.
- D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- E. Roofing system will be considered defective if it does not pass tests and inspections.

3.9 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period.
 - 1. When remaining construction does not affect or endanger roofing, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to the Commissioner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 52 16

SECTION 07 84 13

THROUGH-PENETRATION FIRESTOP SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. This Section includes through-penetration firestop systems for penetrations through fireresistance-rated constructions, including both empty openings and openings containing penetrating items.

1.3 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E 814 or UL 1479:
 - 1. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.
 - 2. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:

a. Penetrations located outside wall cavities.b. Penetrations located outside fire-resistance-rated shaft enclosures.

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- 3. L-Rated Systems: Where through-penetration firestop systems are indicated in smoke barriers, provide through-penetration firestop systems with L-ratings of not more than 3.0 cfm/sq. ft at both ambient temperatures and 400 deg F.
- C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
 - 1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 - 2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
 - 3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
- D. For through-penetration firestop systems exposed to view, provide products with flamespread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

1.4 SUBMITTALS

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".
- B. Product Data: For each type of product indicated.
- C. Shop Drawings: For each through-penetration firestop system, submit documentation, including illustrations, from a qualified testing and inspecting agency, showing each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item.
- D. Qualification Data: For Installer.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Installer Qualifications: A firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors."
- C. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:

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- 1. Firestopping tests are performed by a qualified testing and inspecting agency acceptable to NYC Department of Buildings.
- 2. Through-penetration firestop systems are identical to those tested per testing standard referenced in "Part 1 Performance Requirements" Article. Provide rated systems bearing classification marking of qualified testing and inspecting agency.
- D. Coordinate construction of openings and penetrating items to ensure that throughpenetration firestop systems are installed according to specified requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the through-penetration firestop systems indicated for each application at the end of Part 3 that are produced by one of the following manufacturers:
 - 1. Grace, W. R. & Co. Conn.
 - 2. Hilti, Inc.
 - 3. 3M; Fire Protection Products Division.
 - 4. Tremco; Sealant/Weatherproofing Division.
 - 5. Or approved equal

2.2 FIRESTOPPING

- A. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.
- B. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

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3.2 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

- A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated..
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
- C. Install fill materials for firestop systems by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.
- D. Identification: Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. Include the following information on labels:
 - 1. The words "Warning Through-Penetration Firestop System Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Through-penetration firestop system designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Through-penetration firestop system manufacturer's name.
 - 6. Installer's name.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to alpha-alpha-numeric designations listed in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. Firestop Systems for Metallic Pipes, Conduit, or Tubing

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- C. Firestop Systems for Nonmetallic Pipe, Conduit, or Tubing
- D. Firestop Systems for Electrical Cables
- E. Firestop Systems for Cable Trays
- F. Firestop Systems for Insulated PipesFirestop Systems for Miscellaneous Electrical Penetrants
- G. Firestop Systems for Miscellaneous Mechanical Penetrants

END OF SECTION 07 84 13



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SECTION 08 31 13

ACCESS DOORS

PART 1 - GENERAL

1.1 **RELATED DOCUMENTS**

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Provide all access doors and frames located in walls and in ceilings, complete with accessories, as indicated on the Drawings and as specified herein.

1.3 **QUALITY ASSURANCE**

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Fire rated Doors
 - 1. Fire Rated Access Doors for Walls: Complete assemblies meeting NYC Building Code requirements for 1¹/₂ hour rating for a 2-hour wall. Each assembly shall be labeled by an agency approved pursuant to rules of the NYC Dept. of Buildings. The label shall meet Building Code requirements and shall be permanently affixed at the factory.
 - 2. Fire Rated Access Doors for Ceilings: Complete assemblies complying with NYC Building Code requirements for one-hour combustible and one-hour non-combustible floor/ceiling systems. Each assembly shall be labeled by an agency approved pursuant to rules of the NYC Dept. of Buildings. The label shall meet Building Code requirements and shall be permanently affixed at the factory.

1.4 **REFERENCES**

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



1.5 **SUBMITTALS**

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".
- B. Product Data: For each type of door and frame indicated. Include catalogue cuts, construction details relative to materials, individual components and profiles, finishes, and fire ratings (if required) for access doors and frames.
- C. Shop Drawings: Schedule Provide complete door and frame schedule, including types, general locations, sizes, construction details, latching or locking provisions, and other data pertinent to installation. Indicate locations of fire rated doors on schedule.
- D. Certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the NYC Building Code is acceptable for the intended use. When test methods are stipulated in the NYC Building Code, the tests utilized shall be stated in the Certification. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

Fire rated access doors are regulated assemblies.

E. Keys Furnish_6 keys for all locks

1.6 **COORDINATION**

A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed equipment, and indicate on schedule specified in "Submittals" Article.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle access doors and frames as recommended by the Manufacturer, to protect from damage.

PART 2 - PRODUCTS

2.1 **MANUFACTURERS**

- A. Karp Associates, Inc., Maspeth, NY 11378
- B. Milcor, Inc., Lima, OH 45804
- C. Nystrom Building Products, Minneapolis, MN 55413
- D. or approved equal

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2.2 NON-FIRE RATED ACCESS DOORS

A. Frames

Minimum 16 gage steel.

- 1. Flange: Integral exposed flange not less than 3/4" wide around the perimeter.
- 2. Plaster Applications: Expanded metal lath and exposed casting bead welded to perimeter of frame, in place of integral exposed flange.
- 3. Acoustical Tile Applications: Frames without exposed flange.
 - a. Finish: Factory-applied rust inhibitive baked enamel primer over phosphate treated steel.
 - b. Anchorage: Predrilled holes in frame for anchoring with fasteners.
- B. Flush Type Door Panel

Minimum 14 gage steel.

- 1. Hinges: Concealed spring type set to open to approximately 175°; sufficient number to support the door size, or continuous type hinge.
- 2. Finish: Factory-applied rust inhibitive baked enamel primer over phosphate treated steel.
- C. Cam Locks (for doors located in ceilings)

Flush, screwdriver operated; sufficient number to hold door panel in flush, smooth plane when closed.

D. Cam Locks (for doors located in walls)

Flush screwdriver or key operated; sufficient number to hold door panel in flush, smooth plane when closed.

1. One lock on each door panel shall be key operated, pin tumbler type. The remaining locks, if any, shall be screwdriver operated type.

2.3 FIRE RATED ACCESS DOORS FOR WALLS

A. Frames



Minimum 16 gage steel, with integral exposed flange not less than 1" wide around the perimeter.

- 1. Anchorage: Predrilled holes in frame for anchoring with fasteners.
- B. Flush Type Door Panel

Minimum 20 gage steel double wall construction with insulation, equipped with automatic closer and inside release mechanism.

- 1. Hinge: Continuous hinge set to open to approximately 175°.
- 2. Finish: Factory-applied baked enamel primer over phosphate treated steel.
- C. Automatic Latches

Direct action Knurled knob or turn ring, or key operated; sufficient number to hold door panel in flush, smooth plane when closed.

1. One latch on each door panel shall be key operated, pin tumbler type. The remaining latches, if any, shall be knurled knob or turn ring operated type.

2.4 KEYING FOR NON-FIRE RATED ACCESS DOORS AND FIRE RATED ACCESS DOORS FOR WALLS

A. Key all locks and latches alike. Furnish 6 keys total.

2.5 FIRE RATED ACCESS DOORS FOR CEILINGS

A. Frames

Minimum 16 gage steel, with integral flange 1" wide.

- 1. Anchorage: predrilled holes in frames for anchoring with fasteners.
- B. Flush Type Door Panel

Minimum 20 gage steel double wall construction with insulation, equipped with automatic closer and inside release mechanism.

- 1. Hinge: Continuous, set to open approximately 175°.
- 2. Finish: Factory-applied baked enamel primer over phosphate-treated steel.
- C. Automatic Latches

Direct action knurled knob or turn ring, of sufficient quantity to hold door panel in flush, smooth plane when closed.

1. One latch on each door panel shall be key-operated, pin tumbler type.



2. Locking Device: Self-latching key operated cylinder lock. Furnish<u>6</u> keys total.

2.6 **FABRICATION AND MANUFACTURE**

- A. Manufacture access door assemblies as integral units complete with all parts and ready for installation. Fabricate units of continuous welded steel construction unless otherwise indicated or specified. Grind welds smooth and flush with adjacent surfaces. Attachment devices shall be of size and type required to secure access doors to types of supports indicated on the Drawings.
 - 1. Allowable Size Variations: Manufacturer's standard size units that vary slightly from the sizes indicated may be acceptable, subject to the approval of the Commissioner.

2.7 **PAINT**

A. Shop Primers: Provide primers that comply with section 09 91 23-Interior Painting.

PART 3 - EXECUTION

3.1 **EXECUTION REQUIREMENTS**

A. Refer to DDC General Conditions for execution requirements.

3.2 **INSTALLATION**

- A. Install the access doors in accordance with the manufacturer's printed installation instructions, except as shown or specified otherwise.
- B. Coordinate access door installation with installation of supporting construction.
- C. Set units accurately in position and securely attach to support with face panel plumb or level in relation to adjoining finish surface.

3.3 **ADJUSTMENT**

- A. Adjust hardware and doors for proper operation.
- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

3.4 LOCATION

A. Provide non-fire rated access doors in non-fire rated construction and fire rated access doors in fire rated construction.

END OF SECTION 08 31 13

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Access Doors 08 31 13 - 6



SECTION 09 51 00

ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 DESCRIPTION OF WORK

- A. Provide acoustical ceiling Work as indicated on Drawings and as specified herein, including the following:
 - 1. Acoustical Mineral Fiber Tile and Panel Ceilings.
 - a. Lay-in panel installation exposed grid

1.3 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
 - B. American Society for Testing and Materials (ASTM), latest edition.
 - 1. C423: Test Method for Sound Absorption and Sound Absorption Coefficient by the Reverberation Room Method.
 - 2. C635: Metal Suspension System for Acoustical Tile and Lay-In Panel Ceilings.
 - 3. C636: Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - 4. D1779: Specification for Adhesion for Acoustical Materials
 - 5. E84: Surface Burning Characteristics of Building Materials.
 - 6. E90: Standard Test Method for Laboratory Sound Transmission Class
 - 7. E119: Method for Fire Tests of Building Construction and Materials.



- 8. E413: Determination of Sound Transmission Class
- 9. E1264: Standard Classification for Acoustical Ceiling Products.
- 10. E14114: Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a common Ceiling Plenum (CAC)
- 11. E1477: Standard Test Method for Luminance Reflectance Factor (LR) LR1 >75%
- C. AMA -1-II Ceiling Sound Transmission Test By Two-Room Method
- D. Underwriters Laboratories Inc. (UL) Fire Resistance Directory
- E. Acoustical and Insulation Materials Association, "Job Conditions".
- F. New York City Building Code.
- G. New York City Board of Standards and Appeals (BSA) approvals; New York City Materials Equipment Acceptance (MEA).

1.4 **DEFINITIONS**

- A. Direct Suspension System
 - 1. Directly fastened to floor or roof construction above.
- B. Indirect Suspension System
 - 1. Installed as part of the Work of this Section, as furnished by ceiling system manufacturer to be attached to direct suspension system.

1.5 SUBMITTALS

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures" for all submittals.
- B. Product Data
 - 1. Submit manufacturer's product specifications and installation instructions for ceiling materials, indicating compliance with applicable requirements. Include information pertaining to fire performance, flame spread, and smoke development.
- C. Shop Drawings

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- 1. Submit shop drawing details indicating the relationship to mechanical and electrical Work and other items penetrating or connected to the ceiling. Indicate framing and support details for the ceiling Work.
- 2. Acoustical Panel Ceilings
 - a. Submit large scale details indicating how ceiling mounted items such as lighting fixtures and HVAC diffusers are installed.
 - b. Submit ceiling plans for coordination with mechanical trades. Indicate which panels are to be installed without retainer clips, to enable service and maintenance access.
- D. Samples
 - 1. Submit samples of the following materials, prior to installation;
 - a. Acoustical panels: 6"x6" samples of each type, pattern and color.
 - b. Lay-in mineral fiber acoustical panel with field cut tegular edge on one edge, painted to match factory tegular edges. The other three edges shall have manufactured tegular profile: 12" x 24" sample.
 - c. Exposed runners and moldings: 8" long samples of each color and system type required.
 - 2. Forward each approved sample type to Mechanical Installer for purpose of matching diffusers.
- E. Quality Assurance Submittals
 - 1. Affidavit certifying experience of installation company.
 - 2. Certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies regulated by the NYC Building Code are acceptable for the intended use. When test methods are stipulated in the NYC Building Code, the tests utilized shall be stated in the Certification. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.
- F. Project Closeout Submittals
 - 1. Guarantee



- G. Low Emitting Materials Compliance Submittals:
 - 1. Provide documentation for each sealant and adhesive to be used indicating that the sealants and adhesives comply with New York City V.O.C. requirements.

1.6 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Qualifications
 - 1. Installer is to be a firm with not less than three years of successful experience in the installation of specified materials.
- C. Regulatory Requirements
 - 1. Building Code: Work of this Section shall conform to all requirements of the N.Y.C. Building Code.
 - 2. Certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.
- D. Fire Performance Characteristics
 - 1. Provide ceiling components that are identical to those tested for the following fire performance characteristics, according to ASTM test method, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction. Identify ceiling components with appropriate marking of applicable testing and inspecting agency.
 - 2. Surface Burning Characteristics: Tested per ASTM E84. Tested surfaces shall be the surfaces facing the occupied space.
 - a. Flame Spread: 25 or less.
 - b. Smoke Developed: 25 or less.
 - 3. All materials exposed to the airflow in ceiling cavity plenums used for supply, return, or exhaust air shall be non-combustible or have a maximum smoke developed index/rating of 50, as defined by and in accordance with NYC Construction Code Sections BC 719 and MC 602. Flame spread index shall not exceed 25. Tested surfaces shall be the surfaces facing the plenum.



- E. Fire Resistance Ratings
 - 1. When the drawings indicate that the acoustical ceiling construction is part of a fire-rated floor/ceiling or roof/ceiling assembly, provide certification by an Approved Agency, in accordance with NYC Dept. of Buildings rules, indicating approval of the ceiling for use in the assembly described.
- F. Coordination of Work
 - 1. Coordinate layout and installation of ceiling units and suspension system components with other work above, supported by, or penetrating through ceilings, including light fixtures, HVAC equipment, fire-suppression systems and partitions. Resolve all discrepancies and conflicts prior to start of Work.
- G. Pre-installation Meeting
 - 1. Prior to start of Work, installer of ceiling system and representatives of trades involved are to have a conference at the job site, in the presence of the Commissioner representative, to discuss coordination of ceiling system installation and resolve all discrepancies.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery
 - 1. Deliver all acoustical units in manufacturer's original, unopened packages fully identified with type, finish, performance data and compliance labeling.
- B. Storage
 - 1. Store materials where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.
 - 2. Store tile containers in space where they will be installed for at least 24 hours prior to installation to stabilize moisture content and temperature.
- C. Handling
 - 1. Handle ceiling units carefully to avoid chipping edges or damaging units in any way.

1.8 PROJECT CONDITIONS

- A. Space Enclosure
 - 1. Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet work in space is completed and dry, work above ceilings is

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completed, and until air temperature and humidity are maintained at values of final occupancy.

2. Pressurized plenums: Operate HVAC system for not less than 48 hours before beginning acoustical panel installation.

1.9 GUARANTEE

- A. Work showing defects in workmanship or materials within the one year guarantee period specified in the Contract shall be corrected as directed by the Commissioner. Defects include but are not limited to:
 - 1. Tiles or suspension system loose or improperly secured.
 - 2. Tiles or suspension members showing discoloration or cracking.
 - 3. Tiles or suspension members warping, sagging, or deforming.

PART 2 - PRODUCTS

2.1 MANUFACTURERS, MODELS

- A. Acoustical Panels
 - 1. Mineral Composition Panels (24" x 24" x 3/4")
 - a. USG Interiors Inc.

Product name: "Mars"

Product number: 86785

Environmental performance type: "ClimaPlus"

b. Armstrong World Industries

Product name: "Ultima"

Product number: 1911

Environmental performance type: "HumiGuard Plus"

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c. CertainTeed Corporation

Product name: "Symphony-m"

Product number: 1222BB-IOF-1

Environmental performance type: "104/90"

- d. Or approved equal
- B. Indirect Metal Suspension Systems (suspension members for panel ceilings shall be by the manufacturer of the ceiling panels or by a company recommended by the panel manufacturer).
 - 1. Chicago Metallic Corporation
 - 2. Donn Corporation / USG Interiors, Inc.
 - 3. Armstrong World Industries, Inc.
 - 4. Or Approved equal

2. 2 MATERIALS - ACOUSTICAL PANELS

- A. Mineral Fiber Tile and Panels
 - 1. Provide units per ASTM E1264; of designation, style, finish, color, acoustical range, edge detail and size as indicated below:
 - a. Suspended (Exposed grid, lay-in) Installation

Style:	Fine Texture
Size:	24" x 24" x 3/4", or as indicated.
Edge Profile:	Reveal beveled tegular, or as indicated.
Weight:	0.95-1.05 lbs./sq.ft.
NRČ:	Min70
CAC:	Min. 35
Light Reflectance	Min85 Average
Color:	White
Finish:	Factory finish

B. Provide fire-rated ceiling systems when indicated on the Drawings as part of a fire-rated assembly, with ratings as stipulated.

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2.3 MATERIALS - METAL SUSPENSION SYSTEMS - INDIRECT HUNG

A. Exposed Grid Suspension System

Manufacturer's standard system, with design and finish as selected by the Commissioner.

- 1. Structural Classification: Heavy-duty system in accordance with ASTM C 635.
- 2. Face width: 15/16".
- 3. Main runners: Connect to direct suspension system (refer to Specification Section 05170). Conform to ASTM C 635 for heavy-duty classification.
- 4. Provide runners suitable for attachment of hold-down clips and impact clips as applicable.
- 5. Hold-Down Clips for Non-Fire-Rated Ceilings: For ceilings composed of lay-in panels, provide hold-down clips spaced 2'-0" o.c. on all cross tees.
- 6. For metal panel ceilings the exposed grid shall be furnished by the panel manufacturer, or by a company recommended by the panel manufacturer, and finish shall match panels. Main runners and cross runners shall be G60 hot-dipped galvanized steel in accordance with ASTM A653, with aluminum capping.
- 7. Impact Clips: Provide in high impact areas, including corridors, lobbies, and gymnasiums, and at other locations indicated. Provide manufacturer's impact clip ("keep clip") system designed to absorb impact forces against lay-in panels. Provide number of clips recommended by manufacturer; not less than 4 clips per panel. System shall meet requirements of Article titled "Impaction Ceiling System Installation".

2.4 MISCELLANEOUS MATERIALS

- A. Tile Adhesive
 - 1. Comply with ASTM D1779 or FS-MMM-A-00150, factory made product recommended by manufacturer, bearing UL label for Class 0-25 flame spread.
 - 2. All adhesives used on site shall comply with New York City V.O.C. requirements.
- B. Primer
 - 1. In accordance with manufacturer of acoustical tile adhesive, substrate shall be primed with one of the following products prior to application of adhesive to remove any residual which would prevent proper attachment of tile:



- a. Chemical Wash
- b. Sizing
- c. Adhesive base or primer
- d. All adhesive base and primers used on site shall comply with V.O.C. requirements specified.
- C. Edge Moldings and Trim Pieces
 - 1. Provide manufacturer's standard molding for edges and penetrations of ceiling units which fit with type of edge detail and suspension system indicated.
- D. Tile Fasteners
 - 1. Cadmium plated, type recommended by tile manufacturer, but for not less than 1/2" penetration of substrate.
- E. Drop Clips
 - 1. 18 gage galvanized steel with key hole slot, or other configuration approved by New York City Dept. of Buildings for connection of ceiling suspension members to carrying channels.
 - 2. Drop clips shall be of length required for indicated ceiling height, and to provide clearances for lighting fixtures, mechanical equipment, and other items above the ceiling. Where necessary because of limited clearance, provide clips that connect runners tight to the bottom of carrying channels.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 EXAMINATION

- A. Examine the building before beginning Work to determine that it is properly enclosed, and the structure is in proper condition to receive acoustical materials and suspension system. Area shall be broom cleaned and uninterrupted for free movement of rolling scaffold. Do not proceed until satisfactory conditions prevail.
- B. Verify that direct suspension system has been installed properly, that main runners are spaced evenly and have been leveled to a tolerance of 1/8" in 12' measured both

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lengthwise on each runner and transversely between parallel runners so that indirect suspension system installation may proceed accurately.

C. Start of Work constitutes acceptance of existing conditions, therefore, contractor is advised to bring any discrepancies to the attention of the Commissioner prior to start of Work.

3.3 **PREPARATION**

- A. Coordination
 - 1. Provide and coordinate the locations of inserts, clips, or other supports for support of acoustical ceilings.
 - 2. Determine the length of drop clips required to maintain indicated ceiling height and to provide necessary clearance for electrical, mechanical and other equipment. Where necessary for clearance, clips that connect runners tight to the bottom of carrying channels shall be used.
- B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders and comply with reflected ceiling plans.
- C. Adhesive Tile Installations
 - 1. Before installing adhesively-applied tile on wet-placed substrate such as cast in place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.
 - 2. Surface Preparation: Remove dirt, dust, oil, grease, and other foreign matter that may impair proper bonding of the tile adhesive. Clean and prepare substrate in accordance with the adhesive manufacturer's instructions and as specified.
 - a. Existing Painted Surfaces: Remove loose, peeling, and blistered coatings. Sand glossy surfaces to a dull finish.
 - b. Concrete Surfaces: Remove laitance, fins, and other defects that may impair bonding of the tile adhesive or may prevent alignment of tiles in a uniform plane.

3.4 INSTALLATION - GENERAL

- A. Install materials in accordance with manufacturer's printed instructions and in compliance with ASTM C636, NYC Building Code, fire resistance rating requirements, as indicated.
 - 1. Coordinate requirements for Work of other trades to be built into ceiling system. Provide supplementary framing as required.

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- B. Arrange directionally-patterned units (if any) in manner shown by reflected ceiling plans, or as approved by the Commissioner. Install in patterns indicated, (balanced borders all sided) symmetrical or centered about center line of corridors, panels, fixtures, beam haunches, rooms, spaces.
- C. Cut as required for installation of electric fixtures, air diffusers, grilles, sprinkler heads, security devices, access doors, etc., provided under other trades. Verify sizes and locations with other trades.
- D. On completion, the ceilings shall present a uniform horizontal plane surface, unless otherwise indicated, free from blemishes and imperfections. Exposed grid cross runners shall fit tightly against adjacent main runners, with no visible gaps.
- E. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.
 - 1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.
 - 2. Screw-attach moldings to substrate at intervals not over 16" o.c. and not more than 3" from ends, leveling with ceiling suspension system to tolerance of 1/8" in 12'-0". Miter corners accurately and connect securely.
- F. Install panels in coordination with suspension system with suspension members concealed by support of tile units.
- G. Neatly scribe and cut panels to fit accurately at borders, interruptions, and penetrations. The cut edges of reveal tegular lay-in mineral fiber panels shall be field cut to match profile of factory edges, in accordance with manufacturer's printed instructions. Paint the cut edges to match factory finish where exposed to view, using paint supplied by panel manufacturer.

3.5 DIRECT (ADHESIVE) TILE INSTALLATION

- A. Apply primer as specified herein to all concrete surfaces prior to cementing tiles in place.
- B. Remove loose dust from backs of tiles by brushing and then priming them with thin coat of adhesive.
- C. Cement acoustic tile directly to concrete ceiling slab, between beam haunches and to plaster or gypsum board ceiling with (4) spots of adhesive to each square foot of tile. Each spot of adhesive shall produce a surface of not less than (2) inches in diameter after tile has been pressed in place.

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- D. Fit adjoining tiles to form neat and uniform hairline joints that are straight and parallel to the room axis in both directions. Install directionally patterned or textured tiles in a checkerboard pattern unless otherwise indicated.
- E. Scribe and cut tile to fit accurately at ceiling edges and penetrations. Install molding at ceiling perimeter, openings, cut-outs and where otherwise indicated.

3.6 ADJUSTING AND CLEANING

- A. Clean exposed surfaces of ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage.
- B. Remove and replace Work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
- C. Remove and replace Work that is damaged or soiled by other trades as directed by the Commissioner.

END OF SECTION 09 51 00



SECTION 09 91 23

INTERIOR PAINTING

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
 - A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following exterior substrates:
 - 1. Gypsum Board
 - 2. Steel

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - 2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.



1.4 QUALITY ASSURANCE

- A. MPI Standards:
 - 1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
 - 2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.
- B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Commissioner will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Commissioner will designate items or areas required.
 - 2. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Commissioner at no added cost to the City of New York.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.



PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Benjamin Moore & Co.
 - 2. Sherwin Williams
 - 3. Tnemec Company, Inc.
 - 4. Or approved equal.

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

2.3 BLOCK FILLERS

- A. Interior/Exterior Latex Block Filler: MPI #4.
 - 1. VOC Content: E Range of E2.

2.4 PRIMERS/SEALERS

- A. Interior Latex Primer/Sealer: MPI #50.
 - 1. VOC Content: E Range of E1.
- B. Interior Alkyd Primer/Sealer: MPI #45.
 - 1. VOC Content: E Range of E1.

2.5 LATEX PAINTS

- A. Interior Latex (Flat): MPI #53 (Gloss Level 1).
 - 1. VOC Content: E Range of E1.

- B. High-Performance Architectural Latex (Semigloss): MPI #141 (Gloss Level 5).
 - 1. VOC Content: E Range of E1.
- C. Interior Latex (Low Sheen): MPI #44 (Gloss Level 2).
 - 1. VOC Content: E Range of E1.

2.6 ALKYD PAINTS

- A. Interior Alkyd (Flat): MPI #49 (Gloss Level 1).
 - 1. VOC Content: E Range of E1.
- B. Interior Alkyd (Eggshell): MPI #51 (Gloss Level 3).
 - 1. VOC Content: E Range of E1.
- C. Interior Alkyd (Semigloss): MPI #47 (Gloss Level 3).
 - 1. VOC Content: E Range of E1.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Masonry: 12 percent.
 - 2. Gypsum Board: 15 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- C. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content of surfaces or alkalinity of mortar joints to be painted exceed that permitted in manufacturer's written instructions.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

- A. Testing of Paint Materials: Commissioner reserves the right to invoke the following procedure at any time and as often as Commissioner deems necessary during the period when paints are being applied:
 - 1. Contractor will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will perform tests for compliance of paint materials with product requirements.



3. Commissioner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Commissioner, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 PAINTING SCHEDULE

- A. Steel Access Doors: Alkyd System: MPI EXT 6.3B
 - 1. Prime Coat: Alkyd Primer
 - 2. Intermediate Coat: Acrylic Alkyd Enamel (Semi-Gloss)
 - 3. Topcoat: Acrylic Alkyd Enamel (Semi-Gloss)
- B. Gypsum Board Substrates: Alkyd System: MPI EXT 6.2C
 - 1. Prime Coat: Start Alkyd Primer
 - 2. Intermediate Coat: House and Trim paint (Semi-Gloss)
 - 3. Topcoat: House and Trim paint (Semi-Gloss)

END OF SECTION



SECTION 23 00 05 ACCESS DOORS IN GENERAL CONSTRUCTION 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.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Access Doors in Drywall.
- B. Access Doors in Ceilings.
- C. Fire Rated Access Doors.
- D. Color Coded Buttons.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Provide manufacturer's data on access doors to be furnished by location within the project.
- B. Submit a schedule of access doors and frames indicating size, type, location and access item or purpose.
- C. Coordinate access doors and frames furnished under this Section with those provided by the architectural specifications. Furnish samples for each type and finish of access door and frame, if required.



PART 2 - PRODUCTS

2.1 GENERAL

- A. Wherever access is required through walls or ceilings to valves, fire dampers, fire and smoke dampers, automatic and balancing dampers, or other concealed equipment installed under this Division, furnish access doors and frames as follows:
- B. Flush door in drywall:
 - 1. Milcor Type DW
 - 2. KARP Type KDW
 - 3. Williams Brothers Type WB
 - 4. Elmdor Type AP
 - 5. Or approved equal
- C. Recessed door in walls and ceilings:
 - 1. Milcor Type AP
 - 2. Karp Type RDW
 - 3. Williams Brothers Type WB-RDW
 - 4. Elmor Type AT
 - 5. Or approved equal
- D. Recessed door in finished plaster or ceramic tile:
 - 1. Milcor Type AP
 - 2. Karp Type KATR
 - 3. Williams Brothers Type WB-AP
 - 4. Elmdor Type AP
 - 5. Or approved equal
- E. In fire rated construction:
 - 1. Milcor Type UFR
 - 2. Karp Type 350 FR

- 3. Williams Brothers Type WB-ATR
- 4. Elmdor Type FR
- 5. Or approved equal
- F. Furnish access doors in rated construction with "B" label fire construction. Furnish a U.L. label on each access door.
- G. Coordinate all sizes and locations with the Contractor.
- H. No access door shall be installed until location and type have been approved by the Commissioner.
- I. Furnish color coded buttons or tabs to indicate location of valves, dampers or other equipment located above removable type ceilings where access doors are not required.
- J. Make access door size a minimum of 18" x 18".

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 GENERAL

- A. Coordinate sizes and location of all access doors with the Contractor.
- B. Direct location and setting of access doors in hung ceilings, furred spaces, walls, etc., to provide access to all concealed work items requiring maintenance and/or adjustment and as directed by the Commissioner. Obtain acceptance of the Commissioner for the locations and sizes of such access doors.
- C. Locate and group equipment requiring access doors so that access door locations are aesthetically acceptable. Coordinate location of equipment requiring access with other trades to minimize number of access doors in one area. Prepare drawings of valve and damper locations indicating proposed access door locations for review by the Commissioner prior to installation of valves, dampers, etc. Include equipment of other trades on the Drawings.

END OF SECTION 23 00 05



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SECTION 23 02 00 FIRESTOPPING 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.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Firestop Compounds.
- B. Damming Material.
- C. Factory Assembled Devices.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Submit shop drawings, product data, and manufacturer's installation instructions for all materials and prefabricated devices, providing descriptions sufficient for identification at the job site.
- B. Submit shop drawings showing proposed material, reinforcement, anchorage, fastenings, and method of installation. Construction details shall accurately reflect actual job conditions.
- C. Submit Material Safety Data Sheets with product delivered to job site.
- D. Submit certification by NYC DOB and U.L. for the complete system of firestopping for each type penetration.
- E. Submit complete details of each type of penetration to be used indicating the proper U.L. approved firestop system and U.L. system number.

- F. Submit Product Data: Manufacturer's specifications and technical data for each material including the composition and limitations, documentation of qualified tested firestop systems to be used and manufacturer's installation instructions.
- G. Manufacturer's engineering judgment identification number and document details when no qualified tested system is available for an application. Engineering judgment must include both project name and contractor's name who will install firestop system as described in document.

1.5 FIRESTOPPING INSTALLER

- A. Engage an experienced Installer who is properly trained by the firestopping manufacturer as having been provided the necessary training to install manufacturer's products per specified requirements. A supplier's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer.
- B. Firm with not less than 3 years' experience with fire stop installation.

1.6 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. ASTM E-814, "Fire Test of Penetration Fire Stops."
 - 2. ANSI/UL 1479, "Fire Tests of Through Penetration Firestops."
 - 3. ASTM E-119, "Fire Tests of Building Constructions and Materials."
 - 4. ANSI/UL263, "Fire Tests of Building Construction and Materials."
 - 5. ASTM E-84, "Surface Burning Characteristics of Building Materials."
 - 6. ANSI/UL723, "Surface Burning Characteristics of Building Materials."
 - 7. ASTM G-21, "Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi."
- C. Firestop system installation shall conform to requirements of qualified designs or manufacturer approved modifications, as supported by engineering reports.
- D. Install firestop materials and systems as required by these Contract Documents and meet and be accepted for use by applicable design building and construction codes.
- E. Submit manufacturer's product data, letter of certification, or certified laboratory test report that the material or combination of materials (firestop system) meets the requirements specified in accordance with the applicable referenced standards.

- F. For those firestop applications that exist for which no qualified tested system is available through a manufacturer, an engineering judgment derived from similar qualified tested system designs or other tests will be submitted to the NYC DOB for their review and approval prior to installation. Engineering judgment documents must follow requirements set forth by the International Firestop Council.
- G. Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174, "Standard Practice for On-Site Inspection of Installed Fire Stops" or other recognized standard.
- H. The firestop compound shall not contain any solvents or inorganic fibers. The penetration seal material must be unaffected by moisture and must maintain the integrity of the floor or wall assembly for its rated time period when tested in accordance with ASTM E814 (UL1479). The system shall be U.L. Classified for up to and including 3 hours.

Line			Rating	U.L.	Tested
#	Penetrating Item	Type of Rated Wall/Floor	(Hrs.)	System #	System
1	Steel Pipe (12" or smaller)	Concrete or Concrete Block	3	399	CAJ1155
2	Steel Pipe or EMT Conduit	Concrete or Concrete Block	2	215, 216, 223	CAJ1155
3	Steel Pipe or EMT Conduit	Concrete or Concrete Block	1	221	CAJ1155
4	Steel Pipe or EMT Conduit	Gypsum Wall	2	425	WL1056
5	Steel Pipe or EMT Conduit	Wood Floor Assembly	2	306	FC1059 FC1009
6	Copper Pipe (not insulated)	Concrete or Concrete Block	2	400	FA1017
7	Insulated Steel Pipe/Conduit	Concrete or Concrete Block	2	301	CAJ5098
8	Insulated Copper Pipes(s)	Concrete or Concrete Block	2	310, 402, 403	FA5017
9	PVC Pipe (6" or smaller)	Concrete or Concrete Block	2	300, 226	CAJ2109 CAJ2217

1. Firestopping Chart



Line			Rating	U.L.	Tested
#	Penetrating Item	Type of Rated Wall/Floor	(Hrs.)	System #	System
10	PVC Pipe (4" or smaller)	Concrete or Concrete Block	3	300	CAJ2095
11	PVC Pipe (4" or smaller)	Gypsum Wall	2	312, 227, 228	WL2251
12	PVC Pipe (4" or smaller)	Wood Floor Assembly	2	303	FC2029
13	CPVC and PB Pipe	Concrete or Concrete Block	2	226	
14	ABS Pipe (2" or smaller)	Gypsum Wall	2	227	WL2234
					WL2235
15	PP Pipe (4" or smaller)	Concrete or Concrete Block	2	300	CAJ2217
16	Glass Pipe (4" or smaller)	Concrete or Concrete Block	2	302	WL2330
17	Cables (Power, Control, Phone)	Concrete or Concrete Block	2, 3	222, 224, 307	CAJ3285
					CAJ3096
18	Cables (Power, Control)	Gypsum Wall	2	425	WL3334
					WL3396
19	Phone Cable (25 pair or smaller)	Wood Floor Assembly	2	304	FC3012
20	Joints (up to 3" wide)	Concrete or Concrete Block	2	214	HWD1008
					HWD1045
					HWD1058
21	Blank Opening	Concrete or Concrete Block	2	311	CAJ0138
					CAJ0105
					CAJ0097
					CAJ0090



PART 2 - PRODUCTS

2.1 FIRESTOPPING

- A. Provide firestop compounds for caulk, pour, trowel or pump application. Material must be capable of sealing openings around single or multiple against fire, smoke and toxic gases, and maintaining rating with a thickness no greater than the structure.
- B. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.
- C. Provide a damming material, where required, per manufacturer's recommendations and as shown on the Drawings.
- D. Provide a firestop system consisting of a material, or combination of materials, to retain the integrity of firerated construction by maintaining an effective barrier against the spread of flame, smoke or gases through penetrations in fire-rated barriers. It shall be used in specific locations as follows:
 - 1. Penetrations in Fire Resistance Rated Walls: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. F-Rating: Not less than the fire-resistance rating of the wall construction being penetrated.
 - 2. Penetrations in Horizontal Assemblies: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. F-Rating: Minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.
 - b. T-Rating: when penetrant is located outside of a wall cavity, minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.
 - c. W-Rating: Class 1 rating in accordance with water leakage test per UL 1479 (when applicable).
 - 3. Penetrations in Smoke Barriers: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at both ambient and elevated temperatures.
 - 4. Locations shown specifically on the drawings or where specified in other sections of these specifications.
- E. Mold Resistance: Provide penetration firestopping with mold and mildew resistance rating of one (1) or less as tested per ASTM G21.



2.2 MATERIALS

- A. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating item(s) without affecting the adhesion or integrity of the system.
- B. Firestopping materials shall not require hazardous waste disposal of used containers/packages.
- C. Provide firestopping materials free of solvents which will not experience shrinkage while curing.
- D. Use only firestop products that have been UL 1479 or ASTM E 814 tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.

2.3 MANUFACTURERS

- A. Hilti (Basis of Design)
- B. Dow Corning
- C. Flamesafe
- D. International Protective Coatings
- E. Or approved equal.

2.4 APPROVED PRODUCTS

- A. Fire Rated Cable Management Devices: Factory-assembled round metallic sleeve device for use with cable penetrations, containing an integrated smoke seal fabric membrane that can be opened and closed for repenetration.
- B. Smoke and Acoustic Sleeves (Non-rated assembly): Factory-assembled round metallic sleeve device for use with cable penetrations for non-rated walls, containing an integrated material enabling ease of re-penetration with the intent to significantly reduce sound transmission and preventing smoke passage.
- C. Firestop Cable Collar: Factory-assembled collars formed from galvanized steel, completely filled with an intumescent material that can accommodate 0% up to 100% visual fill. Surface mounted device.
- D. Firestop Cable Disk: For use with up to a 1" cable bundle, consisting of non-hardening dielectric, waterresistant putty; containing no solvents, inorganic fibers, or silicone compounds
- E. Drop-In Firestop Devices: Factory-assembled devices for use with combustible or noncombustible penetrants in cored holes within concrete floors. Device shall consist of galvanized steel sleeve lined with an intumescent strip, an extended rectangular flange attached to one end of the sleeve for fastening to concrete floor, and neoprene gasket.
- F. Firestop Board: Non-curing, re-penetrable materials used for large size/complex penetrations



- G. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- H. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- I. Intumescent Putties: Non-hardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- J. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- K. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a non-shrinking, homogeneous mortar.
- L. Blocks/Plugs: Intumescent flexible block/plug suitable for reuse in re-penetration of openings. Blocks shall allow up to 12" of unreinforced annular space.
- M. Tub Box Kit: Cast-in place pre-formed plastic tub box kit with three support legs for use with drain piping assembly associated with bathtub installations.
- N. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, non-shrinking foam.
- O. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and non-sag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of non-sag grade for both opening conditions.

PART 3 - EXECUTION

3.1 GENERAL

- A. Refer to DDC General Conditions for execution requirements.
- B. Deliver materials to site in original unopened containers or packages bearing the manufacturer's name, brand designation, product description and U.L. Classification Mark.
- C. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job site.
- D. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.
- E. Comply with recommended procedures, precautions or remedies described in Material Safety Data Sheets as applicable.



3.2 EXAMINATION

- A. Examine areas and conditions under which work is to be performed and notify the Contractor in writing of conditions detrimental to proper and timely completion of the work.
- B. Verify that openings are properly sized and in suitable condition to receive the work of this section.

3.3 PREPARATION

- A. Clean substrate of dirt, dust, grease, oil, loose materials, rust or other matter that may affect the proper fitting or adhesion of the firestopping materials.
- B. Clean metal and glass surfaces with a non-alcohol solvent.
- C. Coordinate construction of openings, penetrations and construction joints to ensure that the fire stop systems are installed according to specified requirements.

3.4 INSTALLATION

- A. Install firestop materials as indicated in accordance with design requirements and manufacturer's instructions.
- B. Seal all holes or voids made by penetrations to ensure an air, smoke and water-tight seal.
- C. Consult with the Commissioner and damper manufacturer prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
- D. Firestopping may be required by other Subcontractors under related sections of the project specifications. Identify all locations requiring firestopping and coordinate the work of this section with work performed under other sections of the project to provide a uniform system of firestopping.
- E. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.
- F. Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation.
- G. Firestop systems do not re-establish the structural integrity of load bearing partitions. Contractor shall consult the Commissioner prior to penetrating any load bearing assembly.
- H. Firestop systems are not intended to support live loads or traffic. Contractor shall consult the Commissioner if he has reason to believe these limitations may be violated.



3.5 FIRESTOPPING

- A. Insulated Cold Pipes
 - 1. Install a pipe sleeve with an inside diameter large enough to include the specified thickness of insulation.
 - 2. Eliminate insulation for depth of wall and fill space between with firestop expanding foam leaving sufficient space at each end of sleeve for proper depth of firestop, unless the UL tested system being used does NOT require the removal of any pipe insulation to restore the rating of the penetration.
 - 3. Install firestop material at each end of sleeve to form a U.L. approved system.
 - 4. Insulate pipe on each side of wall and caulk all around insulation at joint of wall and insulation.
- B. Hot Pipes (Up to 220°F)
 - 1. Install a pipe sleeve with an inside diameter large enough to include the specified thickness of insulation.
 - 2. Eliminate insulation for depth of wall and, using section of specified insulation as backing, install proper depth of firestop material on each end of sleeve to form a U.L. approved system, unless the UL tested system being used does NOT require the removal of any pipe insulation to restore the rating of the penetration.
 - 3. Insulate pipe on each side of wall and caulk all around insulation at joint of wall and insulation.
 - 4. Weld a 20 gauge sheetmetal expansion compensator, as shown on the Drawings, to the Compensator to be formed "U" shape 2" wide and of sufficient length so as to be 6" above insulation. Pre-compress compensator, fill compensator with 6 lb. density fiberglass insulation.
 - 5. Install specified insulation on each side of wall up to expansion compensator.

END OF SECTION 23 02 00



Department of Design and Construction

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SECTION 23 05 13 ELECTRIC MOTORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Electric Motors.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Shop Drawings: Submit electric motor characteristics with each equipment submission.
- B. Product Data: Manufacturer's latest published data for materials, equipment, accessories and installation.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Motor efficiency is Guaranteed Minimal Efficiency according to NEMA Standard MG-1-12.53a when tested in accordance with IEEE Standard 112.

1.6 GUARANTEE

A. Contractor shall provide one (1) year guarantee in accordance with DDC Addendum to the General Conditions, Schedule B.



PART 2 - PRODUCTS

2.1 ELECTRIC MOTORS

- A. Provide high efficiency electric motors for driving the mechanical equipment. Motors to be of proper power, construction and speed to suit the specified makes of equipment; if other makes of equipment are accepted, the proper adjustment of motor speed, power, and work of Division 26 must be included without additional cost to the City of New York.
- B. 1/2 horsepower and larger motors to be rated at 208 volts for operation on 208 volt, 3 phase, 60 hertz, alternating current systems, except as otherwise noted. 1/3 horsepower and smaller motors to be rated at 115 volts for operation on 120 volt, single phase, 60 hertz, alternating current systems, except as otherwise noted.
- C. Motors to be of constant speed, squirrel-cage type. Single phase motors to be capacitor start, induction run, or split phase type as approved for the service. Motors over 100 horsepower to be suitable for operation with reduced-voltage auto-transformer type starters.
- D. All 1/2 horsepower and larger motors to have Class B insulation suitable for ambient temperature of 40°C. when operated at 115% load.
- E. All motors to be of quiet operation, guaranteed to fulfill the specified requirements without producing any sound audible outside of Machine Rooms. All belt connected motors to have adjustable bases and set screws to maintain proper belt tension; provide proper belt guards.
- F. All motors and accessories to comply in all respects with NEMA standards.
- G. Coordinate the NEMA type of each motor with the torque and inertia load of the equipment served, and the inrush characteristics of the motor with the starter selection, so that all items furnished constitute a properly related package. No motor to operate in the service factor range.
- H. Cooling tower motors to be TEFC; others to be drip-proof construction. Motors 1 horsepower or larger to have encapsulated stator windings of the epoxy or silicone type.
- I. Fan motors to be capable of accelerating their respective fans from 0 revolutions per minute to design or synchronous revolutions per minute within a maximum of 10 seconds. Submit for approval curves which plot time versus revolutions per minute for the particular motor and fan combination.
- J. All motors used in variable speed applications to be suitable for use with variable frequency drives.
- K. Motorized equipment rated at more than 1000 watts to have a power factor not less than 95 percent under rated nameplate conditions. Provide corrective devices where required to achieve this.
- L. Provide thermistor protection for windings on all motors 25 horsepower and above. Where motors are controlled by individual motor starters, provide relays for installation under Division 26. Relays in "motor control centers" to be provided by the Contractor furnishing the motor control centers.
- M. All vertical motors 150 horsepower and above to be provided with bearing temperature detectors on thrust bearing. Provide contactors and circuitry to give remote alarm at temperatures above 175°F.



N. All motors operated on variable frequency drives shall be equipped with maintenance free, conductive micro fiber, shaft grounding ring with a minimum of two rows of circumferential micro fibers to discharge damaging shaft voltages away from bearings to ground. Shaft grounding ring to be installed as per manufacturer's recommendation.

2.2 MANUFACTURERS

- A. General Electric
- B. Marathon
- C. Lincoln
- D. Or approved equal

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 WIRING

- A. Wiring between motor and controllers will be coordinated with Division 26.
- B. Review Division 26 and section 23 09 23 for required accessories, interlocks, etc. Failure to fully coordinate this item with the other Divisions in no way relieves Contractor from providing a complete, functional, and coordinated system as described.

END OF SECTION 23 05 13


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SECTION 23 05 19 METERS AND GAUGES FOR HVAC PIPING AND DUCTWORK

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.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Thermometers and Temperature Wells.
- B. Hydronic Pressure Gauges.
- C. Test Plugs.
- D. Air Pressure Gauges.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Submit an overall schedule of instruments to be utilized for the project indicating service and instrument model number.
- B. Submit a line-by-line statement of compliance, meeting the intent, non-compliance or not, available for each clause of this specification.
- C. Product Data: Submit manufacturer's latest published data for instrument types, materials, accessories and installation.
- D. Shop Drawings: Submit shop drawings of instrument display boards, along with other shop or field fabricated installations.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Instruments are to be factory calibrated for the temperature and pressure of the systems in which they are installed.
- C. Instruments to be industrial quality.

PART 2 - PRODUCTS

2.1 THERMOMETERS AND TEMPERATURE WELLS

- A. Provide duct thermometers of the dial face type, 3" diameter, bimetal hermetically sealed. Accuracy is to be factory calibrated to $\pm 1^{\circ}$ F, for the average temperature of the system in which it is installed. Construction to be stainless steel with external calibration adjustment.
- B. Provide pipe insertion thermometers of the 9" blue liquid reading scale, 2°F increments separable socket, adjustable angle with brass socket . Provide the following socket lengths:
 - 1.

Pipe Size	Insertion Length
4" and 5"	21/2"
6" and 8"	5"

- C. Provide pipe surface mount 2" diameter thermometers of the strap on, spring held type with insulating cup. Spring shall be stainless steel shall be heat-treated bimetallic.
- D. Provide thermometers with ranges as follows:
 - 1. Duct Systems: 0° to 160° F.
 - 2. Hot Water Systems:

Glass: 30° to 240°F Dial: 50° to 300°F

- E. Manufacturers
 - 1. Weiss
 - 2. Trerice
 - 3. Ashcroft



4. Or approved equal

2.2 TEST PLUGS AND KITS

- A. Provide test plugs ¹/₂" NPT made of brass body and cap with Nordel core.
- B. Provide kit consisting of:
 - 1. (1) $\frac{1}{4}$ " NPT pressure gauge with minimum 4" dial face with a range of 0 psi to 150 psi.
 - 2. (1) $\frac{1}{4}$ " NPT compound gauge with minimum 4" dial face with a range of -15 psi to +30 psi,
 - 3. (2) Ball valves, (1) needle valve, (3) $\frac{1}{4}$ coupling adaptors, (3) $\frac{1}{2}$ x $\frac{1}{4}$ bushings,
 - 4. (3) ³/₄" x ¹/₄" bushings, (3) 3-foot long flexible hoses with female threaded swivel couplings, auxiliary test cock, (1) stainless steel 1" dial face stem thermometer minimum 4" long with a range of 0° to 220°F, (1) adjustable angle stainless steel stem thermometer with minimum 3" dial face with 4" stem with a range of 0° to 250°F.
 - 5. A shock resistant molded plastic case with foam inserts and carrying strap.

C. Manufacturers

- 1. Test Plugs and Kits
 - a. MG Piping Products
 - b. Ernst
 - c. Weksler
 - d. Gage IT, Inc.
 - e. Or approved equal

PART 3 - EXECUTION

3.1 GENERAL

- A. Refer to DDC General Conditions for execution requirements.
- B. Provide local panel for mounting of duct thermometers located next to air handler which it serves. Locate panel so that length of capillary tubing is held to a minimum. Mount panel on kindorf fastened securely to structure. Thermometers to be provided in each system as follows:
- C. Upstream of each heating coil bank. Range 0 100F
- D. Downstream of each heating coil bank. Range 0 160F



- E. Upstream of each cooling coil bank. Range 0 100F
- F. Downstream of each cooling coil bank. Range 0 100F
- G. At each return air fan inlet. Range 0 100F
- H. At each supply air fan discharge. Range 0 160F
- I. At each supply air fan inlet. Range 0 160F
- J. At each outside air intake. Range -40 to 160F
- K. Where shown on Contract Documents.

3.2 THERMOMETERS

- A. Provide pipe thermometers and thermometer wells in the inlet and outlet at each of the following locations:
 - 1. Hot water coil.
 - 2. Where shown on the Contract Documents.

3.3 TEST PLUGS

A. Test plugs to be provided at inlet and outlet of each water coil.

3.4 PRESSURE GAUGES

- A. Provide pressure gauges at the following locations:
 - 1. Upstream and downstream of all coils, strainers, controls valves, steam boiler, and cooling tower.
 - 2. Where shown on contract drawings.

3.5 AIR PRESSURE GAUGES

- A. Provide air pressure gauges at the following locations.
 - 1. Upstream and downstream of all filter banks, coils.

3.6 RECORDING INSTRUMENTS

- A. Install instruments flush mounted on a 10 gauge steel display panel complete with supports and braces. Submit the entire panelboard and arrangement for approval prior to fabrication.
- B. Locate measuring instruments at the point of measurement with a signal transmitted to receiving instruments, for indicating and recording, mounted on the display panel.

END OF SECTION 23 05 19



SECTION 23 05 23 VALVES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Gate Valves.
- B. Globe Valves.
- C. Ball Valves.
- D. Automatic Flow Control Valves.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Valve List: Figure numbers and catalog cuts of proposed valves.
- B. Product Data: Manufacturer's latest published data for materials, intended service and installation.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Valves and valve construction to be suitable for the pressure, temperature, and fluid quality of the service in which they are to be used.

- C. All valves to be in accordance with ANSI, AWWA, ASTM, MSS-SP-70 & 80 (Manufacturers Standardization Society), and ASME standards and specifications.
- D. Minimum test pressure for all valves to be 1.5 times maximum system working pressure unless noted otherwise.
- E. Provide butterfly valves suitable for dead end service and constructed of high quality industrial design.

1.6 GUARANTEE

A. Contractor shall provide one (1) year guarantee in accordance with DDC Addendum to the General Conditions, Schedule B.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide valves of the same manufacturer throughout where possible.
- B. Provide valves with manufacturer's name and pressure rating clearly marked on the outside of body.
- C. Provide valves suitable for connection to adjoining piping as specified for pipe joints.
- D. All valves to be full pipe size unless noted otherwise.
- E. Provide all valves used for future connection with lockable handles.

2.2 GATE VALVES

- A. 2" and smaller valves with rising stem, screwed bonnet, inside screw and wedge gate. Bronze body and trim with screwed ends for steel piping and sweated ends for copper piping.
- B. 2¹/₂" and larger valves with rising stem, bolted bonnet, outside screw and yoke, wedge gate, iron body with bronze trim and flanged ends for steel piping and bronze body for copper piping.
- C. Gate valves to be backseating and suitable for repacking under pressure. Packing to be non-asbestos.
- D. Manufacturers
 - 1. Grinnell
 - 2. Crane
 - 3. Hammond
 - 4. Or approved equal



2.3 GLOBE VALVES

- A. Use for throttling in water systems.
- B. 2" and smaller valves bronze body and trim with rising stem, screwed bonnet with screwed ends for steel piping and sweated ends for copper piping.
- C. Globe valves to be suitable for repacking under pressure. Packing to be non-asbestos.

D. Manufacturers

- 1. Grinnell
- 2. Crane
- 3. Hammond
- 4. Or approved equal

2.4 BALL VALVES

- A. Use for stop, isolation and as drain valves, in water systems up to 200°F and pipe sizes to 3".
- B. Provide ball valves of the bronze top-entry body type, having a straight-through full port flow passage. Design to permit disassembly without removing body from line.
- C. Construct seats and all gland packing of Teflon. Lever handle to be vinyl covered. Body to be 2-piece screwed end for steel piping and sweated end for copper piping.
- D. Provide lever for quarter turn operation; lever to indicate open or closed position.
- E. When used as drain valves, provide with hose thread and brass cap with chain. Cap to be rated for full system pressure.

F. Manufacturers

- 1. Apollo
- 2. Nibco
- 3. Stockham
- 4. Or approved equal



2.5 BUTTERFLY VALVES

- A. Use for stop and isolation in water systems up to 200°F and pipe sizes 2½" and larger.
- B. Butterfly valves to have ductile iron lug body, 316 stainless steel stem with bronze bushings and aluminum bronze disc.
- C. The stem journals will be a multiple seal design providing for completely independent seals. The stem disc assembly will be such that the need for pins, screws or bolts is not required. Positive stem retention to be provided to permit removal of handle or actuator while under full operating pressure.
- D. The valve seats to consist of replaceable resilient elastomer.
- E. Valves to size 6" to be supplied with multi-position handles; size 8" and over to be supplied with enclosed worm gear operator.
- F. Valve body to be full-lug pattern to comply with MSS-SP-67 and be compatible with ANSI pattern flanges of appropriate pressure rating.
- G. Manufacturers
 - 1. Grinnell
 - 2. Jamesbury
 - 3. Centerline
 - 4. Or approved equal

2.6 AUTOMATIC FLOW CONTROL VALVES

- A. Provide automatic pressure-compensating flow control valves with extended valve body and dual temperature/pressure test ports. Provide performance certification of valves by an independent laboratory to the Commissioner.
- B. Valve to be manufactured in one piece and to consist of ground joint union, flow control and test plugs.
- C. All valves to be factory set to control the flow rate within 4 percent of the selected rating over an operating pressure differential of at least 10 times the minimum required for full flow conditions.
- D. Valves to be brass body and stainless steel or diaphragm orifice plate internal construction with threaded or sweat connections.
- E. Provide all valves with unions to allow field exchange of internal components without removing the valve body from the pipeline.
- F. Mark all valves in a permanent manner to show direction of flow and flow rate.



- G. Provide valves rated for a minimum of 350 psi, or as necessary to meet the design conditions of the piping system.
- H. Provide test plugs with dual valve cores for pressure and temperature monitoring.
- I. Confirm the valve design flow rate by establishing that the pressure drop is within the valves' specified pressure range.
- J. Manufacturers
 - 1. Autoflow
 - 2. Griswold
 - 3. Bell & Gossett
 - 4. Or approved equal

2.7 VALVE LIST

- A. The following is a listing of representative figure numbers by service, indicative of the product quality required.
- B. Water Services

Service	Туре	Size	Nibco Fig. No.	DeZurik Fig. No.
50 psi	Globe	1½ to 2 in.	T-235Y	-
	Globe	21/2 to 10 in.	F-718B	-
	Plug	21⁄2 to 24 in.	-	118
	Gate	To 2 in.	T-135	-
	Gate	21⁄2 to 24 in.	F-617-O	-
	H.P. Ball	To 2 in.	-	551
	H.P. Butterfly	21/2 to 36 in.	-	BHP-L1
	Check-Swing	To 2 in.	Т-433-В	-
	Check-Swing	21/2 to 12 in.	F-918B	-
	Check-Silent	All	F/W 910/960	-



PART 3 - EXECUTION

3.1 GENERAL

- A. Refer to DDC General Conditions for execution requirements.
- B. Install valves so that they are accessible for repacking.
- C. Install with stem vertical and handle up wherever possible, never with stem below horizontal position.
- D. Install with operating clearance for handle and stem.
- E. Install isolation valves on equipment so that valve and piping do not interfere with equipment removal or maintenance. Install unions or flanges on equipment side of valves.
- F. Provide 1" drain valves with threaded ends for hose connections at drain points, at main shutoff valves, low points of piping systems, bases of vertical risers, and at equipment.
- G. Provide required manual or automatic vent valves at high points of piping systems to facilitate venting of air and to ensure quiet operation.
- H. Provide renewable bronze seat rings and bronze spindles for cast iron body valves.
- I. Provide chain operated sheaves and chains for all valves which are more than 8 feet above the floor in Mechanical Equipment Rooms.
- J. Furnish and install other valves, check valves, cocks, etc., as required for the complete and proper valving of the entire installation.
- K. Install butterfly valves in horizontal piping with stem in the horizontal position so that bottom of disk lifts in the direction of flow.

END OF SECTION 23 05 23



SECTION 23 05 29 HANGERS, ANCHORS AND SUPPORTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Match Pipe Hangers and Supports.
- B. Trapeze Pipe Hangers.
- C. Thermal-Hanger Shield Inserts.
- D. Fastener Systems.
- E. Pipe Stands.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Shop Drawings: Submit details of pipe hangers, anchors and supports for each pipe size and pipe service. Submit details of support methods and point loadings, and anchor reactions. Include the following:
 - 1. Dimensions
 - 2. Construction details of hangers, inserts, anchors and guides
 - 3. Materials
 - 4. Maximum Load

- 5. Locations
- 6. Recommended installation procedures

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Hangers and supports to be constructed and applied according to the following standards:
 - 1. Manufacturer's Standardization Society MSS SP-58, SP-69 and SP-89.
 - 2. Power Piping Code, ANSI B31-1.

C. References

- 1. Publications, codes and standards listed below form a part of this specification to the extent referenced.
 - a. International Building Code (IBC)
 - 1) Chapter 16 Structural Design
 - 2) Chapter 17 Structural Tests and Special Inspections
 - b. ASCE 7-05, Chapter 13, Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers (ASCE).
 - c. ACI 318, Building Code Requirements for Structural Concrete, American Concrete Institute (ACI).

PART 2 - PRODUCTS

2.1 **PERFORMANCE REQUIREMENTS**

- A. Engage a qualified professional engineer, licensed in the State of New York, as defined in Section 014000 "Quality Requirements," to design trapeze pipe hangers and equipment supports.
- B. Structural Performance: Hangers and supports for HVAC piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
 - 1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
 - 2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

2.2 HANGERS AND SUPPORTS

A. Provide hangers of heavy construction suitable for the size of pipe to be supported. All materials to be of steel, except rollers which are to be of wrought or malleable iron. Hangers for pipes up to and including 5



inches to be adjustable swivel ring, split ring, wrought pipe clamp, or adjustable wrought clevis type. Hangers for pipes 6 inches and above to have 2 rods and cross-rod with cast iron pipe roll complete with adjustable sockets and nuts.

- B. Support vertical piping with double bolt riser clamps attached to the pipe, resting on the floor slab. In general, use one clamp for each two floors and one clamp at each floor for copper tubing. Where pipes are in open shafts, provide forged steel bar brackets fixed to wall.
- C. Support vertical piping risers on base elbow supports. Supports to be no less than one pipe size smaller than riser.
- D. The following tables will establish a minimum level of acceptance for pipe hangers, supports and attachments.

Service	Hanger Type	Anvil Figure No.	Maximum Pipe Size
Uninsulated Steel	Clevis	260	5"
Uninsulated Copper	Clevis	CT-65	4"
(Copper Pipe)	Riser Clamp	CT-121	4"
Concrete Insert		282	
Phillips Inserts		Phillips Insert	

1. Hangers and Supports

2. Structure Attachments

Туре	Anvil Figure No.	Maximum Rod Size (Inches)	Maximum Pipe Size
Beam Clamp	218	7/8	8"
Side Mount Clamp	225	7/8	8"
Channel Clamp	226	7/8	8"
Expansion Shield	281	7/8	8"

2.3 METAL PIPE HANGERS AND SUPPORTS

- A. Carbon-Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Galvanized Metallic Coatings: Pregalvanized, hot-dip galvanized, or electro-galvanized.



- 3. Nonmetallic Coatings: Plastic coated, or epoxy powder-coated.
- 4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
- 5. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.
- B. Stainless-Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
 - 3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.
- C. Copper Pipe and Tube Hangers:
 - 1. Description: MSS SP-58, Types 1 through 58, copper-plated steel, factory-fabricated components.
 - 2. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.4 TRAPEZE PIPE HANGERS

A. Description: MSS SP-58, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.5 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened Portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.6 PIPE STANDS

- A. General Requirements for Pipe Stands: Shop- or field-fabricated assemblies made of manufactured corrosionresistant components to support roof-mounted piping.
- B. Compact Pipe Stand:
 - 1. Description: Single base unit with integral-rod roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
 - 2. Base: Single, vulcanized rubber, molded polypropylene, or polycarbonate.
 - 3. Hardware: Galvanized steel or polycarbonate.
 - 4. Accessories: Protection pads.



2.7 MANUFACTURERS

- A. Anvil
- B. Pipe Shields Inc.
- C. Carpenter & Patterson, Inc.
- D. Or approved equal

PART 3 - EXECUTION

3.1 GENERAL

- A. Refer to DDC General Conditions for execution requirements.
- B. Support horizontal piping in accordance with the following schedule:

Pipe Size	Maximum Hanger Spacing	Rod Size
1" and smaller	6'-0"	3/8"
1¼" to 2"	9'-0"	3/8"
2½" to 3"	10'-0"	1/2"
4" to 5"	12'-0"	5/8"
6"	12'-0"	3/4"

- C. Provide hangers at each change in direction and both sides of each valve.
- D. Support hangers from concrete inserts or beam clamps. Furnish, locate and set such inserts and make sure that such inserts are in place when the concrete is poured. Construct inserts of malleable iron or pressed steel with space for rods of all sizes. Install all inserts for pipes 3" and larger in size with a reinforcing rod 5/8" in diameter run through a slot in the insert specifically provided for this purpose.
- E. If any pipe is to be hung in a space where no inserts have been provided, drill holes in the slab (subject to the Commissioner's prior approval) and provide rods and hanger attached to an approved fishplate or install double expansion shields connected by a 2" x 2" angle, from which the hanger rod is to be suspended. For pipe size 2" and under, use single shields but the hanger spacing defined hereinbefore to be reduced to 5'-0". The carrying capacity and size of each shield to be calculated on the basis of the spacing indicated above but the minimum size to be 3/8". Install additional shields of the same size so that the number of hangers are of adequate size to support the loads which they carry. Shields may be used in concrete slabs only.

- F. Regardless of the type of construction (i.e., concrete, concrete-deck-steel or other variations) take particular care to support all main lines and all large and heavy pipes in an approved manner, including the furnishing and installation of supplementary steel, if required. Supplementary steel sections are to be mill-rolled. Submit shop drawings, indicating support methods, point loadings to the building structure and hanger locations for review sufficiently in advance of concrete pouring schedules to permit evaluation, critique and any necessary changes to handling and support methods.
- G. Set all inserts for all pipes in ample time to allow concrete work to be performed on scheduled time.
- H. Hangers may be directly attached to steel beams of building construction, where they occur, if approved by the Commissioner. Smaller pipes may be suspended from crosspieces of pipe or steel angles, which in turn, are to be securely fastened to building beams or hung from building concrete construction by means of rods and inserts. The intention is to provide supports which, in each case, will be amply strong and rigid for the load, but which will not weaken or unduly stress the building construction.
- I. Provide approved roller support, floor stands, wall brackets, etc., for all lines running near the floor or near walls, which can be properly supported or suspended by the floors or walls. Pipelines near walls may also be hung by hangers carried from approved wall brackets at a level higher than the pipe.
- J. Do not hang piping from other piping. Support of hangers by means of vertical expansion bolts is not permitted.
- K. Wherever hangers using pipe rolls are used provide approved steel pipe covering protection saddles, spot welded to the piping at each hanger location. Vapor barrier jackets to cover shield.
- L. Anchor piping where shown on Drawings and as required to localize expansion or to prevent undue strain on piping and branches. Anchors to be entirely separate from hangers. All anchor designs to be submitted for approval and to include piping reactions which respective anchors are capable of supporting. Provide all indicated or required expansion loops.
- M. Support all lines of copper tubing individually by approved type hangers not more than 6' apart, or as shown on the drawings. Use hangers especially designed for copper tubing and of exact outside diameter of tubing. On hangers for covered tubing, use broad straps fitting outside of covering.
- N. Hangers used for cold piping will support the pipe without piercing the insulation. Use insulation shields to protect the insulation on cold pipes. Weld insulation protection saddles to insulated hot pipes, or any piping subject to axial movement, at roller supports. Space between pipe and saddle to be filled with insulation. Wherever fibrous glass pipe insulation is installed, install calcium silicate of equal thickness in lieu thereof, wherever hangers and insulation shields bear on insulation. Vapor barrier jackets to cover shields.
- O. For piping 4" and larger, support the elbows of the piping adjacent to the pumps with steel base elbow supports from the inertia base which pump is on to prevent loading heavy weights of piping on pump casing. Where inertia base is not provided, base elbows to be supported on floor with 1" neoprene pad.
- P. Support risers using base elbow supports, no smaller than one pipe size, mounted on 1" neoprene pad and concrete housekeeping pad. Submit pipe loads to the Commissioner for review.

3.2 ATTACHMENTS TO EXISTING STEEL DECK SLAB

- A. Attachments to existing steel deck to be limited to loads of 500 lbs. Heavier loads to be supported by supplementary structural steel connected to structural beams. Provide all required supplementary steel.
- B. Furnish and locate sleeves, cut holes through deck, reinforce deck, and set sleeves. Coordinate sleeve locations with deck subcontractor and electrical distribution. Submit drawings showing location of holes and proposed reinforcing for approval before proceeding with installation.

END OF SECTION 23 05 29



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SECTION 23 05 40 ACOUSTICS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Sound Attenuating Units.
- B. Sound-Lining.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Shop Drawings
 - 1. Sound attenuators.
 - 2. Sound-Lining.
 - 3. Certification that sound-lining meets erosion test method described in U.L. Publication No. 181 erosion test method.
 - 4. Non-hardening caulking.
 - 5. Certified Tests:
 - a. Submit certified test data from approved laboratory for pressure drop and insertion loss ratings:
 - 1) For square or rectangular attenuators: 24 in. x 24 in. cross-section attenuator.



- 2) Certification data for pressure drop and net insertion loss: based on tests of same attenuator.
- 3) Attenuators and tests: subject to inspection upon request.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Acoustical Criteria
 - 1. Noise levels, due to equipment and ductwork, to permit attaining sound pressure levels in all 8 octave bands in occupied spaces will conform to the following NC curves:
 - a. Lobbies, corridors, toilets, spaces within 10 feet of duct penetrations through walls and floors of fan rooms: NC-40.
 - b. Library: NC-25.
 - c. Conference Rooms:
 - 1) Small: NC-35.
 - 2) Large: NC-30.
 - d. All other spaces: NC-35.
 - 2. In addition to complying with the standard full octave band sound pressure levels based on NC criteria, acoustical performance of fans, air handling units, terminal devices, pressure regulating boxes, etc., when operating under design conditions shall not create any objectional pure tones. A pure-tone is defined as a peak sound pressure level which, when measured in 1/3 octave band frequencies, is higher by more than 5 dB's than adjacent 1/3 octave band frequencies.
 - 3. Comply with specified NC levels for radiated noise from pressure regulating boxes and/or duct breakout noise from floor-by-floor air handling equipment by having full octave band sound pressure levels of at least two contiguous frequencies tangent to the NC spectrum. In other words, a single frequency controlled NC environment is considered obtrusive and unacceptable.
- C. Mechanical Performance
 - 1. Air distribution system equipment; terminal device noise:
 - a. Maximum permissible sound-power levels in octave bands of airborne transmissions through the combination of grilles, registers, diffusers, and terminal units, or related pressure reducing devices, when operated in installed condition per Plans and Specifications is as follows:



Octave Bands	Maximum PWL re 10 ⁻¹² Watts				
	NC-30	NC-35	NC-40	NC-45	NC-50
1	58	62	66	68	70
2	52	56	60	63	66
3	45	49	54	58	62
4	41	46	51	56	61
5	38	43	48	53	58
6	37	42	47	52	57
7	36	41	46	51	56
8	37	42	47	52	57

- 2. Provide sound-lining in accordance with U.L. 181.
- 3. Provide all materials in accordance with NFPA, U.L. and state and local codes.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Sound Attenuators
 - 1. Factory prefabricated.
 - 2. Shell:
 - a. Galvanized Steel: Minimum No. 22 USSG.
 - b. Leakproof at pressure differential of 8 in. wg.
 - 3. Media:
 - a. Maximum Flamespread: 25.
 - b. Maximum Fuel Contributed and Smoke Developed: 50.
 - c. Minimum 4.5 lbs. per cubic foot density glass or mineral fiber packed under 5 percent compression.
 - d. Filler to be inert, vermin and moisture proof.



- 4. Internal Construction:
 - a. Galvanized Perforated Steel Baffles: Minimum 24 gauge.
- 5. Minimum Net Insertion Ratings:
 - a. Determined by duct-to-reverberant room test method at design airflow:

Band No.	Frequency No.	Dynamic Net Insertion Loss (db) Sound Trap Types					
		3L	5L	7L	3 S	5 S	7 S
2	125	5	7	13	12	18	20
3	250	9	13	18	24	16	35
4	500	14	21	28	28	40	45
5	1000	23	29	40	35	45	50
6	2000	24	39	47	35	46	48

- 6. Maximum Self-Generated Noise:
 - a. At 2000 ft. per minute face velocity and 4 sq. ft. face area:

Band No.	Band Center Frequency Hz	Sound Power Level (db) re 10 ⁻¹² watts Sound Trap Types
		L Series
2	125	51
3	250	51
4	500	49
5	1000	47
6	2000	50



Band No.	Band Center Frequency Hz	Sound Power Level (db) re 10 ⁻¹² watts Sound Trap Types
		S Series
2	125	49
3	250	49
4	500	47
5	1000	46
6	2000	49

b. At 1000 feet per minute face velocity and 4 sq. ft. face area:

B. Sound-Linings

- 1. Fiber glass.
- 2. Facing for Low Pressure Duct Liner:
 - a. Finish: Neoprene coated.
 - b. Stenciled NFPA 90.
- 3. Facing for duct liner downstream of local floor equipment room walls for a distance of 15 feet, and all ducts with velocities over 2500 FPM.
 - a. Finish: Perforated, 28 percent minimum open area, 24 gauge galvanized steel.
- 4. Thickness:
 - a. In ductwork: minimum 1 in. unless otherwise noted on drawings.
 - b. In plenums and in supply duct downstream of local floor equipment rooms: minimum 2 inches, 3 pound density, semi-rigid.
 - c. For sound-lining used as thermal insulation minimum thickness shall conform to requirements as specified in Section on Insulation.
 - d. Linear Diffuser Supply Plenums: Minimum ¹/₂", 1¹/₂ lb. density.
- 5. Minimum density: $1\frac{1}{2}$ lb. per cu. ft. in ducts.3 lb. per cu. ft. in plenums.
- 6. Flamespread: Maximum 25.

- 7. Fuel Contributed and Smoke Developed: Maximum 50.
- 8. Suitable for duct velocity of 4000 fpm. Meet erosion test method described in U.L. Publication No. 181.
- 9. Dynamic Loss Coefficient: Maximum 1.2.
- 10. K Factor: Maximum .25 Btu/hr./°F/in.
- 11. ASTM Noise Reduction Coefficient (NRC) for 1 inch thick lining: minimum 0.70.

C. Adhesive and Sealer

- 1. Adhesive: Similar to Benjamin Foster 85-20, John Mansville, 3M or approved equal.
- 2. Sealer: Similar to Benjamin Foster 85-20, John Mansville, 3M or approved equal.
- D. Non-Hardening Caulking
 - 1. Guaranteed to be permanently elastic.
 - 2. Similar to Tremco Polybutene, Benjamin Foster, 3M or approved equal.

2.2 MANUFACTURERS

- A. Sound Attenuators
 - 1. Industrial Acoustics Co.
 - 2. Vibro-Acoustics
 - 3. Mason
 - 4. Or approved equal.
- B. Sound-Linings
 - 1. Certainteed Products Corp.
 - 2. Johns-Manville Corp.
 - 3. Owens-Corning Fiberglas Corp.
 - 4. Or approved equal.



PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

- A. In order to obtain satisfactory acoustical performance of the terminal devices, complete the following:
 - 1. Proper duct connections at inlet to the terminals.
 - 2. Proper air-balancing.
 - 3. Avoid excessive dampering right at the terminals.
- B. Sound Attenuators
 - 1. Install in accordance with manufacturer's recommendations to obtain noted performance.

C. Sound-Linings

- 1. Adhere with 6 in. wide strips of adhesive.
 - a. 12 in. on centers.
 - b. At joints in lining.
- 2. In addition, secure with weld pins and 2 in. diameter washers on maximum 16 in. centers.
- 3. Coat all edges with sealer and caulk all butt joint seams.
- 4. Provide continuous sheetmetal edge protection at entering and leaving edges of lined duct sections and all joints.
- 5. Dimensions of lined ductwork are clear inside dimensions after lining has been installed.
- 6. Extent of Ductwork Sound-Linings:
 - a. Air-Conditioning Systems:
 - 1) Supply: Ductwork within mechanical equipment rooms not less than 25 feet from fan. Downstream of local floor MER walls.
 - 2) Return: Ductwork in mechanical equipment rooms but not less than 25 feet from fan.
 - b. Outside air supply systems a minimum distance of 25 feet downstream of fan.
 - c. Ventilation Systems: As indicated on Drawings.



- d. Exhaust Systems: As indicated on Drawings.
- e. Minimum lengths shown. Provide additional acoustical treatment as required to meet maximum permissible sound-power levels scheduled for equipment.
- 7. Sound-Lined Plenums: As indicated on Drawings.
- 8. All transfer and jumper ducts.
- 9. All linear diffuser supply plenums.
- D. Soundproofing of Construction
 - 1. Required for packing between ductwork and the following construction:
 - a. Equipment room walls.
 - b. Floors, except in shafts.
 - c. Sound barrier ceilings.
 - 2. Soundproofing:
 - a. Fill openings with fiber glass blanket or board for full depth of penetration.
 - b. Caulk each side of opening with non-hardening, non-aging caulking compound similar to Johns-Manville "Duxeal", Benjamin Foster, 3M or approved equal.
 - 3. Soundproofing may be deleted when firestopping material is provided.
- E. Ductwall External Soundproofing
 - 1. Extent:
 - a. Vane axial fans including their inlet and discharge transitions and sound attenuators.
 - b. Where indicated on Drawings.
 - 2. Soundproofing Material:
 - a. Fiber Glass:
 - 1) Board: 6 lb./cu. ft. density.
 - 2) Thickness: $\frac{1}{2}$ in. greater than height of ductwork angles, but 2 in. minimum.



- b. External Jacket:
 - 1) Lead Sheet:
 - a) Overlapped 2 in.
 - b) Secured with tape.
 - c) Weight: 1 lb. per sq. ft.
 - d) Thickness: 1/64 inch.

F. Tests

- 1. Sound Attenuators:
 - a. After Installation: Measure total system pressure before and after attenuators.
 - b. If pressure loss exceeds maximum static pressure scheduled on drawings: at no charge, replace attenuators and/or modify entrance and/or discharge aerodynamic flow to obtain specified performance.

END OF SECTION 23 05 40



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SECTION 23 05 48 VIBRATION ISOLATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Vibration isolation elements for piping and equipment.
- B. Equipment isolation bases.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Manufacturer's Data
 - 1. Catalog cuts and data sheets on specific vibration isolators to be utilized showing compliance with the specifications.
 - 2. An itemized list showing the items of equipment or piping to be isolated, the isolator type of model number selected, isolator loading and deflection, and reference to specific drawings.
 - 3. An itemized list of non-isolated equipment, piping, and ductwork to be seismically restrained.
 - 4. Written approval of the base design to be obtained from the equipment manufacturer.
- B. Shop Drawings
 - 1. Drawings showing equipment base constructions for each machine, including dimensions, structural member sizes and support point locations.

- 2. Drawings showing methods of suspension, support guides for piping and ductwork.
- 3. Drawings showing methods for isolation of pipes and ductwork piercing walls and floor slabs.
- 4. Concrete and steel details for bases including anchor bolt locations.
- 5. Provide installation instructions, drawings and field supervision to assure proper installation and performance.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Provide control of excessive noise and vibration in the buildings due to the operation of machinery or equipment, and/or due to interconnected piping, ductwork or conduit. Installation of vibration isolation units, and associated hangers and bases, under the direct supervision of the vibration isolation manufacturer's representative.
 - 1. All vibration isolators shall have either known undeflected heights or calibration markings so that, after adjustment, when carrying their load, the deflection under load can be verified, thus determining that the load is within the proper range of the device and that the correct degree of vibration isolation is being provided according to the design.
 - 2. All isolators shall operate in the linear portion of their load versus deflection curve. Furnish load versus deflection curves linear over a deflection range of not less than 50% above the design deflection.
 - 3. The ratio of lateral to vertical stiffness to be not less than 0.9 nor greater than 1.5.
 - 4. The 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 a whole by more than $\pm 10\%$.
 - 5. All neoprene mountings shall have a Shore hardness of 40 to 65, after minimum aging of 20 days or corresponding oven-aging.
- C. Adhere to ASHRAE Guide 1995 Chapter 50.
- D. Manufacturer of vibration isolation equipment has the following responsibilities:
 - 1. Determine vibration isolation sizes and locations.
 - 2. Guarantee specified isolation system deflection.
 - 3. Provide piping and equipment isolation systems as scheduled or specified.
 - 4. Guarantee specified isolation system deflection.
 - 5. Provide installation instructions, drawings and field supervision to assure proper installation and performance.



- E. Structural or civil engineer's stamp verifying design and calculations for seismic restraining systems used.
- F. Substitution of internally isolated mechanical equipment in lieu of the specified isolation of this Section must be approved for individual equipment units and is acceptable only if above acceleration loads are certified in writing by the equipment manufacturer and stamped and sealed by a Professional Engineer licensed in the State of New York.
- G. Purchased and/or fabricated equipment must be designed to safely accept external forces of 1.0g load in any direction for all rigidly and resiliently supported equipment, piping and ductwork without failure and permanent displacement of the equipment. Life safety equipment such as fire pumps, smoke exhaust fans, emergency generators and other life safety designated equipment must be capable of accepting external forces of up to 1.5g in any direction without permanent displacement or failure of the equipment.
- H. Vibration isolation firms having a minimum three (3) years' experience designing and installing vibration isolation and seismic restraint systems shall be qualified to provide the materials and installation required by this section.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All vibration isolation devices to be the product of a single manufacturer.
- B. Where spring isolation systems are described in the following specifications, the mounting assemblies shall utilize bare springs with the spring diameter not less than 0.8 of the loaded operating height of the spring. Each spring isolator shall be designed and installed so that the ends of the springs remain parallel. The minimum deflection from loaded operating height to spring solid height shall be 50% of the rated static deflection of the spring.
- C. Where neoprene-in-shear isolation systems are described in the following specifications, the mounting assemblies shall utilize bare neoprene elements with unit type design molded in oil resistant neoprene. The neoprene shall be compounded to meet the following:
 - 1. Shore hardness of 35 to 65 ± 5 , after minimum aging of 20 days or corresponding oven-aging.
 - 2. Minimum tensile strength of 2000 PSI.
 - 3. Minimum elongation of 300%.
 - 4. Maximum compression at 25% of original deflection.
- D. All mounting systems, including seismic restraints, exposed to weather and other corrosive environments shall be protected with factory corrosion resistance. All metal parts of mountings (except springs and hardware) to be hot dip galvanized. Springs shall be cadmium plated and neoprene coated. Nuts and bolts shall be cadmium plated.



2.2 VIBRATION ISOLATORS

- A. Refer to schedule sheets for vibration isolator types to be used.
 - 1. Type C: Spring hanger rod isolators to incorporate the following:
 - a. For suspended fans and pumps over 3 h.p. and all a/c units.
 - b. Spring element seated on a steel washer within a neoprene cup incorporating a rod isolation bushing.
 - c. Steel retainer box encasing the spring and neoprene cup.
 - d. Provide sufficient clearance between retainer box and spring hanger rod to permit minimum 15 degree allowable rod misalignment in any direction, total 30 degrees.
 - 2. Type F: Combination spring/elastomer hanger rod isolators to incorporate the following:
 - a. For all internally isolated floor mounted equipment.
 - b. Spring and neoprene isolator elements in a steel box retainer.
 - c. Other characteristics of steel box retainer and hanger rod swing as described for Type C isolators.
 - 3. Type G: Pad type elastomer mountings to incorporate the following:
 - a. For floor supported pipe risers and steam metering and reducing stations.
 - b. 0.750" minimum thickness.
 - c. 50 psi maximum loading.
 - d. Ribbed or waffled design.
 - e. .10" deflection per pad thickness.
 - f. 1/16" galvanized steel plate between multiple layers of pad thickness.
 - g. Suitable bearing plate to distribute load.

Type Super WMIIType 200NVECType ShearflexVMCI

- 4. Type H: Pad type elastomer mountings to incorporate the following:
 - a. Laminated canvas duck material and neoprene.
 - b. Maximum loading 1000 psi.



- c. Suitable bearing plate to distribute load.
- d. Minimum thickness, $\frac{1}{2}$ inch.

Type HLMIIType FabriflexVMCI

2.3 EQUIPMENT BASES

- A. Integral Structural Steel Base, Type B-1
 - 1. Reinforced as required to prevent base flexure at startup and misalignment of drive and driven units. Centrifugal fan bases complete with motor slide rails. Drilled for drive and driven unit mounting template.
 - 2. Type WF, M MII
- B. Concrete Inertia Base, Type B-2
 - 1. Concrete inertia bases to be formed in a structural steel perimeter base, reinforced as required to prevent flexure, misalignment of drive and driven unit or stress transferal into equipment. The base to be complete with motor slide rails, pump base elbow supports and complete with height saving brackets, reinforcing, equipment bolting provisions and isolators.
 - 2. Minimum thickness of the inertia base to be according to the following tabulation:

Motor Size (hp)	Minimum Thickness (in)
5-15	6
20-50	8
60-75	10
100-250	12
300-500	18

а
u



- b. Mason Type K, BMK, VMC, or as approved.
- C. Curb Mounted Base, Type B-3
 - 1. Curb-mounted rooftop equipment shall be mounted on spring isolation curbs that directly sit on roof construction and are flashed and incorporated into roof's membrane waterproofing system.
 - 2. All spring locations shall have removable waterproof covers to allow for spring adjustment and/or removal.
 - 3. All spring mounts shall be as Isolator Type B.
 - 4. Curb and spring mounting shall be capable of withstanding 110mph wind and 1.5g seismic loads.
 - 5. Curbs shall be Mason Type CMAB or RSC (depending on deflection required), VMCI, VEC or approved equal.

2.4 MANUFACTURERS

- A. Mason Industries, Inc. (MII)
- B. Vibration Mountings & Controls, Inc. (VMCI)
- C. Vibration Eliminator Co. (VEC)
- D. Or as approved equal

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 GENERAL

- A. Install in accordance with manufacturer's written instructions. Vibration isolators must not cause any change of position of equipment or piping resulting in piping stresses or misalignment.
- B. Isolate mechanical equipment from the building structure by means of noise and vibration isolators as scheduled on the Drawings and in these specifications.
- C. Piping and ductwork to be isolated must pass freely through walls and floors without rigid connections. Maintain 3/4 inch to 1¹/4 inch clearance around outside surfaces of piping or ductwork at penetration points. Pack this clearance space tightly with fiberglass, and caulk airtight after installation of piping or ductwork.
- D. Make no rigid connections between equipment and building structure that degrades the noise and vibration isolation system specified herein.



- E. Loop electrical circuit connections to isolated equipment to allow free motion.
- F. Bring to the Commissioner's attention prior to installation any conflicts with other trades which will result in unavoidable rigid contact with equipment or piping as described herein, due to inadequate space or other unforeseen conditions. Corrective work necessitated by conflicts after installation will be at the responsible contractor's expense.
- G. Do not install any equipment, piping or conduit which makes rigid contact with the "building" unless permitted in this Specification. Building includes, but is not limited to, slabs, beams, columns, studs and walls.
- H. Coordinate work with other trades to avoid rigid contact with the building. Inform other trades following work, such as plastering or electrical, to avoid any contact which would reduce the vibration isolation.

3.3 EQUIPMENT ISOLATORS

- A. Mount floor mounted equipment on 4" high concrete housekeeping pads over complete floor area of equipment. Mount vibration isolating devices and related inertia blocks on concrete pad. Key housekeeping pads with hair pins, as required, to be integral with structural slab.
- B. Support each fan and motor assembly on a single structural steel frame. Provide flexible duct connections at inlet and discharge of fans.
- C. Provide brackets to accommodate the isolator. Manufacturer to specify the vertical position and size of the bracket.
- D. Maintain a minimum operating clearance between the equipment frame on rigid steel base frame and the housekeeping pad of 1 inch. Maintain a minimum operating clearance between concrete inertia and base and housekeeping pad or floor of 2 inches.
- E. Temporarily support the structural steel or concrete inertia base with blocks or shims, as appropriate, prior to the installation of the machine or isolators.
- F. Install the isolators without raising the machine and frame assembly.
- G. Adjust the isolator after the entire installation is complete and under full operational load so that the load is transferred from the blocks to the isolator. When all isolators are properly adjusted, the blocks or shims will be barely free and shall be removed.
- H. Verify that all insulated isolator and mounting systems permit equipment motion in all directions. Adjust or provide additional resilient restraints to flexibly limit equipment startup lateral motion to ½ inch.
- I. Prior to startup, clean out all foreign matter between bases and equipment. Verify that there are no isolation short circuits in the base or isolators.


3.4 ADDITIONAL REQUIREMENTS

- A. Diagonal thrust restraint shall be as described for Type C hanger with the same deflection as specified for the spring mountings. The spring element shall be designed so it can be pre-set for thrust and adjusted to allow for a maximum of ¹/₄" movement at start and stop. Diagonal restraints shall be attached at the centerline of thrust. Restraint shall be Mason Type WB, VMCI, VEC or as approved.
- B. All piping and ductwork to be isolated shall freely pass through walls and floors without rigid connections. Penetration points shall be sleeved or otherwise formed to allow passage of piping or ductwork, and maintain ³/₄" to 1¹/₄" clearance around the outside surfaces. This clearance space shall be tightly packed with fiberglass, and caulked airtight after installation of piping or ductwork.
- C. Isolators shall be installed with the isolator hanger box attached to, or hung as close as possible to, the structure. Hanger rods shall be aligned to clear the hanger box.
- D. Isolators shall be suspended from substantial structural members, not from slab diaphragm unless specifically permitted.
- E. Structural steel for cooling tower or other equipment must support the equipment without excessive deflection. The structural steel support shall not be resonant with the isolation system resonant frequencies or the driving frequencies of the supported equipment.

3.5 INSPECTION

A. On completion of installation of all vibration isolation and seismic restraint devices herein specified, the local representative of the isolation materials manufacturer shall inspect the complete system and report in writing any installation errors, improperly selected isolation or restraint devices, or other faults that could affect the performance of the system. Contractor shall submit a report to the Commissioner, including the manufacturer's representatives final report, indicating all isolation reported as properly installed or requiring correction, and include a report by the Contractor on steps taken to properly complete the isolation work.

END OF SECTION 23 05 48



SECTION 23 05 53 SYSTEMS IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Valve Tags.
- B. Piping Identification.
- C. Equipment Identification.
- D. Duct Identification.
- E. Stencils.
- F. Warning signs, labels and tag. Charts and Schedules.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Shop Drawings: Submit valve tag chart; pipe, duct and equipment labels, paint and color chart.
- B. Product Data: Manufacturer's latest published data for materials, equipment and installation, including samples of all identification including but not limited to valve tags, equipment identification and piping identification, showing size of lettering.
- C. Valve Schedule: Include the proposed numbering scheme of all valves.

- D. Equipment Identification Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.
- E. Maintenance Manuals: Provide valve tag charts for inclusion in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Piping identification to be in accordance with ANSI/ASME A13.1 2007 (latest edition) as to sizes, color, lettering and background color.

PART 2 - PRODUCTS

2.1 VALVE TAGS

- A. Use tags 2-inch minimum diameter, fabricated of 0.032-inch brass, 0.025-inch stainless steel or 0.032-inch anodized aluminum. Attach tags with matching material chain, S-hook or split ring as appropriate.
- B. Stamped or engraved with 1/4-inch letters for piping system abbreviation per below and 1/2-inch numbers.
 - 1. Refrigerant: R.
 - 2. Hot Water: HW.
 - 3. Gas: G.

2.2 **PIPING IDENTIFICATION**

- A. Provide preprinted, color-coded bands with lettering indicating service and showing flow for all piping systems per ANSI/ASME-A13.1-2007.
- B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
- C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Contract Drawings; also include 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. Provide two arrows each side of text.
 - 2. Lettering Size: Size letters according to ANSI/ASME A13.1 for piping, but at least 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.



2.3 EQUIPMENT IDENTIFICATION

- A. Identify mechanical equipment by means of nameplates permanently attached to the equipment with the following characteristics:
 - 1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
 - 2. Letter Color: White.
 - 3. Background Color: Black.
 - 4. Maximum Temperature: Able to withstand temperatures up to 160 deg F (71 deg C) or higher. Temperature limits shall be suitable for the temperature of the equipment affixed to.
 - 5. Minimum Label Size: Length and width vary for required label content, but not less than 3 by 1 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-quarters the size of principal lettering.
 - 7. Fasteners: Stainless-steel self-tapping screws.
 - 8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- B. Label Content: Include equipment's Contract Drawing designation or unique equipment number.
- C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch (A4) bond paper. Tabulate equipment identification number, and identify Contract Drawing numbers where equipment is indicated (plans, details, and schedules) and the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.4 DUCT IDENTIFICATION

- A. Identify duct systems by means of labels permanently attached to the duct with the following characteristics:
 - 1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick.
 - 2. Letter Color: See label color coding section.
 - 3. Background Color: See label color coding section.
 - 4. Maximum Temperature: Able to withstand temperatures up to 160 deg F (71 deg C) or higher. Temperature limits shall be suitable for the temperature of the equipment affixed to.
 - 5. Minimum Label Size: Length and width vary for required label content, but not less than 3 by 1 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-quarters the size of principal lettering.
- 7. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- 8. Duct Label Contents: Include identification of duct service using same designations or abbreviations as used on Contract Drawings; also include duct size and an arrow indicating flow direction.
 - a. 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.

2.5 STENCILS

- A. Stencils for Piping: Not to be used.
- B. Stencils for Ducts:
 - 1. Lettering Size: Minimum letter height of 1-1/4 inches for viewing distances up to 15 feet and proportionately larger lettering for greater viewing distances.
 - 2. Stencil Material: Brass.
 - 3. Stencil Paint: Exterior, gloss, acrylic enamel. Paint may be in pressurized spray-can form.
 - 4. Identification Paint: Exterior, acrylic enamel. Paint may be in pressurized spray-can form.
- C. Stencils for Access Panels and Door Labels, Equipment Labels, and Similar Operational Instructions:
 - 1. Lettering Size: Minimum letter height of 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.
 - 2. Stencil Material: Brass.
 - 3. Stencil Paint: Exterior, gloss, acrylic enamel. Paint may be in pressurized spray-can form.
 - 4. Identification Paint: Exterior, acrylic enamel. Paint may be in pressurized spray-can form.

2.6 WARNING SIGNS, LABELS AND TAGS.

- A. Signs and labels:
 - 1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick.
 - 2. Letter Color: White.
 - 3. Background Color: Red.

- 4. Maximum Temperature: Able to withstand temperatures up to 160 deg F (71 deg C) or higher. Temperature limits shall be suitable for the temperature of the equipment affixed to.
- 5. Minimum Label Size: Length and width vary for required label content, but not less than 3 by 1 inch (64 by 19 mm).
- 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-quarters the size of principal lettering.
- 7. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- 8. Label Content: Include caution and warning information plus emergency notification instructions.

B. Tags:

- 1. Description: Preprinted or partially preprinted accident-prevention tags of plasticized card stock with matte finish suitable for writing.
- 2. Size: 3 by 5-1/4 inches minimum.
- 3. Fasteners: Brass grommet and wire.
- 4. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
- 5. Color: Safety-yellow background with black lettering.

2.7 CHARTS AND SCHEDULES

A. Valve Schedules: For each piping system, on 8-1/2-by-11-inch (A4) bond paper, framed for mounting. Tabulate valve number by floor, 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. Valve-tag schedule shall be included in operation and maintenance data.

2.8 MANUFACTURERS

- A. Brady, Seton, Electromark
- B. Marking Services Inc.
- C. Metalcraft Inc.
- D. Or approved equal



PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 PREPARATION AND GENERAL INSTALLATION REQUIREMENTS

- A. Clean piping, duct and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.
- 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 locations of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

3.3 VALVE TAGS

A. Black letters on a safety-white background as standard.

3.4 VALVE-TAG APPLICATION SCHEDULE

- A. Tag valves according to the following color scheme:
- B. Toxic and Corrosive Fluids: Black letters on a safety-orange background.
- C. Flammable Fluids: Black letters on a safety-yellow background.
- D. Combustible Fluids: White letters on a safety-brown background.
- E. Potable and Other Water: White letters on a safety-green background.
- F. Compressed Air: White letters on a safety-blue background.
- G. Any additional service groups that required based on the scope of the project may be submitted by the Contractor for review and approval.

3.5 PIPING SYSTEMS

- A. Identify all piping systems with color coded bands per ANSI/ASME A13.1-2007, sharply contrasting with background. Locate bands near strategic points, such as valves, items of equipment; changes in direction, wall penetrations, capped stub out for future connection and every 40 feet of straight runs. If necessary, paint a strip background of black or white to obtain contrast.
- B. Apply bands where they can be easily read and with their long dimension parallel to the axis of the pipe. Provide bands with backgrounds of different colors from the various service groups as follows:



- 1. Heating Water Piping: White letters on a safety-green background.
- 2. Refrigerant Piping: White letters on a safety-purple background.
- 3. Any additional service groups that required based on the scope of the project may be submitted by the Contractor for review and approval.
- C. All valves shall be properly tagged.
- D. Provide three schedules of all valves showing number, size, type and service of each valve, suitable for use with three ring binder. Provide separate list for each system.
- E. Drain piping serving mechanical equipment items for which the drain discharge is not visible from the equipment shall be marked in accordance with ANSI/ASME A13.1-2007 near the point of discharge indicating the item of equipment served.

3.6 EQUIPMENT

- A. Attach nameplates in a permanent manner in a location that will be clearly visible after installation is complete. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Mask all labels prior to field painting of equipment. Labels that are painted over will be replaced by Contractor at no cost to the City Of New York.

3.7 DUCTWORK

- A. Install self-adhesive duct labels with permanent adhesive on air ducts in the following color codes:
 - 1. Supply ducts: Blue background, black lettering
 - 2. Exhaust ducts: Green background, black lettering
 - 3. Return ducts: Yellow background, black lettering
 - 4. Outside Air ducts: White background, black lettering
- B. Labels shall indicate service / equipment / system and flow direction.
- C. Locate labels near points where ducts enter into and exit from concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system.
- D. Labelling to be done after insulation and other duct coverings are completed.
- E. Systems on which duct identification has been covered or is otherwise not visible will not be accepted.

3.8 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

3.9 ACCESS DOORS

- A. Fire / Fire Smoke Dampers
 - 1. Provide labels for damper access doors on the exterior by a label having letters not less than 0.5 inch in height reading: "FIRE/SMOKE DAMPER, SMOKE DAMPER or FIRE DAMPER", followed by an identification marking that is individual and unique to the damper accessed.

3.10 CHARTS AND SCHEDULES

- A. Prepare valve charts in a framed mounting behind a clear covering, such as glass, for protection.
- B. All identifying numbers will correspond to those numbers as shown on Contract Documents, such as riser numbers, equipment numbering, piping and duct symbols, etc.

END OF SECTION 23 05 53



SECTION 23 05 93 TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Pressure testing of new piping and new duct systems.
- B. Preliminary and final adjustment of all new water systems.
- C. Preliminary and final adjustment of all new air systems.
- D. Verification of required air and water quantities from existing systems, if applicable.
- E. Temporary pipe and duct connections, pipe caps, duct caps, tees, valves, dampers, etc. TAB subcontractor to coordinate with mechanical contractor.
- F. Performance testing of all HVAC systems.
- G. This section covers general duct, pipe and equipment testing. Additional specific equipment tests are covered in individual sections.
- H. Operation of mechanical systems as required for testing by other trades.
- I. Cooperate with independent agent performing controlled inspections and/or commissioning.
- J. Refer to commissioning specifications for additional scope.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."



1.4 SUBMITTALS

- A. Submit the following at least six (6) months prior to the execution of testing during the shop drawing phase:
 - 1. Complete brochure of proposed independent certified balancing firm, listing previous installations successfully balanced, length of time in business, names and qualifications of employees who will be assigned to the project, and list of instruments, equipment and elapsed time schedule to be used on the project.
 - 2. Procedures and recording forms for testing and adjusting each system and each item of equipment.
 - 3. Documentation of instrumentation calibration including date of calibration.
 - 4. Complete test and balancing plan listing all TAB procedures. For air and water systems the test and balancing plan submitted must be customized and reflect the actual systems within the project.
- B. Submit the following within two (2) weeks of completion of testing and adjusting.
 - 1. Submit six (6) certified copies of each complete testing and adjustment report to the Commissioner for review and send two (2) copies of the report to the City of New York. The Contractor shall submit individual testing and adjustment reports for each individual air distribution system, each return and exhaust system, and each pumping system within two (2) weeks after completion of the testing and adjustment of each system.
- C. Inspection reports: List all system deficiencies found.
- D. Submit a statement of compliance or non-compliance with this specification section.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Testing
 - 1. SMACNA 2002 Testing, Adjusting and Balancing.
 - 2. ANSI/ASME B31.9 2008; Chapter VI Part 937.
 - 3. ANSI/ASME B31.1 2010; Power Piping Code.
 - 4. NYC Building Code.
- C. Balancing
 - 1. AABC 2002 National Standards; Air and Hydronic.
 - 2. NEBB 2005 Edition of the Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems.



- 3. SMACNA 2002 Testing, Adjusting and Balancing.
- D. During the progress of the work, make tests as specified herein and as required by the NYC DOB or Commissioner. Tests shall be conducted by the Mechanical Contractor as part of the work of this Division. Include all qualified personnel, equipment apparatus, and services required to perform the tests.
- E. Calibrate all instruments used for testing and adjusting within a period of six (6) months prior to testing and/or balancing. Certify instrument calibrations.

PART 2 - PRODUCTS

2.1 PRESSURE AND TEMPERATURE SENSING TAPS

A. Provide ¹/₂-inch pressure and temperature test plugs on the entering and leaving piping at all equipment and as indicated on the plans in order to complete the required system balancing. Coordinate with the mechanical contractor during the installation phase.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 TESTING

- A. General
 - 1. Provide a complete set of approved mechanical and electrical shop drawings and equipment and product submittals to the balancing subcontractor.
 - 2. Perform all tests required by Codes, Ordinances, and as specified herein, as well as demonstrations of operation for all equipment. Each final test to be witnessed by the Commissioner. Give a minimum of seven (7) days written notice before performing tests.
 - 3. Install all temporary and permanent equipment and instruments required for tests, as well as additional thermometer wells, gauge and instrument connections, at no additional cost to the City of New York.
 - 4. Perform preliminary tests and repair all leaks before notifying the Commissioner of final tests.
 - 5. Repair leaks, damage, or defects discovered during or resulting from tests or replace to a like-new condition. Remove leaky pipe joints, ductwork, etc., and replace with acceptable materials. Retest systems repaired.
 - 6. Maintain a log book of all tests, preliminary and final, showing dates, personnel, observers' initials, description of test, and test status. Provide updated log to Commissioner each month throughout the construction period. Initial log submitted to include listing of all anticipated tests.



- 7. Testing, balancing, and adjusting will not relieve the Contractor of the warranty requirements.
- 8. Furnish all fuel, water, and electricity required in performing the testing, balancing and adjustment of mechanical systems.
- 9. Clean all piping and ducts before testing.
- 10. Use calibrated test gauges with at least 4¹/₂" diameter dial. Gauge range not to be more than three (3) times test pressure.
- 11. Provide and demonstrate operation of all test equipment and apparatus required for the complete testing and inspection of all systems at such time and locations as may be directed by the Commissioner and/or by the NYC DOB.
- 12. When freezing is a hazard, take all precautions necessary to prevent damage. Correct any and all damage that results due to freezing at no expense to the City of New York.
- 13. All tests shall be successfully completed and approved prior to the application of insulation and prior to the concealment of any portion of the system being tested.
- B. Piping
 - 1. Before covering or enclosing piping of various systems, all piping must be tested tight for 4 hours. Start and coordinate testing to be completed by 4:30 PM on the day started. The maximum test pressure not to exceed 500 psig. Tests may be witnessed by the Commissioner if he so desires, and pronounced satisfactory before pressure is removed.
 - 2. Equipment must be valved off during the test. Do not pressure test through new equipment if equipment pressure ratings cannot support the test pressure. Drain equipment and piping and protect against freeze-up anytime the ambient temperature is below freezing.
 - 3. Test piping within conduit prior to encasement of joints.
 - 4. Hydrostatically test water piping at 1.5 times actual maximum working pressure.
 - 5. Refrigerant Piping: Air test at 125% of maximum operating pressure but not exceeding 150 psig for four (4) hours.
- C. Ductwork
 - 1. Maximum system leakage shall not exceed 5% of system design capacity. When testing individual segments of a total system, prorate allowable leakage as follows:

Maximum Leakage (Surface Area of Test Section) x (System (Surface Area of System CFM)



- a. Test recording form to include above calculation. When all sections of a system have been tested, submit confirmation that the sum of individual section surface areas is equal to the total system surface area.
- 2. Pressure tests shall be performed with a test blower. Rig with orifice plate. Test ducts/casings with positive pressure on the discharge side of the system fan and under negative pressure on the suction side of the system fan. Include testing of flexible runouts.
- 3. During construction, individually test each completed riser, each completed horizontal distribution section and each field erected casing/plenum, as required below.
- 4. Test ductwork as follows:
 - a. Low Pressure Ductwork (From -2 to +2 inches H2O inclusive):
 - 1) Exposed or Accessible: Visual and audible check for leaks that can be heard or felt under normal operating conditions.
 - 2) Concealed (i.e., within shafts and above sheetrock ceilings): Pressure test at 2 inches H2O (pos. or neg. as required).
 - b. Medium Pressure Ductwork (Below -2 inches and above +2 inches H20): Pressure test at system pressure classification.
- D. Equipment and Systems
 - 1. Take vibration and alignment field measurements on every pump, fan and chiller over 1 HP. Readings shall include shaft alignment, equipment vibration, bearing housing vibration and foundation vibration. Building structure vibration shall be tested when directed by the Commissioner. Readings shall be made using portable IRD (or as approved) equipment capable of filtering out various unwanted frequencies. Maximum vibration at any point listed above, or where specified, shall not exceed 2 mils on air handling units and individual fans, and 2 mils on pumps, unless otherwise specified. Equipment manufacturers shall certify in writing that the field readings, which do not exceed the maximum specified, are acceptable to them.
 - 2. Take sound level readings at twelve (12) locations in the building as selected by the Commissioner. Take the readings on an Octave Band Analyzer in a manner acceptable to the Commissioner. Submit the test equipment data and reporting forms to the Commissioner for review at least three (3) months prior to the field testing. In order to reduce the ambient noise level, take the readings at night. Perform all tests in the presence of the Commissioner, if they so desire.



- 3. When each mechanical system is complete and functional, prove the capacity and performance of each item of equipment (i.e., fans.). Operate each item of equipment for a minimum of four (4) hours and record all associated operating data every 15 minutes (i.e., temperatures, flows, pressures, amps, volts, etc.). Verify all integral and external equipment controls and safeties are in proper working order. Complete system testing and demonstration to be done for both normal and emergency modes of operation. Commissioner and including Commissioning Agent, may witness final tests.
- 4. Assist Controls Subcontractor in demonstrating to the Commissioner, the proper operation of each control, monitor and alarm function of the Building Management System, and/or control system, along with all software routines. These functions and routines will be demonstrated from the front end and local panels under both normal and emergency power. Proper operation of battery back-up and downloading of software from the front end to the remote microprocessor panels will be verified. Coordinate with Controls subcontractor all final TAB readings to be incorporated into the Building Management System.
- 5. Demonstrate to the Commissioner, the proper operation of each control, monitor and alarm function of the control system, along with all software routines. Demonstrate these functions and routines from the front end and local panels under both normal and emergency power. Verify proper operation of battery back-up and downloading of software from the front end to the remote microprocessor panels.
- 6. Provide operation of all mechanical equipment required for systems testing by other trades (i.e., fuel oil systems, smoke exhaust systems, etc.).

3.3 ADJUSTMENT

A. General

- 1. Prior to start of air balancing, take traverse readings at all connections to building systems with all downstream dampers in fully open position and report results to the Commissioner. Provide assistance if air quantities are below that shown on drawings.
- 2. Prior to start of water balancing, take ultra sonic flow readings at all connections to building systems with all downstream valves in full flow position and report results to the Commissioner. Provide assistance if water quantities are below that shown on drawings.
- 3. After the entire installation has been completed, make required adjustments to balance valves, air vents, automatic controls, air dampers, air distribution devices, pressure reducing valves, fans, sheaves, etc., until performance requirements are met. Make these adjustments with equipment operating. In addition, repeat these adjustments for each of the remaining three seasons of the year. During such periods of adjustment prior to the date of acceptance of the mechanical systems, operate equipment.
- 4. Permanently mark the balanced position of each balancing valve and damper on the pipe or duct or insulation.

B. Water Balancing

1. Before any hydronic balancing work is done, install clean strainers, check proper pump rotation, proper control valve installation and operation. Verify that each system is adequately bled and vented, proper



system static pressure is available to assure a full system, flow meter and check valve is properly installed. Maintain throttling devices and control valves open at this time as required and appropriate.

- 2. After piping systems have been installed, tested, cleaned and flushed, complete with all pumps, piping, valves, coils, and other items as herein specified, make adjustments as required to deliver the water volumes at each coil and piece of equipment to within 5% of design flow as shown on the Drawings, or as required to properly balance the load throughout the conditioned areas. During balancing set control for full-flow through coils. Set automatic throttling valves in the full-open position. Close the bypass port on automatic 3-way valves. Confirm proper differential pressure settings at system by-pass station.
- 3. Each air handling unit with multiple coils shall have the flow through each coil balanced. Make adjustments in water volumes in a manner satisfactory to the Commissioner. Submit detailed balancing procedure and recording forms for the Commissioner's review months prior to commencing any water balancing work.
- 4. After water flow is adjusted, and with the temperature controls set to produce design cooling, measure and record all data necessary to compile a complete report to demonstrate the acceptability of the various mechanical systems.
- 5. Adjust flow through equipment and coils by means of pressure drop. Obtain curves from the various manufacturers indicating the relationship between flow and pressure drop through the coils and equipment. Take readings on calibrated test gauges.
- 6. For orifice plates record the pipe size, orifice size, flow factor, required differential pressure, final differential pressure, and calculated final flow quantity.
- 7. For venturi type, pitot tube, or other flow measuring devices, record the pipe size, manufacturer and size of device, and the direct reading of the differential pressure, and calculated final flow.
- 8. Upon completion of the water balance, reconcile the total heat transfer through all coils by recording the entering and leaving water temperatures and the entering and leaving air dry bulb and wet bulb temperatures. Adjust differential bypasses for the same pressure drop on full bypass as on full flow.
- 9. Do not perform adjustments until the entire system has been pressure tested, flushed and cleaned.
- 10. Record all system pressure and temperature readings.
- C. Air Balancing
 - 1. Adjust all air systems by AABC or NEBB certified balancing contractor acceptable to the Commissioner.
 - 2. Operate fan systems for as long a time as will be necessary to test air flow from openings, make necessary damper and other adjustments until even distribution is obtained, throughout the various systems, with the air quantities required at each outlet or inlet as shown on the Drawings. Make noise level measurements for the operation of mechanical equipment selected by the Commissioner in order to determine if the equipment produces excessive noise in occupied areas of the building.

- 3. Before any air balance work is done, test the system for duct leakage, install clean filters, check for correct fan rotation and equipment vibration, check automatic dampers for proper operation, and verify that all fire dampers are open.
- 4. Fans to be adjusted to deliver above system requirements to compensate for duct leakage.
- 5. Preliminary adjustment may be made prior to completion of systems; however, final balancing must be done with all systems completely installed and operating, including all air outlets and return grilles.
- 6. Record the pressure drop across the filters in air systems prior to balancing. Systems to be adjusted with clean filters.
- 7. Traverse main supply air ducts, using a pitot tube and manometer. Calibrate the manometer to read two (2) significant figures in all velocity pressure ranges. A main duct is defined as any of the following:
 - a. A duct serving five (5) or more outlets.
 - b. A duct serving two (2) or more branch ducts.
 - c. A duct serving a heating coil.
 - d. A zone duct from a VAV unit.
 - e. A duct emanating from a fan discharge or plenum and terminating at one or more outlets.
 - f. All supply and exhaust risers.
- 8. The intent of this operation is to measure by traverse the total air quantity supplied by the fan and to verify the distribution of air to zones.
- 9. Submit data in support of all supply fan deliveries by the following four (4) methods:
 - a. By summation of the air quantity readings at outlets.
 - b. By duct traverses of main supply ducts.
 - c. By rotating vane traverse across a filter or coil bank.
 - d. By plotting revolutions per minute and static pressure readings on the fan curve. Air density corrections must be indicated.
- 10. For return air and exhaust fans, the second and third methods listed above (b. & c.) can be omitted.
- 11. Inspect fan scrolls and remove objects or debris. Inspect coils and remove debris or obstructions. Verify that all fire dampers are open and control dampers are in their proper position.
- 12. Record the following design requirements for fans and fan motors from the design drawings and reviewed shop drawings:



- a. Manufacturer, model and size.
- b. Air quantities cubic feet per minute.
- c. Approximate fan speed revolutions per minute.
- d. Fan static pressure (total or external) inches of water.
- e. Outlet velocity feet per minute.
- f. Fan brake horsepower.
- g. Motor horsepower.
- h. Volts, hertz, amperes and service factor at design conditions.
- 13. Record the following data from fans and fan motors installed at the project:
 - a. Manufacturer, model and size.
 - b. Motor horsepower, service factor and revolutions per minute.
 - c. Volts, hertz, full load amperes and service factor.
 - d. Motor starter and heater size.
 - e. Equipment location.
- 14. Completely adjust fans and duct systems by the adjustment of sheaves, dampers, and other volume and diverting control devices, to obtain the air quantities indicated in the Contract Documents. Integral dampers in terminal outlets and inlets are not to be used for adjustment of duct branches. Adjust outside air and return air modulating dampers to admit the specified quantities of air under all cycles of operation. Adjust final air quantities within 5% of the design requirements. Balance air outlets with air pattern as shown on the Drawings.
- 15. Record the following test data for fans and fan motors installed at the project at final balanced conditions:
 - a. Fan speed revolutions per minute.
 - b. Fan suction, discharge and total static pressure (external or total) inches of water.
 - c. Static pressure drops across filters, dampers, coils, washers and eliminators in the supply fan casings in inches of water.
 - d. Motor operating amperes and voltage per phase at operating conditions.
 - e. Fan cubic feet per minute as required above.



- f. Calculated brake horsepower.
- 16. Prepare single line diagrams of duct systems indicating terminal outlets identified by number. List on data sheets all such outlets denoted by the same numbers, including the outlet size, "K" factor, location, cubic feet per minute and jet velocity. Submit this data for supply, return and exhaust air systems.
- 17. Adjust the outside air and return dampers to admit the required amounts of air under both summer and winter cycles. Record the outside, return and mixed air temperatures for both cycles after final adjustments.
- 18. Adjust the minimum, maximum, return and exhaust/spill air dampers so that the respective fans deliver the correct cubic feet per minute at all damper positions. Should the observed air quantities be less than 95% or more than 105% of the specified amount, change driving pulley ratio to make acceptable changes to obtain the specified or scheduled air quantities.
- 19. Balance and adjust supply air systems as follows:
 - a. Systems installed with trunk ducts only, with no air outlets, to be balanced by adding a volume damper at each end of the trunk duct (minimum of two (2) dampers per system if duct is looped). Make adjustments to the air handling units as required to deliver the volume of air within 10% of design flow at the static pressure and cold air supply temperature shown on the Drawings. Remove dampers and seal or re-cap openings after reports have been accepted by Commissioner.
 - b. Systems installed with main duct capped at wall of fan room will be balanced by installing an opposed blade damper at each capped connection. Make adjustments as required to deliver the volume of air within 10% of design flow at the static pressure and cold air supply temperature shown on the Drawings. Remove dampers and re-cap openings after reports have been accepted by Commissioner.
 - c. Systems installed partially complete will be balanced by installing a volume damper in duct allocated for remaining portion of system. Make adjustments as required to deliver the volume of air within 10% of design flow at the static pressure and cold air supply temperature shown on the Drawings. Remove damper and re-cap or seal openings after reports have been accepted by Commissioner.
 - d. Balance and adjust supply air systems installed in finished areas of the building (except for areas with inaccessible ceiling construction) as follows:
 - After duct systems have been installed complete with all grilles, dampers, ducts, coils, automatic temperature controls, and other items hereinafter specified, make the adjustments to the air handling units and all outlets as required to deliver the volume of air within 5% of design flow as shown on the Drawings with design cold duct temperatures. After the finished area is occupied, readjust the air volumes if required, to properly balance the cooling and heating loads throughout the conditioned areas.
 - e. Balance and adjust completed supply air systems installed in areas with inaccessible ceilings as follows:



- 1) After duct systems have been installed complete with all dampers, ducts, coils, and other items hereinafter specified, except for final connection to grille or air outlet, and prior to inaccessible ceiling installation, make adjustments, as required, to deliver the volume of air at each interior and perimeter air tap proportionally within 5% of design flow as shown on the Drawings.
- 2) After each duct system has been adjusted, securely lock each manual damper, splitter, spin-in damper, etc., with sheetmetal screws prior to installation of ceiling.
- 3) Submit balancing reports to the Commissioner for review and comment as specified hereinafter, prior to the installation of the inaccessible ceiling. Do not conceal duct system prior to the receipt of an air balance report which has been accepted by the Commissioner York for the system.
- 4) After ceiling installation, install each air outlet with air patterns as shown on the Drawings. Make final air balance adjustment by increasing or decreasing the air handling fan powered terminal unit fan rpm.
- 20. The air balancing subcontractor shall visit the project site as often as necessary prior to the start of balancing procedures to verify that the duct systems have been properly installed complete with all grilles, dampers, ducts, coils, etc., and that the return air paths through walls, grilles, lighting fixtures, and slot diffusers are completely open and unobstructed. The air balancing subcontractor shall also verify that adequate access to equipment and balancing devices has been provided and that the temporary plastic coverings on the lighting fixtures used for supplying conditioned air have been removed. The air balancing subcontractor shall submit a written report to the Commissioner within one (1) week after each visit.
- 21. For balancing air outlets, use a flow hood for the air balance. The instrument to be complete with a flow hood kit complete with flow hood tops specifically designed to accurately measure the air outlets specified for this project. The flow hood's accuracy and the instrument calibration for measuring the air flow from the air distribution device specified for the project must be verified in an independent testing laboratory acceptable to the Commissioner.
- 22. After all miscellaneous ventilation systems have been installed complete with all duct, grilles, louvers, dampers, fans, and other items as hereinafter specified, make adjustments, as required to deliver to volumes of air, or differential static pressures in the case of the pressurization fans, at each air inlet and/or outlet within 10% of design flow.

3.4 FINAL REPORT

- A. If the work is completed during the heating season, perform the final tests of cooling equipment the following summer; if completed during the summer, perform test on heating system the following winter.
- B. After each seasonal adjustment is made, prepare a detailed report and submit to the Commissioner for approval.



C. Demonstrate to the Commissioner, prior to acceptance by the City of New York, that all systems and/or equipment have been balanced and adjusted properly, and that the system and/or equipment is in compliance with the Contract Documents.

END OF SECTION 23 05 93



SECTION 23 07 00 INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Piping Insulation.
- B. Duct Insulation.
- C. Fire-rated duct wrap

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Shop Drawings: Submit list of insulation to be used for each service.
- B. Product Data: Manufacturer's latest published data for materials, "R" values and installation.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Comply with all requirements of ASTM for thermal and moisture transmission.

- C. Provide insulation (including insulation jacket or facing and adhesives used to adhere the facing or jacket to the insulation) with non-combustible material meeting Code requirements and fire and smoke hazard ratings as tested by procedure ASTM E-84, National Fire Protection Association 255, and UL 723, not exceeding flame spread 25 and smoke developed 50. Adhesives, mastics, cements, etc. shall not exceed the same component ratings. Foam glass insulation to be manufactured in accordance with ASTM C552.
- D. All insulating products and coverings to be U.L. listed.
- E. Insulation materials, including all weather and vapor barrier materials, jackets, fitting covers, and other accessories, shall be furnished and installed in strict accordance with project drawings, specifications and manufacturer's requirements.
- F. Insulation materials and accessories shall be installed in a workmanlike manner by skilled and experienced workers who are regularly engaged in commercial insulation work.

1.6 DELIVERY AND STORAGE OF MATERIALS

- A. All of the insulation materials and accessories covered by this specification shall be delivered to the job site and stored in a safe, dry place with appropriate labels and/or other product identification.
- B. The contractor shall use whatever means are necessary to protect the insulation materials and accessories before, during, and after installation. No insulation material shall be installed that has become damaged in any way. The contractor shall also use all means necessary to protect work and materials installed by other trades.
- C. Any installed or stored insulation material that has become wet, soiled or damaged because of transit or job site exposure to moisture or water shall be immediately removed from the job site.

PART 2 - PRODUCTS

2.1 **PIPE INSULATION**

- A. Materials
 - 1. When the temperature of a fluid falls within the following temperature ranges at any time during the system cycle, provide the insulation thickness indicated.

Insulation Thickness							
For Indicated Pipe Size Pipe Size							
Service	Service Temp. Range °F		<1"	1" to <1.5"	1.5" to <4"	4" to <8"	≥8"
Hot Water and glycol	141 to 200	Glass Fiber	1.5"	1.5"	2"	2"	2"
Hot Water and glycol	105 to 140	Glass Fiber	1"	1"	1.5"	1.5"	1.5"



Insulation Thickness							
For Indicated Pipe Size							
			Pipe Size				
Service	Temp. Range °F	Material	<1"	1" to <1.5"	1.5" to <4"	4" to <8"	≥8"
Water, glycol, brine, condenser water (Waterside Economizer)	40 to 60	Glass Fiber or Closed Cell	0.5"	0.5"	1"	1"	1"
Glycol, brine, Refrigerant	Below 40	Glass Fiber or Closed Cell	0.5"	1"	1"	1"	1.5"
Condensate drains above hung ceilings and in shafts	-	Glass Fiber or Closed Cell	0.5"	0.5"	0.5"	1"	1"
Domestic Fresh Water	-	Glass Fiber or Closed Cell	1"	1"	1"	1"	1"
Refrigerant hot gas (exposed)	Above 100	Glass fiber	0.5"2	0.5"	0.5"		

- B. Fiberglass Insulation: Fiberglass pipe insulation in equipment rooms and/or where exposed to be of the sectional type having 6 lbs./cu. ft. density. Thermal conductivity of fiberglass to be .23 BTU-in/hr.sq.ft °F at a mean temperature of 75°F.
- C. Closed cell Foam Insulation: Closed cell foam pipe insulation density to be 8 lbs/cu. ft.Thermal conductivity of closed cell insulation to be .245 BTU-in/hr.sq.ft °F at a mean temperature of 75°F.
- D. Calcium Silicate Insulation: Thermal conductivity of calcium silicate to be .32 BTU-in/hr.sq.ft °F at a mean temperature of 100°F
- E. Insulation Jackets

1.	Concealed pipes carrying fluids 105°F and above.	Factory applied white fire retardant all service jacket, (ASJ), stapled and banded. Pipes shall be banded with not less than 3 bands per section.
2.	Exposed pipes carrying fluids 105°F and above.	Factory applied white fire retardant all service jacket, (ASJ), with butt strips stapled and banded. Pipes shall be banded with not less than 3 bands per section.
3.	Pipes carrying fluids 60°F and below up to 14 inches.	Factory applied white fire-retardant vapor barrier all service jacket with self-sealing lap (ASJ) and butt strip. Ends of pipe insulation shall be sealed off at valves, fittings and flanges with Childers CP-33 or



Foster 30-33 vapor barrier mastic.

- 4. Pipes carrying fluids 60°F and below over 14 inches. Factory applied white fire-retardant vapor barrier all service jacket (ASJ) sealed with self-sealing lap. All circumferential joints shall be wrapped with a 3-inchwide strip of white fire-retardant jacket adhered with self-sealing lap. Ends of pipe insulation shall be sealed off at valves, fittings and flanges with Childers CP-33 or Foster 30-33.
- 5. Finish calcium silicate with glass lagging cloth adhered with Childers CP-50AMV1 or Foster 30-36 lagging adhesive.
- 6. Vapor barrier jacket permeability shall be 0.02 perms.
- 7. When multiple layers are required, all inner layer(s) shall be provided without all service jacket.
- F. Fittings, Valves and Flanges
 - 1. Factory pre-molded insulation fittings shall be of the same material and thickness as the pipe insulation for fittings, flanges and valves.
 - 2. Where factory pre-molded insulation fittings are not used, insulate fittings, flanges and valves with mitered segments of the same thickness and density as the adjoining pipe covering.
 - 3. On cold systems, particular care must be given to vapor sealing the fitting cover or finish to the pipe insulation vapor barrier. All valve stems shall be sealed with caulking to allow free movement of the stem but provide a seal against moisture incursion.
- G. Piping located outdoors and exposed to the weather shall be protected with the following weatherproof finishes:
 - 1. Metal jacketing shall be 0.016" minimum aluminum or stainless steel with moisture barrier, secured in accordance with the jacket manufacturer's recommendations. Joints shall be applied so they will shed water and shall be sealed completely with Foster 95-44 or Childers CP-76 metal jacketing sealant.
 - 2. UV resistant PVC jacketing may be applied in lieu of metal jacketing provided jacketing manufacturer's limitations with regards to pipe size, surface temperature, and thermal expansion and contraction are followed.
 - 3. Fittings shall be insulated as prescribed above, jacketed with preformed fitting covers matching outer jacketing used on straight pipe sections, with all joints weather sealed.
 - 4. On outdoor refrigerant lines, the insulation system shall be completely vapor sealed with vapor barrier mastic before the weather-resistant jacket is applied. The outdoor jacket shall not compromise the vapor barrier by penetration of fasteners, etc. Vapor stops at butt joints shall be applied at every fourth pipe section joint and at each fitting to prevent of water incursion.

2.2 DUCTWORK INSULATION

A. Glass Fiber Blanket

- 1. Glass fiber blanket insulation shall be insulated with 0.75 pcf density, FSK-faced fibrous glass duct wrap insulation having a k-value of .28 BTU-in/hr.sq.ft °F.
- 2. The duct wrap insulation shall consist of a blanket-type insulation composed of wool-type glass fibers firmly bonded with a thermosetting resin. Duct wrap material shall be factory-laminated to a scrim reinforced, foil-kraft (FSK) vapor retarder facing have a 2" stapling flange on one edge.
- 3. When installed in accordance with recommended installation procedures, duct wrap insulation shall provide installed R-values as follows:

Density	Labeled Thickness	Installed R-Value
.75PCF	1.5"	4.2
.75PCF	2"	5.6
.75PCF	2.125"	6.0
.75PCF	2.25"	6.5
.75PCF	2.5"	7.0
.75PCF	3"	8.5
1.0PCF	1.5"	4.5
1.0PCF	2"	6.1
1.5PCF	1.5"	4.8
1.5PCF	2"	6.4

- B. Fiberglass Duct Board
 - 1. Material to be high-density fiberglass duct board with foil kraft laminate facing, reinforced with scrim. Maximum thermal conductivity (K-value) at 75°F mean temperature to be 0.23 BTU-in/hr.sq.ft °F when tested in accordance with ASTM C518 or ASTM C177.

C. Application

Service	Material	Insulation Thickness
Heated or Cooled Supply Air Ducts, concealed in unconditioned spaces, including shafts and hung ceilings	Glass Fiber Blanket	2"
Heated or Cooled Supply Air Ducts, in hung ceilings used as Return Air Plenums	Glass Fiber Blanket	0.75"



Department of Design and Construction

Service	Material	Insulation Thickness
Heated and Cooled Supply Air Ducts exposed in unheated space	Glass Fiber Board	1.5"
Cooled Supply Air Ducts exposed in unconditioned space	Glass Fiber Board	1.5"
Return & Relief Air Ducts from heated or cooled spaces in unconditioned spaces including shafts and hung ceilings.	Glass Fiber Blanket	1"
Return and relief air ducts from heated or cooled spaces in exposed locations.	Glass Fiber Rigid Board	1"
Exposed Outside Air Intake Ducts & Plenums from intake louver to supply system.	Glass Fiber Rigid Board	1.5"
Raw Outside air ducts in shafts.	Glass Fiber Blanket	1.5"
Raw Outside air ducts in hung ceilings	Glass Fiber Blanket	2 layers – 1.5" each
Unused portion of louvers where blanked off with sheet metal	Glass Fiber Rigid Board	1.5"
Exhaust or Relief Air Ducts from automatic louvered damper to discharge at exterior openings	Glass Fiber Rigid Board	1"

D. Rigid Glass Fiber Board to be six (6) pound per cu. ft. density with factory applied white fire-retardant jacket (ASJ). Apply with mechanical fasteners. Seal all seams, joints, tears, penetrations and breaks with vapor barrier mastic to prevent moisture ingress.

2.3 FIRE-RATED DUCT WRAP

A. Fire Wraps

- 1. Fire wrap shall be approved for intended use by local jurisdiction.
- 2. Fire rated duct wrap shall be a flexible fire-resistant wrap consisting of an inorganic fiber blanket encapsulated with a scrim-reinforced foil.
- 3. The product shall be 1-1/12 in. thick, 6 pcf density.
- 4. Fire wrap shall be used to fire rate commercial kitchen grease ducts as well as ventilation ducts.

- 5. Fire wrap installation shall be in strict accordance with manufacture's written instructions, as shown on the approved shop drawings. The fiber blanket shall have a continuous use limit of 1000°C (1832°F). The blanket thermal resistance (R-value) at ambient temperature shall be minimum 6.3 °F ft2 hr (Btu).
- 6. Smoke Developed Index and Flame Spread Index of the bare blanket, and of the foil encapsulated blanket shall be 0/0. The foil encapsulation shall be bonded to the core blanket material.

7. Design Listing

Fire Resistive Rating	Enclosure System
Grease Duct	ASTM E 2336 / ICC-ES AC101
1 and 2 hour	2 layers of Fire Wrap
Other rated ducts	ISO 6944
1 and 2 hour	1 layer of Fire Wrap

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.
 - 1. Calcium Silicate Adhesive: Fibrous, sodium-silicate-based adhesive with a service temperature range of 50 to 1000 deg F.
 - a. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - b. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Mineral-Fiber Adhesive: Comply with ASTM C 916, Type II
 - 1. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. ASJ Adhesive: Comply with ASTM C 916, Type II for bonding insulation jacket lap seams and joints.
 - 1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

- 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. PVC Jacket Adhesive: Compatible with PVC jacket.
 - 1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.5 SEALANTS

- A. FSK and Metal 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: Aluminum.
 - 5. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 6. Sealants shall comply with LEED IEQ 4.1 for VOC Content
- B. 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, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 6. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. FACTORY-APPLIED JACKETS



- 1. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
 - a. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
 - b. PVDC Jacket for Outdoor Applications: 6-mil- (0.15-mm-) thick, white PVDC biaxially oriented barrier film with a permeance at 0.01 perm when tested according to ASTM E 96/E 96M and with a flame-spread index of 5 and a smoke-developed index of 25 when tested according to ASTM E 84.

2.6 MANUFACTURERS

- A. Insulation
 - 1. Glass Fiber
 - a. Owens-Corning Fiberglass
 - b. Johns-Manville
 - c. Armstrong
 - d. Or approved equal
 - 2. Closed Cell Foam Insulation
 - a. Aeroflex
 - b. Armacell
 - c. Kflex
 - d. Or approved equal
- B. Adhesives and Sealers
 - 1. Foster (H.B. Fuller Co.)
 - 2. Rubatex
 - 3. Childers
 - 4. Or approved equal
- C. Fire Wrap
 - 1. 3M



- 2. FireMaster
- 3. Unifrax
- 4. Or approved equal

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION OF INSULATION - GENERAL

- A. Perform work in strict accordance with the manufacturer's recommendation and the best practice of the trade and the intent of this specification.
- B. Ensure that insulation is clean, dry, and in good mechanical condition with all factory-applied vapor or weather barriers intact and undamaged. Any wet, dirty, or damaged insulation stored or already installed shall be immediately removed from the construction site and are not acceptable for installation.
- C. Apply insulation over clean dry surface, butting sections or surfaces firmly together and finishing as specified.
- D. Seal vapor barriers in a continuous manner throughout to prevent moisture penetration.
- E. Insulation to be continuous through wall, floor and ceiling openings, pipe supports or sleeves. Do not cover any nameplates or identification tags.

3.3 INSULATION OF DUCT WORK AND FITTINGS

- A. No insulation shall be installed until ductwork has been pressure tested or leak tested as specified elsewhere to the satisfaction of the Commissioner.
- B. Before applying duct wrap, steel metal ducts shall be clean, dry, and tightly sealed at all joints and seams.
- C. All portions of duct designated to receive duct wrap shall be completely covered with duct wrap.
- D. To ensure installed thermal performance, duct wrap shall be cut to "stretch-out" dimensions as follows (P = perimeter of duct in inches/mm):

Labeled	Average Installed	Thickness Calculation to Arrive at Correct Installed Thickness			
THICKNESS	Thickness.	Round Duct	Square Duct	Rectangular Duct	
1.5"	1.125"	P+ 9.5"	P+ 8.0"	P+ 7.0"	
2"	1.5"	P+ 12.0"	P+ 10.0"	P+ 8.0"	



Labeled	Average Installed	Thickness Calculation to Arrive at Correct Installed Thickness				
I nickness	Thickness.	Round Duct Square Duct Rectangular Duct				
2.25"	1.69"	P+ 13.5"	P+ 11.5"	P+ 9.0"		
2.5"	1.88"	P+ 14.5"	P+ 12.5"	P+ 9.5"		
3"	2.25"	P+ 17.0"	P+ 14.5"	P+ 11.5"		

- E. A 2" piece of insulation shall be removed from the facing at the end of the piece of insulation to form an overlapping stapling and taping flap
- F. Install duct wrap insulation with facing outside so that the stapling flap overlaps the insulation and facing at the other end of the piece of duct wrap. Adjacent sections of duct wrap insulation shall be tightly butted, with the 2" stapling and taping flap overlapping. If ducts are rectangular or square, install so insulation is not excessively compressed at corners. Seams shall be stapled approximately 6" (152 mm) on center, with ½" minimum, steel, outward-clinching, staples.
- G. Where a vapor barrier is required, seams shall be sealed with pressure-sensitive tape matching the insulation facing, either plain foil or fil-scrim-kraft (FSK). Seal all tears, punctures, and other penetrations of the duct wrap facing with tape or mastic to provide a vapor-tight system.
- H. Wherever external duct insulation is specified and internal acoustic treatment of equivalent insulating effect is also required (by Drawings or Specifications) for the same location, the external insulation may be omitted.
- I. Cover ductwork exposed to outdoor conditions, including spaces ventilated with outdoor air, with an additional 2-inch thick 5 lbs./cu.ft density., aluminum foil coated with PVC backing insulation , K-Flex CLAD AL, Johns Manville, CertainTeed or approved equal.
- J. Apply vaporseal board by mechanical fasteners such as Graham pins and speed washers. Seal joints with an adhesive, as approved and reinforced with a glass cloth membrane over vapor barrier mastic and self-sealing matching tape. Butter pinheads with an adhesive, as approved. If vaporseal board is wired, use tin edges to protect the corners of the board. Seal edges and joints.

3.4 **PIPING INSULATION**

A. Insulation must not be installed at fittings and joints until the piping systems have been hydrostatically tested as specified elsewhere to the satisfaction of the Commissioner.

- B. Provide insulation for removable flanges of pipe strainers on cold services with built-up sections of glass fiber pipe covering, arranged to facilitate servicing of the strainer. Complete applications with vaporseals. Vapor barriers to be sealed and continuous through hangers, walls, sleeves, etc. Adhesives and coatings to be as noted herein.
- C. Piping Exposed to Outdoor Conditions
 - 1. Pipes in Spaces that are not heated and Pipes Subject to Freezing: Cover piping with an additional layer of 2 inches glass fiber insulation of the same finish as specified for the particular service in paragraph 2.1, but not less than 3 inches total thickness.
- D. Insulate heat-traced piping as specified for piping exposed to outdoors. Cover with an aluminum jacket, as specified for piping exposed to the outdoors.
- E. Notify Contractor of any leaks in pipe or joints. Do not insulate until leaks have been repaired. Replace all insulation dampened by leaks.
- F. Apply prefabricated sectional insulation for straight pipes neatly fitted around the piping, and sealed with adhesive. Apply adhesive to only one side of each joint and not to pipe surface.
- G. Seal all joints with Foster 30-35 fire resistant vapor barrier mastic. Where required, oversized pipe sections or board type insulation may be used to fabricate and install insulation around pipe specialties. All void space must be firmly filled with flexible insulation to support oversized pipe insulation.
- H. Maintain the integrity of factory-applied vapor barrier jacketing on all pipe insulation, protecting it against puncture, tears or other damage. All staples used on cold pipe insulation shall be coated with suitable sealant to maintain vapor barrier integrity.
- I. Secure sectional insulation with 0.02" thick by ¹/₂" wide aluminum bands manufactured by Childers, Johns Manville, Thomas & Betts "TY-RAP" nylon ties or approved equal, on 24" centers for pipe sizes 2" and larger. Install at least two (2) bands per section of insulation.
- J. Insulate and thoroughly vapor seal control valve bodies where the valve actuator penetrates the insulation.
- K. Replace any self-sealing insulation and/or lap that is found to be not sealing properly. Do not use staples to secure the insulation, lap, or coverings.

3.5 **PROTECTION OF INSULATION**

- A. Protect pipe covering at hangers, guides, and roller supports with 16 gauge galvanized metal shields or saddles (at least 3 times the insulation diameter in length and 1/3 the insulation circumference in width) on the outside of the insulation and vapor barrier. Hold shields in place with straps. Do not pierce the insulation with hangers. Where glass fiber insulation is used on piping 3 inches and larger, provide half-section of calcium silicate covering of equal thickness at metal shields.
- B. Piping Exposed to Outdoors: Cover insulated piping exposed to outdoors or called for to be weatherproofed, in addition to finishes specified, with an aluminum jacket similar from ITW Insulation, RPR Products, Johns Manville or approved equal, including all fittings.

C. Exposed insulated piping in mechanical equipment rooms located 8 feet or less above the floor or where subject to traffic shall be provided with an aluminum insulation jacket from ITW Insulation, Johns Manville, RPR Products or approved equal.

3.6 INSPECTION

- A. Upon completion of installation of duct wrap and before system operation is to commence, visually inspect the system and verify that duct insulation has been correctly installed.
- B. Open all system dampers and turn on fans to purge all scraps and other loose pieces of material from the duct system. Allow for a means of removal of such material from the duct system.
- C. Check the duct system to ensure that there are no air leaks through duct joints.
- D. Fill surface imperfections such as chipped edges, small joints or cracks and voids or holes with insulation material and smooth all such areas with a skim coat of insulating cement.

3.7 SAFETY PRECAUTIONS

- A. Insulation contractor's employees shall be properly protected during installation of all insulation. Protection shall include proper attire when handling and applying insulation materials, and shall include (but not be limited to) disposable dust respirators, gloves, hard hats, and eye protection.
- B. The insulation contractor shall conduct all job site operations in compliance with applicable provisions of the Occupational Safety and Health Act (OSHA), as well as with all state and local safety and health codes and regulations that may apply to the work.

END OF SECTION 23 07 00



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SECTION 23 08 00 COMMISSIONING OF 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 commissioning process requirements for HVAC systems, assemblies, and equipment.
- B. Related Sections:
 - 1. DDC General Conditions Section 01 91 13 "General Commissioning Requirements for MEP Systems" for general commissioning process requirements.
 - 2. Division 23 Heating Ventilation & Air Conditioning

1.3 DESCRIPTION

- Commissioning: Commissioning is a systematic process of ensuring that all building systems, including the mechanical and electrical systems, have been installed in the prescribed manner, are functionally checked and capable of being operated and maintained to perform with the design intent and have documentation to support proper installation and operation. The Commissioning Agent (CxA) shall provide the City of New York with an unbiased, objective view of the system's installation, operation and performance. This process does not eliminate or reduce the responsibility of the Contractor to provide a finished product. Commissioning is intended to enhance the quality of each system installation, startup and transfer to beneficial use by the City of New York.
- B. Commissioning during the construction phase is intended to achieve the following specific objectives, according to the Contract Documents:
 - 1. Verify that applicable equipment and systems are installed according to the manufacturer's recommendations and to industry accepted minimum standards and that they receive adequate operational checkout by the Contractor.
 - 2. Verify and document proper performance of equipment and systems as per the written procedures.
 - 3. Verify that Operation & Maintenance documentation is complete and transferred to the City of New York.
 - 4. Verify that the City of New York's maintenance personnel are adequately instructed.
- C. The Commissioning process shall be a team effort and encompass, as well as coordinate, the traditionally separate functions of system documentation, system installation, equipment startup, control system calibration, testing, balancing and verification and performance checkouts.


- D. The CxA will work closely with the construction team, cooperating on and coordinating all Cx activities with the Commissioner and the Contractor.
- E. The Cx process shall not reduce the responsibility of the Contractor to comply with the Contract Documents.

1.4 DEFINITIONS

A. Refer to the DDC General Conditions for definitions.

1.5 SUBMITTALS

- A. Refer to the DDC General Conditions Section 01 91 13 "General Commissioning Requirements for MEP Systems" for CxA's role.
- B. Refer to the DDC General Conditions Section 01 33 00 "Submittal Procedures" and Section 01 91 13 "General Commissioning Requirements for MEP Systems" for specific requirements.
- C. In addition, provide the following:
 - 1. Certificates of readiness
 - 2. Certificates of completion of installation, pre-start, and startup activities.
 - 3. O&M manuals
 - 4. Test reports
- D. Control Drawings Submittal
 - 1. The control drawings shall have a key to all abbreviations.
 - 2. The control drawings shall contain graphic schematic depictions of the systems and each component.
 - 3. The schematics will include the system and component layout of any equipment that the control system monitors, enables or controls, even if the equipment is primarily controlled by packaged or integral controls.
 - 4. Provide a full points list with at least the following included for each point:
 - a. Controlled system
 - b. Point abbreviation
 - c. Point description
 - d. Display unit
 - e. Control point or set point (Yes / No)
 - f. Monitoring point (Yes / No)
 - g. Intermediate point (Yes / No)
 - h. Calculated point (Yes / No)

1.6 QUALITY ASSURANCE

A. Test Equipment Calibration Requirements: The Contractor will comply with test manufacturer's calibration procedures and intervals. Recalibrate test instruments immediately after



instruments have been repaired resulting from being dropped or damaged. Affix calibration tags to test instruments. Furnish calibration records to CxA upon request.

1.7 COORDINATION

A. Refer to the DDC General Conditions Section 01 91 13 "General Commissioning Requirements for MEP Systems" for requirements pertaining to coordination during the commissioning process.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

- All standard testing equipment required to perform startup, initial checkout and functional performance testing shall be provided by the Contractor for the equipment being tested. The Contractor shall ultimately be responsible for all standard testing equipment for the HVAC&R system and controls system in Division 23. A sufficient quantity of two-way radios shall be provided by the Contractor.
- B. Special equipment, tools and instruments (specific to a piece of equipment and only available from vendor) required for testing shall be included in the base bid price to the City of New York and left on site, except for stand-alone data logging equipment that may be used by the CxA.
- C. Proprietary test equipment and software required by any equipment manufacturer for programming and/or start-up, whether specified or not, shall be provided by the manufacturer of the equipment. Manufacturer shall provide the test equipment, demonstrate its use, and assist in the commissioning process as needed. Proprietary test equipment (and software) shall become the property of the City of New York upon completion of the commissioning process.
- D. Data logging equipment and software required to test equipment will be provided by the CxA but shall not become the property of the City of New York.
- E. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Contract Documents. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration within the past year to an accuracy of 0.5°F and a resolution of + or 0.1°F. Pressure sensors shall have an accuracy of + or 2.0% of the value range being measured (not full range of meter) and have been calibrated within the last year.

PART 3 - EXECUTION

3.1 GENERAL DOCUMENTATION REQUIREMENTS

- A. With assistance from the Contractor, the CxA will prepare Pre-Functional Checklists for all commissioned components, equipment, and systems.
- B. Red-lined Drawings:
 - 1. The Contractor will verify all equipment, systems, instrumentation, wiring and components are shown correctly on red-lined drawings.
 - 2. Preliminary red-lined drawings must be made available to the Commissioning Team for use prior to the start of Functional Performance Testing.





- 3. Changes, as a result of Functional Testing, must be incorporated into the final as-built drawings, which will be created from the red-lined drawings.
- 4. The Contractor will create the as-built drawings.
- C. Operation and Maintenance Data:
 - 1. The Contractor will provide a copy of O&M literature within 45 days of each submittal acceptance for use during the commissioning process for all commissioned equipment and systems.
 - 2. The CxA will review the O&M literature once for conformance to project requirements.
 - 3. The CxA will receive a copy of the final approved O&M literature once corrections have been made by the Contractor.
- D. Demonstration and Instruction:
 - 1. The Contractor will provide demonstration and instruction as required by the Contract Documents.
 - 2. A complete instruction plan and schedule must be submitted by the Contractor to the CxA four weeks (4) prior to any instruction.
 - 3. An instruction agenda for each instruction session shall be submitted to the CxA at least one (1) week prior the instruction session.
 - 4. The CxA shall be notified at least 72 hours in advance of scheduled tests so that testing may be observed by the CxA and the Commissioner. A copy of the test record shall be provided to the CxA and the Commissioner.
 - 5. Engage a Factory-authorized service representative to instruct the City of New York's maintenance personnel to adjust, operate, and maintain specific equipment.
 - 6. Instruct the City of New York's maintenance personnel on procedures and schedules for starting and stopping, trouble shooting, servicing, and maintaining equipment.
 - 7. Review data in O&M Manuals.

3.2 CONTRACTOR'S RESPONSIBILITIES

- A. The commissioning responsibilities applicable to the Division 23 trade are as follows (all references apply to commissioned equipment only):
 - 1. Perform commissioning tests at the direction of the CxA.
 - 2. Attend construction phase controls coordination meetings.
 - 3. Attend testing, adjusting, and balancing review and coordination meetings.
 - 4. Participate in HVAC&R systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the CxA.
 - 5. Provide information requested by the CxA for final commissioning documentation.
 - 6. Include requirements for submittal data, operation and maintenance data, and instruction in each purchase order.
 - 7. Prepare preliminary schedule for Mechanical system orientations and inspections, operation and maintenance manual submissions, instruction sessions, pipe and duct system testing, flushing and cleaning, equipment start-up, testing and balancing and task completion for the City of New York. Distribute preliminary schedule to commissioning team members.
 - 8. Update schedule as required throughout the construction period.





- 9. During the startup and initial checkout process, execute the related portions of the prefunctional checklists for all commissioned equipment.
- 10. Assist the CxA in all verification and functional performance tests.
- 11. Provide measuring instruments and logging devices to record test data and provide data acquisition equipment to record data for the complete range of testing for the required test period.
- 12. Gather operation and maintenance literature on all equipment and assemble in binders as required by the Contract Documents. Submit to CxA (45) days after submittal acceptance.
- 13. Coordinate with the CxA to provide (72) hour advance notice so that the witnessing of equipment and system start-up and testing can begin.
- 14. Notify the CxA a minimum of (2) weeks in advance of the time for start of the testing and balancing work. Attend the initial testing and balancing meeting for review of the official testing and balancing procedures.
- 15. Participate in, and schedule vendors and subcontractors to participate in the instruction sessions.
- 16. Provide written notification to the Commissioner and CxA that the following work has been completed in accordance with the Contract Documents, and that the equipment, systems, and sub-system are operating as required.
 - a. HVAC&R equipment including all fans, air handling units, piping, ductwork, dampers, terminals, and all other equipment furnished under this Division.
 - b. Controls system used for equipment monitoring and manipulation
 - c. Fire stopping in the fire rated construction, including fire and smoke damper installation, caulking, gasketting and sealing of smoke barriers.
 - d. Fire detection and smoke detection devices furnished under other divisions of the specification.
- 17. The Contractor shall ensure the equipment suppliers shall document the performance of their equipment.
- 18. Provide a complete set of red-lined drawings to the CxA prior to the start of Functional Performance Testing.
- 19. The Contractor shall direct the TAB subcontractor to:
 - a. Attend initial commissioning coordination meeting scheduled by the CxA.
 - b. Submit the site specific testing and balancing plan to the CxA and Commissioner for review and acceptance.
 - c. Attend the testing and balancing review meeting scheduled by the CxA. Be prepared to discuss the procedures that shall be followed in testing, adjusting, and balancing the HVAC&R system.
 - d. Participate in verification of the testing and balancing report, which will consist of repeating measurements contained in the testing and balancing reports. Assist in diagnostic purposes when directed.
- 20. Provide instruction to the City of New York's maintenance personnel using expert qualified personnel, as specified.
- 21. Contractor shall direct equipment suppliers to:
 - a. Provide all requested submittal data, including detailed start-up procedures and specific requirements needed to keep warranties in force.



- b. Assist in equipment testing.
- c. Provide information requested by CxA regarding equipment sequence of operation and testing procedures.
- B. Refer to the DDC General Conditions for additional Contractor responsibilities.

3.3 CxA RESPONSIBILITIES

A. Refer to the DDC General Conditions Section 01 91 13 "General Commissioning Requirements for MEP Systems" for CxA's responsibilities.

3.4 TESTING PREPARATION

- A. Certify in writing to the CxA that HVAC&R systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.
- B. Certify in writing to the CxA that HVAC&R instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents, and that pretest set points have been recorded.
- C. Certify in writing that testing, adjusting, and balancing procedures have been completed and that testing, adjusting, and balancing reports have been submitted, discrepancies corrected, and corrective work approved.
- D. Place systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).
- E. Inspect and verify the position of each device and interlock identified on checklists.
- F. Check safety cutouts, alarms, and interlocks with smoke control and life-safety systems during each mode of operation.
- G. Testing Instrumentation: Install measuring instruments and logging devices to record test data as directed by the CxA.

3.5 TESTING, ADJUSTING AND BALANCING VERIFICATION

- A. Air and water testing, balancing and equipment performance verification shall be accomplished by an independent test and balance firm under direction of the Contractor. The CxA shall spot check this work to verify accuracy of results
- B. Prior to performance of Testing, Adjusting and Balancing work, provide copies of reports, sample forms, checklists, and certificates to the CxA.
- C. Notify the CxA at least ten (10) days in advance of testing and balancing work and provide access for the CxA to witness testing and balancing work.
- D. Provide technicians, instrumentation, and tools to verify testing and balancing of HVAC&R systems at the direction of the CxA.
 - 1. The CxA will notify the Contractor ten (10) days in advance of the date of field verification. Notice will not include data points to be verified.
 - 2. Use the same instruments (by model and serial number) that were used when original data were collected.



3. Remedy the deficiency and notify the CxA so verification of failed portions can be performed.

3.6 GENERAL TESTING REQUIREMENTS

- A. Provide technicians, instrumentation, and tools to perform commissioning test at the direction of the CxA.
- B. Scope of HVAC&R testing shall include entire HVAC&R installation, from central equipment for heat generation and refrigeration through distribution systems to each conditioned space. Testing shall include measuring capacities and effectiveness of operational and control functions.
- C. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.
- D. The CxA along with the Contractor shall prepare detailed testing plans, procedures, and checklists for HVAC&R systems, subsystems, and equipment.
- E. Tests will be performed using design conditions whenever possible, as determined by the Commissioner.
- F. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by the CxA and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.
- G. The CxA may direct to alter set points when simulating conditions is not practical.
- H. The CxA may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are not practical.
- I. If tests cannot be completed because of a deficiency outside the scope of the HVAC&R system, document the deficiency and report it to the Commissioner. After deficiencies are resolved, reschedule tests.
- J. If the testing plan indicates specific seasonal testing, complete appropriate initial performance tests and documentation and schedule seasonal tests.

3.7 HVAC&R SYSTEMS, SUBSYSTEMS, AND EQUIPMENT TESTING PROCEDURES

- A. Equipment Testing and Acceptance Procedures: Testing requirements are specified in individual Division 23 sections. Provide submittals, test data, inspector record, and certifications to the CxA.
- B. HVAC&R Instrumentation and Control System Testing: Field testing plans and testing requirements are specified in Division 23 Sections. Assist the CxA with preparation of testing plans.
- C. Pipe system cleaning, flushing, hydrostatic tests, and chemical treatment: Test requirements are specified in Division 23 piping Sections. Prepare a pipe system cleaning, flushing, and hydrostatic testing plan. Provide cleaning, flushing, testing, and treating plan and final reports to the CxA. Plan shall include but not limited to the following:
 - 1. Sequence of testing and testing procedures for each section of pipe to be tested, identified by pipe zone or sector identification marker. Markers shall be keyed to Drawings for



each pipe sector, showing the physical location of each designated pipe test section. Drawings keyed to pipe zones or sectors shall be formatted to allow each section of piping to be physically located and identified when referred to in pipe system cleaning, flushing, hydrostatic testing, and chemical treatment plan.

- 2. Description of equipment for flushing operations.
- 3. Minimum flushing water velocity.
- 4. Tracking checklist for managing and ensuring that all pipe sections have been cleaned, flushed, hydrostatically tested, and chemically treated.
- D. Refrigeration System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of chillers, cooling towers, refrigerant compressors and condensers, heat pumps, and other refrigeration systems. The CxA shall determine the sequence of testing and testing procedures for each equipment item and pipe section to be tested.
- E. HVAC&R Distribution System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of air, steam, and hydronic distribution systems; special exhaust; and other distribution systems, including HVAC&R terminal equipment and unitary equipment.
- F. Vibration and Sound Tests: Provide technicians, instrumentation, tools, and equipment to test performance of vibration isolation and seismic controls.
- G. The work included in the commissioning process involves a complete and thorough evaluation of the operation and performance of all components, systems and sub-systems. The following equipment and systems shall be evaluated:
 - 1. Two (2) Packaged Split System Air Handling Units with Hot Water Heating and Associated Air Cooled Condensing Units
 - 2. Two (2) Inline Hot Water Pumps
 - 3. Three (3) HVAC Fans
 - 4. Associated Piping, Ductwork and Specialties

3.8 OPERATION AND MAINTENANCE MANUALS

- A. The Operation and Maintenance Manuals shall conform to Contract Documents requirements as stated in the DDC General Conditions Section 01 78 39 "Contract Record Documents" and Section 01 91 13 "General Commissioning Requirements for MEP Systems."
- B. Refer to the DDC General Conditions Section 01 78 39 "Contract Record Documents" and Section 01 91 13 "General Commissioning Requirements for MEP Systems" for the CxA roles in the Operation and Maintenance Manual contribution, review and approval process.
- C. An updated as-built version of the control drawings and sequences of operation shall be included in the final controls O&M manual submittal.

3.9 INSTRUCTION OF CITY OF NEW YORK PERSONNEL

- Refer to the DDC General Conditions Section 01 79 00 "Demonstration and Owner's Pre-Acceptance Orientation" and Section 01 91 13 "General Commissioning Requirements for MEP Systems" for requirements pertaining to instruction.
- B. Contractor's instruction responsibilities pertaining to mechanical work:





- 1. Provide the CxA with an instruction plan two weeks before the planned Instruction.
- 2. Provide comprehensive orientation and instruction in the understanding of the systems and the operation and maintenance of each piece of HVAC equipment including, but not limited to, all HVAC equipment (ex. pumps, heat exchangers, chillers, heat rejection equipment, air conditioning units, air handling units, fans, terminal units, controls and water treatment systems, etc.) to the City of New York's maintenance personnel.
- 3. Instruction shall normally start with classroom sessions followed by hands-on instruction on each piece of equipment, which shall illustrate the various modes of operation, including startup, shutdown, fire/smoke alarm, power failure, etc.
- 4. During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system will be repaired or adjusted as necessary and the demonstration repeated.
- 5. The appropriate trade or manufacturer's representative shall provide the instructions on each major piece of equipment. This person may be the start-up technician for the piece of equipment, the installing subcontractor or manufacturer's representative. Practical building operating expertise as well as in-depth knowledge of all modes of operation of the specific piece of equipment is required. More than one party may be required to execute the instruction.
- 6. The Contractor shall direct the controls subcontractor to attend sessions other than the controls instruction, as requested, to discuss the interaction of the controls system as it relates to the equipment being discussed.
- 7. The instruction sessions shall follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference.
- 8. Hands-on instruction shall include start-up, operation in all modes possible, including manual, shut-down and any emergency procedures and preventative maintenance for all pieces of equipment.
- 9. Fully explain and demonstrate the operation, function and overrides of any local packaged controls not controlled by the central control system.
- 10. Instruction shall occur after functional testing is complete, unless approved otherwise by the Commissioner.
- C. Contractor's instruction responsibilities pertaining to controls:
 - 1. Provide the CxA and Commissioner with an instruction plan four weeks before the planned instruction.
 - 2. Provide the designated City of New York's maintenance personnel instruction on the control system in this facility. The intent is to clearly and completely instruct the City of New York's maintenance personnel on all the capabilities of the control system.
 - 3. Instruction manuals. The standard operating manual for the system and any special instruction manuals will be provided for each instructee, with three extra copies left for the O&M manuals. In addition, copies of the system technical manual will be demonstrated during instruction and three copies submitted with the O&M manuals. Manuals shall include detailed description of the subject matter for each session. The



manuals will cover all control sequences and have a definitions section that fully describes all relevant words used in the manuals and in all software displays. Manuals will be approved by the CxA and Commissioner. Copies of audiovisuals shall be delivered to the Commissioner.

- 4. The instructions will be tailored to the needs and skill-level of the instructee.
- 5. The instructors will be knowledgeable on the system and its use in buildings. For the onsite sessions, the most qualified instructor(s) will be used. The Commissioner shall approve the instructor prior to scheduling the instruction
- 6. During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system will be repaired or adjusted as necessary and the demonstration repeated.
- 7. Three (3) instruction sessions are required:
 - a. Instruction I. Control System. The first instruction shall consist of 8 hours of actual instruction. This instruction may be held on-site or in the supplier's facility. If held off-site, the instruction may occur prior to final completion of the system installation. Upon completion, each student, using appropriate documentation, should be able to perform elementary operations and describe general hardware architecture and functionality of the system.
 - b. Instruction II. Building Systems. The second session shall be held on-site for a period of 8 hours of actual hands-on instruction after the completion of system commissioning. The session shall include instruction on:
 - 1) Specific hardware configuration of installed systems in this building and specific instruction for operating the installed system, including HVAC systems, lighting controls and any interface with security and communication systems.
 - 2) Security levels, alarms, system start-up, shut-down, power outage and restart routines, changing set points and alarms and other typical changed parameters, overrides, freeze protection, manual operation of equipment, optional control strategies that can be considered, energy savings strategies and set points that if changed will adversely affect energy consumption, energy accounting, procedures for obtaining vendor assistance, etc.
 - 3) All trending and monitoring features (values, change of state, totalization, etc.), including setting up, executing, downloading, viewing both tabular and graphically and printing trends. Instructee will actually set-up trends in the presence of the instructor.
 - 4) Every screen shall be completely discussed, allowing time for questions.
 - 5) Use of keypad or plug-in laptop computer at the zone level.
 - 6) Use of remote access to the system via phone lines or networks.
 - 7) Setting up and changing an air terminal unit controller.
 - 8) Graphics generation
 - 9) Point database entry and modifications



- 10) Understanding Direct Digital Controls field panel operating programming (when applicable)
- D. Contractor's responsibilities pertaining to Testing, Adjusting and Balancing:
 - 1. Meet with maintenance personnel after completion of TAB and instruct them on the following:
 - a. Go over the final TAB report, explaining the layout and meanings of each data type.
 - b. Discuss any outstanding deficient items in control, ducting or design that may affect the proper delivery of air or water.
 - c. Identify and discuss any terminal units, duct runs, diffusers, coils, fans and pumps that are close to or are not meeting their design capacity.
 - d. Discuss any temporary settings and steps to finalize them for any areas that are not finished.
 - e. Other salient information that may be useful for facility operations, relative to TAB.

END OF SECTION 23 08 00



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SECTION 23 09 23 BUILDING MANAGEMENT AND CONTROL SYSTEM (BMCS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Provide a complete, fully integrated Building Management and Control System (BMCS) utilizing direct digital control for energy management, equipment monitoring and control, and subsystems with open communications capabilities in accordance with the contract documents.
- B. The contractor shall interface and coordinate with other trades on all aspects of the project. The entire process shall be governed by the contract documents.
- C. The contractor shall fully coordinate his work with the equipment specified and supplied under other specification sections. A review of all equipment schedules located on the contract drawings shall be performed. Coordinate this information with the actual approved equipment cuts/submittals. Provide all components required to interface with the equipment as called for in the contract documents. The contractor shall detail, layout, and provide all components required for the BMCS criteria for each piece of equipment. The contractor must pay particularly close attention to areas which call for direct network integration, through the utilization of standard protocols, to devices furnished under other specification sections.
- D. Provide an open protocol communications system. The system shall be open with the capabilities to support a multi-vendor environment. The intent is for all distributed controllers down to the terminal level to reside on an open protocol network. To accomplish this effectively, system shall be capable of utilizing standard protocols as follows as well as be able to integrate third-party systems via existing vendor protocols.
 - 1. The BMCS shall utilize high speed Ethernet communication using BACnet over IP protocol at the Management Level and Automation Level networks.
 - 2. System shall be capable of BACnet communication according to ANSI/ASHRAE 135-2016.



- 3. System shall be capable of OPC server communications.
- 4. System shall be capable of LonTalk communication.
- 5. System shall be capable of Modbus communication.
- 6. The system shall be also capable of supporting a range of vendor specific protocols to enable interoperability between a variety of existing and future third-party devices and legacy systems.
- 7. System shall be capable of communication SNMP, SOAP, XML, and Web Services.
- E. The entire system shall be BACnet BTL listed.
- F. The BMCS shall be Direct Digital Control with electric actuation as specified herein.
- G. The contractor shall distribute 120 VAC power to all BMCS components, as necessary, from designated circuits furnished by the Contractor. This includes all equipment and devices supplied by the contractor, except where specifically called for otherwise, including control panels, transformer panels, data gathering panels, actuators, thermostats, etc. Power may be reduced from 120 volt to 24 volt via a transformers provided and installed by the contractor and run to application specific controllers in lieu of 120 VAC. The contractor shall also provide all data cabling, conduit risers, and all layout work as required for the complete installation of the BMCS. Provide sleeves for the fire-stopping at all cores, walls, and slabs, in accordance with the project schedule and contract documents. All controlling and signal power (e.g. 0-10vdc, 4-20 mA, control and status, feedback wiring, etc.) shall be installed by the contractor.
- H. Provide a dedicated BMCS communications network including all required communication cabling, network switches, media converters, routers, repeaters, gateways, and electric isolation for processors and protection from electrical interference.
- I. Miscellaneous wiring required for control devices and equipment provided by others shall be provided by the contractor furnishing the equipment unless otherwise indicated.
- J. Provide all miscellaneous field device mounting and interconnecting wiring for all mechanical systems including but not limited to: AC units, condensing units, VFDs.
- K. All systems requiring interlock wiring shall be hardwired interlocked and shall not rely on the BMCS to operate (e.g. emergency generator to fuel oil pump interlock, emergency generator damper interlock, safety shutdowns, etc.) Interlock wiring shall be run in separate conduits from BMCS associated wiring.
- L. When conflicts occur within the specifications or on the design drawings, or between either, the items of greater quantity, higher cost, or more stringent requirement shall be provided.
- M. The contractor shall provide all items of labor or materials not specifically indicated, but required to complete the intended installation.
- N. The contractor shall be responsible for the completion and final acceptance of all work and material, and shall replace any of the same which may be damaged, lost, or stolen without additional cost to the City of New York.

O. Provide all necessary permits, applications, filings and associated fees which may be required to perform the work called for in the contract documents.

1.3 SCOPE OF WORK

- A. The work under this Section of the specifications includes all labor, materials, wiring, equipment and services to provide a complete and fully operational BMCS in strict accordance with these specifications and the contract drawings and subject to the terms and conditions of the contract. The work in general consists of, but is not limited to, the following:
 - 1. BMCS Server for database management to be located as indicated on contract documents or as coordinated with the City of New York.
 - 2. One Operators Work Station (OWS) consisting of a personal computer, 24" flat panel LCD monitor, and printer to be located as indicated on contract documents or as coordinated with the City of New York.
 - 3. Two Portable local operator's terminal(s).
 - 4. A dedicated data communications network including required cabling, network switches, media converters, routers, repeaters, gateways, and electric isolation for processors and protection from electrical interference.
 - 5. BACnet BTL Listed Building Controllers, communicating BACnet/IP or Ethernet in a peer-to-peer fashion for all major HVAC equipment including central heating and cooling equipment, Air Handling Units, Roof Top Units, etc.
 - 6. BACnet BTL Listed Application Specific Controllers and Advanced Application Controllers for all terminal unit equipment including VAV boxes, Fan Coil Units, Induction units, Unit Ventilators, etc.
 - 7. Complete electrical installation including wiring, conduit, raceways and power wiring, except as noted.
 - 8. Software:
 - a. All software licenses, original installation disks, manuals, service packs, etc., utilized to install, configure and operate systems. All software licenses shall be the property of the City of New York and shall be so assigned upon substantial completion of the project.
 - b. All programming routines, configuration files, utilities, etc. created specifically for the project. These include controller software & configuration utilities to implement the sequence of operations, GUI graphical screens, VB scripts, XML scripts, etc. Any compiled controller software resident in field controllers shall be supplied in its un-compiled format for future utilization by the City of New York.
 - c. System backups on CD to facilitate project software restoration.
 - 9. BMCS equipment or platform capable of providing industry standard open protocol communication (BACnet, LonTalk, Modbus, OPC, SOAP, SNMP, XML) capability to other building systems.



- 10. Full documentation for all software and equipment provided.
- 11. Project management for managing system installation including, but not limited to:
 - a. Design, installation, equipment delivery, coordination with other trades (as applicable) and acceptance testing.
 - b. Provide manpower as necessary for assisting in the testing and commissioning of systems included in this specification and the contract documents (as related to the BMCS). These systems shall include but not be limited to the following:
 - 1) Fire Alarm System
 - 2) HVAC Systems (Air Conditioning Systems, Fans, pumps, motors, etc.)
 - 3) Boilers
- 12. Miscellaneous work as indicated in these specifications and the contract drawings.
- 13. Miscellaneous wiring as specified herein. All wiring associated with the installation of the BMCS and associated systems/equipment provided under this project's scope of work including but not limited to the following:
 - a. BMCS power, communication, and control devices including actuators and sensors.
 - b. BMCS control wiring to third-party interfaces.
 - c. Communication cabling to City of New York's Internet, Intranet, or Extranet services for remote communications.
 - d. Smoke control system from dry contacts or via standard communication protocol (provided by the contractor) to the DDCPs as required affecting the smoke control sequences.
 - e. Smoke dampers and smoke damper end switches for HVAC system interlocks provided by contractor. Fire Smoke Damper end switches for HVAC system interlocks provided by contractor. Smoke damper and Fire Smoke damper actuator wiring by Division 26.
 - f. Fuel oil system control and interlock wiring.
 - g. As a general rule, with the exception of the items above, if a device is furnished under this section, this section to provide all wiring and required conduit, rough in, etc. as required for installation of the device.
- 14. Complete operating and maintenance manuals and field training of operators and maintenance personnel.
- 15. Provide service kit.



1.4 RELATED SECTIONS

- A. The following sections constitute related work:
 - 1. 23 02 00 Fire Stopping for HVAC
 - 2. 23 05 13 Electric Motors
 - 3. 23 05 53 Systems Identification
 - 4. 23 05 93 Testing Adjusting Balancing
 - 5. 23 33 13 Dampers
 - 6. 23 62 10 Air Cooled Air Conditioning Units
 - 7. 23 85 00 Variable Frequency Controllers
 - 8. 28 31 00 Fire Alarm Life Safety System

1.5 SYSTEM DESCRIPTION

- A. System Configuration
 - 1. The Building Management and Control System (BMCS) shall perform both monitoring and control of HVAC and electrical equipment for building management, energy conservation, and environmental control.
 - 2. The BMCS control philosophy to be direct digital control and be implemented by a microprocessor based, distributed direct digital control system.
 - 3. The entire BMCS shall be BACnet BTL Listed.
 - 4. Operator workstation software shall be BTL Listed as Advanced Workstations Software.
 - 5. All field panels controlling each individual AHU, RTU, Chilled water or Heating water distribution plants, and exhaust fans shall be BACnet BTL Listed Building Controllers.
 - 6. All application specific controllers responsible for control of VAV boxes, fan coil units, fan powered boxes, unit ventilators, radiators, unit heaters shall be BACnet BTL Listed Application Specific Controllers.
 - 7. Advanced Application Controllers and Application Specific Controllers shall not be used to control RTU's, AHU's; and Hot water plants.



- 8. The system shall have an open protocol with the capabilities to support a multi-vendor environment. To accomplish this effectively, the BMCS shall be capable of directly utilizing industry standard open communication protocols as well as be able to integrate third-party systems via existing vendor protocols. The system shall also be capable of supporting a wide range of vendor specific protocols, either directly or via gateway, to enable interoperability between a variety of existing and future third-party devices and legacy systems.
- 9. The system shall utilize high speed Ethernet communication using BACnet over IP protocol at the Management Level and Automation Level networks.
- 10. The system shall be capable of BACnet communication according to ANSI/ASHRAE Standard 135-2012.
- 11. The system shall be capable of OPC server communications.
- 12. The system shall be capable of using Modbus and LonTalk protocols.
- 13. System shall be capable of communication SNMP, SOAP, XML, and Web Services.
- 14. The installed Client consoles (workstations) shall provide a user interface for overall building data acquisition and transfer, report and alarm generation, historical data retrieval, and operator interface.
- 15. The system server(s), operator workstation(s), and DDCPs to communicate through dedicated Ethernet communications network in a peer-to-peer fashion. All communications on network shall be by digital signals only. System design shall eliminate dependence upon any single device for alarm reporting and control execution. The failure of any single component or network connection shall not interrupt the execution of any control strategy, reporting, alarming and trending function, or any function at any operator interface device.
- 16. The BMCS communication network layout shall be installed by the contractor to fully comply with the intended design within the manufacturers' network guidelines.
- 17. The Direct Digital Control and Processing Units (DDCP) to perform remote data acquisition and process control. DDCPs shall be locally mounted completely self-contained, field programmable, real-time microprocessor based controllers capable of stand-alone operation. The DDCP Controllers shall be able to access any data from, or send control commands and alarm reports directly to, any other DDCP Controller or combination of controllers on the network without dependence upon a central or intermediate processing device.
- 18. Each DDCP to be connected to its particular controlled environment through field I/O instrumentation.



- B. Design and Performance Criteria
 - 1. Expansion Capability:
 - a. The system's built-in capacity shall include licensing for not less than 50% spare software points (objects) with no hardware changes required, except the addition of DDCPs (I/O) and communication network extensions.
 - b. System shall be modular in design, to allow change of function and operation in the field by adding plug-in module equipment and software changes to expand system capacity while maintaining full on-line operation.
 - c. Provide 20% spare capacity (or a minimum of one, whichever is greater) of each type of I/O point (BI, BO, AI, AO) in each controller
 - 2. Response Time:
 - a. Time between occurrence of alarm, status change or change of value and its processing, display or printout shall not exceed 10 seconds irrespective of other system activities.
 - b. Time between an operator's command and the associated system output shall not exceed the following times irrespective of other system activities.

Point Command (Start Stop, Setpoint, etc.)	5 seconds
Log Request	10 seconds
Graphics Request	10 seconds
Program or Database Modification	60 seconds

3. Provide stable control of all connected systems with a closed loop control accuracy not to exceed:

a.	Space Temperature:	±1 Degree
b.	Duct Temperature:	±1 Degree
c.	Water Temperature:	±1 Degree
d.	Humidity:	±2 percent
e.	Water Pressure:	± 2 percent of full scale
f.	Air Pressure:	±0.1 inch wg (duct)
g.	Air Pressure:	±0.01 inch wg (space)
h.	Flow:	±1 percent of sensor span



- 4. Environmental Conditions:
 - a. The DDCPs, Field Equipment Panels, and other equipment shall operate under ambient environmental conditions of 32° to 122°F dry bulb and less than 93% relative humidity, noncondensing as a minimum. Sensors and control elements shall operate under the ambient environmental temperature, pressure, humidity, and vibration conditions encountered for the installed location. For locations requiring the use of a DDCP mounted in the controlled equipment, such as a rooftop unit, an extended temperature range unit shall be used capable of operating from -40° to 158°F and less than 93% relative humidity, noncondensing as a minimum.
 - b. Other equipment, such as CPU, monitors and printers, shall, unless designated otherwise, operate properly under ambient environmental conditions of 50° to 95°F and a relative humidity of 10% to 95%.
- 5. Materials and Equipment:
 - a. Where multiple units of the same type are required, the units to be products of a single manufacturer. However, the component parts of the system need not be the products of a single manufacturer. The components shall not require customizing other than setting jumpers and switches and adding firmware. Each major component of equipment shall be labeled with the manufacturer's name, address, model and serial number.
 - b. All systems and components shall have been thoroughly tested and proven in actual use.
- 6. Total system shall be immune to internal and external generated sources of electrical noise.
- 7. Remote Capability:
 - a. The BMCS shall provide a Web-based graphical interface that allows users to access the BMCS via the Internet, Extranet, or Intranet provided the appropriate security protocols are met. Functionality of web-based clients shall provide the same user interface provided by installed client consoles (operator workstations).
 - b. The BMCS shall provide remote alarm notifications to a minimum of ten (10) Building Operations Personnel via phone, text message, and email.
 - c. Internet connections, ISP services, as well as necessary firewalls or proxy servers shall be provided by the City of New York as required to support the Web access feature.

1.6 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."



1.7 SUBMITTALS

A. General

- 1. Provide a single submittal package that includes all required information relevant to the BMCS portion of this project. Partial submittals shall not be accepted except when required to accommodate the construction schedule.
- 2. Indicate at the beginning of each submittal, known substitutions and deviations from requirements of Contract Documents. Provide a marked-up specification with "Comply" or "Don't Comply" next to each paragraph. If "Don't Comply" is noted, state how that requirement will be met.

B. Product Data

- 1. Provide technical bulletins and catalog data for all equipment and system components. Clearly identify, by use of symbol or tag number, the service of each item. All relevant information shall be noted (e.g. using arrows, boxes, etc.) and/or irrelevant information shall be marked out leaving only pertinent data for easy identification.
- 2. Number all pages of the data sheet section and provide a table of contents so it is simple to locate specific items without needing to page through multiple data sheets.
- C. Shop Drawings
 - 1. Shop drawing submittals to include sufficient data to indicate complete compliance with Contract Documents. Submissions in form of drawings, brochures, bulletins, catalog data, and/or narrative descriptions. As a minimum requirement submit:
 - a. Symbol and abbreviation lists including standard installation details.
 - b. System block diagram showing quantity and location of Operator's Work Stations (OWS), printers and all Work Station Equipment, DDCPs, Field Equipment Panels, physical communication cable routing between system components, sources for all power to each device (other than final control devices) and coordinated location of all major system components.
 - c. Network riser and communication map indicating all network resident devices including but not limited to Server(s), OWSs, , DDCP controllers, unitary controllers, intelligent sensors & actuators, switches, routers, repeaters, gateways, connectivity to packaged systems, connectivity to integrated systems, etc. If the project scope of work includes the expansion of an existing system, the existing components shall be shown on the riser diagram as well. The existing components to be detailed in light gray, dotted or some other fashion to delineate that the components are existing.
 - d. Interfaces (software and hardware) with equipment provided in other sections of specifications. Show connection details based upon the approved submittals of the equipment being interfaced with. Comments such as "information to be completed with As Built Documentation" will not be acceptable.



- e. Narrative description of operation for each system, enumerating and describing the function of each component. Include alarm and emergency sequences, and equipment interlocks.
- f. Description of manual override capabilities.
- g. Complete input output point schedule. Identify point function, range, type, and location.
- h. Spare capacity provisions.
- i. Detailed bill of materials.
- j. Valve and Damper Schedule: Provide identification numbers, location, system, dimensions and performance data. Damper schedule shall be based upon approved sheet metal shop drawings. Schedule shall show damper leakage rates. Valve sizing shall be based on approved equipment cut sheets and approved piping shop drawings.
- k. Device mounting details. Include as a minimum:
 - 1) Sensing elements in ducts or casings.
 - 2) Sensing elements in piping.
 - 3) Freezestats mounted in factory assembled Air Handling Units
- 1. Ladder wiring diagrams.
 - 1) All panel to field wiring shall be illustrated in ladder wiring diagrams, especially from the field terminals to the panel terminals. Spreadsheets or details that have to be assembled to determine circuitry will not be accepted under any circumstances.
- m. Data maps for network integrated components, indicating parameters and data being shared amongst systems.
- n. Other information as requested herein.
- 2. Complete full-size drawings, 11 in. x 17 in. minimum. Each system shall be submitted separately. Do not submit "typical" system as one drawing unless the systems depicted are identical with the exception of DDCP point addresses. In such cases, provide a schedule on the drawing with rows and columns for each device in each system detailing part numbers, point addresses, etc.

D. Programming

- 1. Point identification code.
- 2. System advisory messages, printouts, logging formats.
- 3. Drawings of system graphics showing monitored points.
- 4. Software flow charts for application and DDCP programs.



- 5. Person machine interface program, include commands, alarm annunciation, logs and programming capabilities.
- 6. Listing of all alarm messages (with their text) to be programmed for each alarm specified. Messages shall require system operator's or City of New York's representative's approval.
- 7. Description of system operation under failure conditions, including restart sequences and hierarchy for all systems.

E. Samples

- 1. Provide samples of the following wall mounted devices.
 - a. Thermostats
 - b. Temperature sensors
 - c. Humidistats
 - d. Humidity sensors
 - e. Carbon Dioxide Sensors
- 2. All devices mounted on finished surfaces.
- F. Quality Control Submittals
 - 1. U.L., BTL, FM, CSA listing compliance certificates.
 - 2. Final calibration, commissioning and testing reports.

1.8 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Contractor shall meet the following qualifications:
 - 1. Have a minimum of 3 years of demonstrated technical expertise and experience in the installation and maintenance of Direct Digital Control Systems similar in size and complexity to this Project. Contractor shall be ISO 9001 certified.
 - 2. Have maintained a service organization consisting of at least three competent service technicians, within proximity of this project, for a period of not less than three years.
- C. Materials and equipment shall be the catalogued products of manufacturers regularly engaged in production and installation of automatic temperature control systems and shall be manufacturer's latest standard design that complies with the specification requirements.

- D. Future compatibility shall be supported for no less than 10 years. Compatibility shall be defined as the ability to upgrade existing field panels to current levels of technology, and extend new field panels on a previously installed network. Compatibility shall be defined as the ability for any existing field panel microprocessor to be connected and directly communicate with new field panels without bridges, routers, or protocol converters.
- E. The Contractor shall provide an experienced Project Manager for this work, responsible for direct supervision of installation and startup of the system.
- F. Comply with all current governing codes, standards, ordinances and regulations, as well as with requirements of NFPA, UL, BTL and all other applicable codes.
- G. Due to the nature of rapid change in manufacturer specifications and BMCS software operating system requirements, submit a detailed BMCS system hardware and software specification conformance statement sheet clearly indicating deviations from the specification.

1.9 WORK PERFORMANCE SCHEDULE

A. A time-phased schedule for delivery, installation, and acceptance of components for the complete system shall be prepared in accordance with the requirements of the Contractor. Submit this schedule to the Contractor or City of New York within thirty (30) days after award of contract. Submit updates and changes to this schedule promptly to the City of New York.

1.10 WARRANTY

- A. The Contractor shall warranty the BMCS to be free from defects in workmanship and material for a period of one (1) year from substantial completion. During this period, the Contractor shall furnish all labor to repair or replace all items or components, which fail due to defects in workmanship or material. Failures on control systems that include all computer equipment, transmission equipment and all sensors and control devices during warranty period shall be adjusted, repaired, or replaced at no additional cost or reduction in service to City of New York.
- B. The Contractor shall also provide necessary preventive maintenance on the server(s) and operator console(s) during the warranty period. Provide updates to operator workstation software, project-specific software, graphic software, database software, and firmware that resolve Contractor identified software deficiencies at no charge during warranty period. Do not install updates or upgrades without City of New York's written authorization.
- C. The contractor shall respond to service calls within four hours of the call either in person or through the remote log-in capabilities of the system. If the problem cannot be rectified remotely, a physical presence shall be made within eight hours of the initial call.
- D. The contractor shall update O&M manuals and system software backups to reflect any corrective measures taken during the warranty period, which impact the hardware, software or system configuration.

1.11 OWNERSHIP OF PROPRIETARY MATERIAL

A. Project specific software and documentation shall become the City of New York's property. This includes, but not limited to:



- 1. Graphics
- 2. Record drawings (Linked to system as-builts)
- 3. Database
- 4. Application programming code
- 5. Programming Tools
- 6. Graphics modification tools
- 7. Database editing tools

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Approved Systems Manufacturers for this project shall be:
 - 1. Honeywell (no substitutions)
 - a. Product Line: EBI Enterprise Building Integrator.
 - b. Acceptable DDCP: Excel Web II Building Controller with direct Ethernet I/O Control in a peerto-peer BACnet/IP environment (Peer to Peer, standalone Direct Digital Control BACnet/IP BTL Listed Building Controller).

2.2 BMCS SERVER

- A. Provide one (1) enterprise level fault tolerant server for system network and database management functions. All real-time control functions shall be resident in the Direct Digital Control Controllers to facilitate greater fault tolerance and reliability.
- B. Provide a Dell PowerEdge desktop, HP, Samsung or approved equal with hardware and software specifications that are recommended by the BMCS manufacturer for optimal system performance. Final approval of the BMCS server shall be determined by the Commissioner prior to installation. Minimum requirements shall be as follows: Intel Xeon 2.20 GHZ processor, 2 x 600 GB SAS 6Gbps 3.5 in. hot-plug (swappable) hard drives, RAID 1 Configuration, DVD-RW Drive, 64 GB RAM, Keyboard, Mouse, 1 Gbps Ethernet Card, Dual Hot-Plug redundant power supply, Windows Server 2012 R2 Standard Edition (64-Bit), Microsoft SQL Server (64-Bit) with SP2, Windows Internet Explorer, Antivirus software, System recovery media. Equal manufacturers may also be submitted for approval.
- C. Locate the BMCS Server in a clean, secure, dry and temperature controlled environment. Server shall be located as indicated on the contract documents or as coordinated with the Commissioner.
- D. The server shall reside on the same BACnet/IP protocol network as the System Controllers.



E. Provide all necessary mounting hardware and cables for all components.

2.3 **OPERATOR WORKSTATION (OWS)**

- A. Provide one (1) operator workstation console as the interface for the day-to-day operation including command entry, information management, alarm management, reporting, and interface with the system servers.
- B. Provide a personal computer with hardware and software specifications that are recommended by the BMCS manufacturer for optimal system performance. Final approval of OWS shall be determined by the Commissioner prior to installation. Minimum requirements shall be as follows: 64 GB RAM, hard drive of 320 GB available space, with a video card with 256 MB RAM capable of supporting a minimum of 1920 x 1080 resolution with a minimum of 32 Bit color, DVD-RW Drive, mouse and 101-key enhanced keyboard. OWS shall be a Windows 10 64-bit (or later), and shall include a dual core processor or better.
- C. Provide a wide screen, active matrix LCD, flat panel type monitor that supports a minimum display resolution of no less than 1920 × 1080 pixels, Energy Star compliant 32-bit color. The display shall have a minimum of 24-inch visible area in diagonal measurement. Separate controls shall be provided for color, contrasts and brightness. The screen shall be non-reflective.
- D. Provide a full color, high speed, high resolution, and energy efficient printer with high speed USB and built in Fast Ethernet connectivity. System printer shall be Hewlett Packard LaserJet, Xerox, Epson or equivalent. The printer model/version shall be the most up to date available at the time of submission. Provide a set of replacement cartridges at the time of final acceptance.
- E. Locate the OWS consoles in a clean, secure, dry and temperature controlled environment. OWS consoles shall be located as indicated on the contract documents or as coordinated with the Commissioner.
- F. The Operator Workstations shall reside on the same BACnet/IP protocol network as the System Controllers.
- G. Provide software licenses for interfacing to the BMCS. Load software, configure and setup for viewing the BMCS system.
- H. Provide all necessary mounting hardware and cables for all components.
- I. Provide integrated sound card and speakers for the annunciation of audible alarms or pre-recorded messages.
- J. All BMCS operator workstations shall have, at minimum, the following functionality: Graphics editing, Graphics generation, Program editing, Program generation, Point database editing, Point database generation, System backup, Trend editing, Trend retrieval, Alarm editing, Alarm retrieval.

2.4 PORTABLE LOCAL OPERATOR'S TERMINAL (LOT)

- A. Provide two local operator's terminals (LOT) to allow local programming, control and monitoring at each DDCP. LOT shall be a fully configured laptop computer. Operating system shall be the same as provided with the Operator's Work Station.
- B. Provide a laptop computer with the following minimum performance requirements: Intel Core i7 or comparable, 64GB of RAM, DVD-RW Drive, 300 GB hard disk drive, 10/100/1000 Network Card, Minimum



display resolution of 1920 \times 1080 pixels, Built-in WiFi and Bluetooth, carrying case, power supply and cables.

C. Provide software licenses for interfacing to the BMCS. Load software, configure and setup for viewing the BMCS system.

2.5 ACCESSORY SOFTWARE

- A. Provide up to date versions of the software as described below for all Client installed consoles. Software shall include original discs, CDs, manuals and site and/or individual licenses.
- B. Provide, at minimum, the following: Operating System Software, Antivirus Software, Microsoft Office Professional including Word and Excel, Internet Explorer or equal browser, Acrobat PDF Reader, CAD Viewer, PC Anywhere or terminal services, Peripheral software as required for printer, graphics generation, system backup, recovery, and restore, etc.
- C. Set up an icon on the desktop to take the User directly to the BMCS system login page.

2.6 PRIMARY ETHERNET NETWORKING

- A. Fiber Optic Networking (DDCP and PC Network)
 - 1. Fiber optic cable (data transmission) shall meet, at minimum, the following requirements:
 - 2. 50 micron core (multi-mode/single mode fiber as necessary to match the fiber provided by the Contractor).
 - 3. 850 mm or 1300 mm LED compatible operation, as required.
 - 4. A Minimum 125 micron cladding.
 - 5. A Maximum attenuation of 4.5 db/km (850 nm).
 - 6. Outdoor and below grade Fibers shall be run a gel-filled tube to protect against moisture and microbending. Tube mid Fiber shall have a Kevlar braid surrounding, with suitable outside protective jacketing.
 - 7. Cable shall contain 100% more Fibers than required for a single point-to-point communication connection.
 - 8. Outdoor Fiber shall be equipped with a central non-conducting member for long pull applications.
 - 9. Fiber optic cable shall comply with ANSI/TIA/EIA-862 (Building Automation Systems Cabling Standard for Commercial Buildings) and all other applicable codes.
 - 10. Fiber Optic cable shall be run in conduit.
- B. Ethernet Networking (DDCP and PC Network)



- 1. Provide Category 6a (CAT-6a) Ethernet cable between Network Service Panels (NSP) and all Building Controllers responsible for AHU, chilled and hot water systems.
- 2. Ethernet cable shall be run in conduit.
- C. Network Service Panel (Fiber and Ethernet Switch Housings)
 - 1. Network Service Panels shall be provided by the contractor as required throughout each building to route fiber optic network between buildings or within buildings with network runs exceeding 300 feet. Route Ethernet CAT-6a cable directly to all Building Controllers from each NSP.
 - 2. Communications between fiber panel and BMCS Building Controllers, mounted at each HVAC unit, are provided by 100-Base-TX Cat-6a Ethernet connections.
 - 3. Communications between each PC (Server/Clients) and the fiber ring are provided by 1000-Base-TX Cat 6a Ethernet connections
 - 4. UPS shall be contained within each Network Service panel
 - 5. Fiber/Ethernet Switch:
 - a. Ethernet switches shall be managed industrial class switches by Cisco, Husky, Netgear or approved equal.
 - b. Switches shall be provided with management capabilities including but not limited to: web browser, Telnet, SNMP
 - c. Ethernet switches shall be powered by local din-rail mounted DC power supplied contained within the Network service panel.
 - d. Provide Network Service Panels as located on system riser diagram (if provided) or as designed by the contractor and fully comply with the intended design within the manufacturers network topology guidelines. Network Services Panel (NSP) shall house the fiber switch and interface from Cat-6 Ethernet network to the redundant fiber ring. Network services panel shall be Siemens CP-567, Linksys, Netgear with key lock or approved equal.
 - e. Each NSP shall contain its own DC power inverter. A service switch and duplex receptacle shall be provided in each panel.
 - f. Each NSP shall contain a fiber optic patch panel.
 - g. Each Ethernet switch required for each Ethernet drop (1 per HVAC equipment) shall be housed in the NSP

2.7 SECONDARY (FIELD) LEVEL NETWORK

- A. RS-485 Networking (ASC and AASC Network)
 - 1. RS-485 networks shall be limited to daisy chaining BACnet Application Specific Controllers and BACnet Advanced Application Controllers, and third party equipment integration.
 - 2. RS-485 network shall extend from BACnet IP based Building Controller to ASC and AAC controllers and third party equipment as required.

2.8 SYSTEMS INTEGRATION

- A. Fire Alarm System Integration
 - 1. Provide UL listed Fire Alarm System Interface.
 - 2. General:
 - a. Provide a software driver that will provide a supervised link from the fire alarm system. Integration between the fire alarm system and the BMCS is intended to allow single seat operation for basic monitoring functions.
 - b. Interface shall be UUKL Listed for smoke control.
 - c. Each fire alarm system smoke detector, heat detector, pull station, water flow switch, etc. shall be mapped to floor graphics. A detailed graphic for each floor in the building shall be provided.
 - d. Testing and software configuration shall be provided as required during startup and commissioning.
 - e. Any break in communications between the fire and BMCS systems shall be annunciated at each system. Upon restoration of communications, the interface shall automatically refresh fire alarm point status.
 - f. Provide any miscellaneous equipment required by the building automation system, such as trunk interfaces, modems, etc. to support the connection between the fire alarm systems and BMCS.
 - g. The interface shall include a driver that provides communications from the fire alarm/life safety system to the building automation system. Each point will be mapped into the BMCS so that they can be monitored and alarmed as though they were native to the BMCS. See the point schedule in Part 3 for a list of points that are to be integrated into the BMCS
 - 3. Hardware
 - a. All components required to provide integration shall be common to the BMCS or fire alarm system. No third-party hardware shall be allowed. No special hardware used only for integration purposes, or hardware not integral to the either the BMCS or fire alarm system shall be allowed.



- b. All hardware used for interfacing the Automation System to the fire alarm system must be UL Listed for smoke control under UL 864 category UUKL.
- 4. Software
 - a. The interface shall provide a supervised link from the fire alarm system to the BMCS. System administrators shall be able to configure the system to prevent operators from changing, reconfiguring, acknowledging or resetting the fire alarm system such that the fire alarm system remains the primary fire command station if desired.
 - b. The fire alarm system labels for each point shall be displayed as the alarm message text for each point in alarm. The interface shall report the following data from the fire alarm system for basic monitoring:
 - 1) Normal point status
 - 2) Alert for dirty for each point
 - 3) Status activity
 - 4) Activated under test
 - 5) Trouble (open/short)
 - 6) Supervisory
 - 7) Alarm
 - c. Points that are mapped through the interface shall be able to be accessed by standard applications in the BMCS such as programming, alarm routing, graphics, and scheduling.
 - d. The following reports shall be provided at the BMCS workstation:
 - 1) Maintenance report
 - 2) History report of point and operator activity
 - 3) Test report, storing test results and status for each test detector
 - e. Operators shall be allowed to schedule reports to run unattended with their outputs directed to the operator screen, to a printer, and/or to a file.
 - f. Operator messages shall distinguish between the active state and trouble conditions on any point (alarm, supervisory, security, etc.).
- 5. For air handling unit graphics:
 - a. Provide a link to associated lab rooms, floor plans, and individual graphics

- b. Provide the average of flow setpoints for all supply boxes served by that air handling unit. (Flow setpoint is an indication of flow vs. damper position indicating relative airflow capacity utilized by the flow control device, therefore providing indication of over/under pressurization of the ductwork system.)
- c. Provide min and max box flow setpoints of all rooms served by each air handling unit to determine operating extremes in each ductwork system.
- 6. For exhaust fan graphics:
 - a. Provide a link to associated lab rooms, floor plans, and individual graphics.
 - b. Provide the average of flow setpoints for all exhaust boxes served by that exhaust fan. (Flow setpoint is an indication of flow vs. damper position indicating relative airflow capacity utilized by the flow control device, therefore providing indication of over/under pressurization of the ductwork system.)
 - c. Provide min and max box flow setpoints of all rooms served by each exhaust fan to determine operating extremes in each ductwork system

2.9 INTEGRATION BETWEEN SUB-SYSTEMS

- A. General: The BMCS is responsible for integration to all devices described within this section, and as indicated in the design drawings and sequences of operations. The BMCS shall provide integration protocols of the type, quantity, redundancy, and architecture as described in this section. Deviations are not acceptable. The contractor shall provide network wiring as described within this section.
- B. VFDs (Variable Frequency Drives)
 - 1. Communication Medium: RS-485 Twisted Shielded Pair
 - 2. Required architecture: VFD's shall be daisy-chained to an Ethernet based Building Controller.
 - 3. Communication Protocol: BACnet
 - 4. Wiring Responsibilities: BMCS manufacturer shall provide and install communication wiring, in conduit, between each VFD and BMCS panel.
 - 5. Points Monitored via integration:
 - a. Drive Status, Alarm Status, Maintenance Required, Drive Speed, Frequency, Voltage, Current, Power, Temperature, Drive KWH, Run Time
 - b. Allow for 25 additional software points mapped to the BMCS.
 - 6. Hardwired Points:
 - a. Safety shutdown, Start/Stop, Speed Control Output, Common Fault, Fan Status, Bypass Mode



- b. As indicated in the sequence of operation.
- C. Factory Packaged AC Units
 - 1. Communication Medium: RS-485 Twisted Shielded Pair
 - 2. Required architecture: AC Unit shall be daisy-chained to an Ethernet based Building Controller.
 - 3. Communication Protocol: BACnet
 - 4. Wiring Responsibilities: BMCS manufacturer shall provide and install communication wiring, in conduit, between each AC Unit and the BMCS panel.
 - 5. Points Monitored via integration:
 - a. As indicated in the sequence of operation
 - 6. Hardwired Points:
 - a. As indicated in sequence of operation.

2.10 DIRECT DIGITAL CONTROL PROCESSING UNITS

- A. Direct Control processing units shall provide functional capabilities as detailed herein. Alternate methods to facilitate the functionality of the DDCPs may be acceptable. Alternate methods must satisfy intent of this specification and deviations must be clearly indicated in submittal.
- B. Direct Digital Control Panels (DDCPs) shall speak peer-to-peer directly on the Ethernet network without the use of interposing routers or gateways.
- C. Cat 6a cable shall homerun to each Building Controller on the Automation Layer such that communication between major HVAC equipment and the System Server(s) shall be direct without any single point of failure.
- D. The DDCP shall be Ethernet based BTL Listed Building Controllers (B-BC) with On-Board BBMD (BACnet Broadcast Messaging Device) capability. All BC's shall be provided with IP addresses.
- E. A BACnet/IP Building Controller (B-BC) with on board BBMD capability shall be provided for each major HVAC system including but not limited to AHU, ERU, H&V, DOAS, Chilled Water System, Condenser Water System, Heating Plant, Exhaust Fan Set, Pump Sets.
- F. Communications: Minimum speed 10/100 Mbps peer to peer.
- G. Control panels shall support as a minimum the following protocols on the Automation Level: BACnet I/P, Modbus TCP, SNMP, HTML
- H. Control panels shall include communication ports for the following Field Level protocols: BACnet MS/TP, Modbus RTU, LON

- I. DDCP application programs shall be resident in the DDCP at all times in Erasable Programmable Read Only Memory (EPROM) or in random access memory (RAM), IMB minimum and include a 100-hour minimum battery backup for data base. Database changes made at the OWS shall be downloaded from the OWS to any DDCPs. Likewise, database changes made at the DDCP shall be uploaded to the OWS. Once downloaded, a DDCP shall not require further communication with the OWS except for database changes, OWS commands, and requests from the OWS for DDCP detected changes of state. Panels using battery backed RAM for programming and database storage shall also have the capability to commit this information to EPROM / Flash ROM.
- J. The DDCP shall be microprocessor based with a minimum word size of 32 bits. They shall also be multitasking, multi-user, real time digital control processors consisting of modular hardware, communication controllers, power supplies and input/output point modules. Each DDCP shall have sufficient memory, a minimum of 16 megabytes, to support its own operating system and databases. The DDCP shall include one or more central processors as required for application processing and for communication processing. The DDCP shall have its database and program stored in its RAM, which shall include battery backup (minimum of 100 hours).
- K. Provide a master calendar/clock to be used by the system processor. The clock shall provide time to the second with a minimum resolution of 1 millisecond. All processors shall operate on the same clock frequency. DDCP panels shall have their clocks synchronized to the BMCS server at least once per day.
- L. Enclosures shall be rigidly secured to a wall or floor, as appropriate, allowing sufficient ventilation space at the back, sides or top as required. All components shall be totally accessible through the front door without the need to remove adjacent components, wiring or piping. All wiring shall enter the cabinets from the bottom or side with bushings. No openings shall be allowed in the top of the cabinet unless sealed water tight. All DDCP enclosures shall have cylinder locks all keyed alike.
- M. DDCPs and all associated components shall be suitable for operation in environmental conditions between 32°F and 122°F and less than 93% relative humidity non-condensing. Where internal air circulation fans are required for reliable operation, they shall be installed.
- N. All electronics in the DDCPs shall be constructed with modular based I/O modules or as specified below. The DDCPs shall be capable of, as a minimum, the following I/O functions:
 - 1. Point Modules: Multiple point modules using a maximum of 16-point multiples for binary inputs and outputs, analog inputs and outputs, and accumulator inputs shall be provided. These modules shall be able to be added to via expansion panels to provide a maximum of 500 direct connection points in a single DDCP. The modules shall be mounted in a pre-wired chassis for convenient mounting. Modules may utilize DIN rail mounting.
 - 2. Binary Inputs (Digital Inputs): All binary inputs shall be optically isolated and shall detect switch contact position. Binary excitation power shall be provided by the DDCP, separate and isolated from all other DDCP power and from earth ground. With the removal of a binary input module all field wiring for that card shall be disconnected from all DDCP circuitry including excitation power.



- 3. Binary Outputs (Digital Outputs): Binary outputs shall operate at 24V dc. All output points shall be relay-isolated through interposing relays. Output points shall be selected by board jumpers or switches to be latched or pulsed. The DDCP shall have space within the high voltage enclosure (Field Equipment Panel) for a minimum of 56 interposing relays (if required) driven by the binary outputs. Each relay shall provide a form C contact rated at a minimum of 10 amps at 120V ac. Provide an LED indicator on each interposing relay provided and/or output point for indication as to the state of the relay and/or output. Power for driving the relays shall be provided by the DDCP and shall be isolated from earth ground. With the removal of a binary output module all power to the relays associated with that card from the DDCP shall be disconnected.
- 4. Analog Inputs: The DDCP shall accommodate the following sensor inputs.

Sensor Type

10K Thermistor – Type II Curve	
100K Thermistor – Type II Curve	
100 ohm platinum RTD	20° to 100°F
100 ohm platinum RTD	-40° to 125°F
100 ohm platinum RTD	32° to 250°F
1000 ohm platinum RTD	20° to 100°F
1000 ohm platinum RTD	-40° to 125°F
1000 ohm platinum RTD	32° to 250°F
1000 ohm nickel RTD	32° to 250°F
0-200 ohm rheostat	Assignable
Three-wire potentiometric	Assignable
Relative humidity	30 to 90%
Relative humidity	0 to 100%
Duct Static pressure	0 to 3 in. wc
Fluid Static pressure	0 to 40 PSIG
0-1 Volt dc linear floating	Assignable
0-5 Volt dc linear floating	Assignable
0-10 Volt dc linear floating	Assignable
4-20 mA dc linear floating	Assignable

- 5. Each point shall be assignable to one of the above sensor types and able to be reassigned at any time.
- 6. The analog-to-digital conversion shall be accomplished with a minimum of 16-bit resolution, plus sign and overflow. The sample shall be integrated over a period of 100 milliseconds for noise rejection. The A/D converter shall not require on-board calibration. The analog board shall continuously scan all points connected to it and place the converted data into on-board RAM memory. This memory shall be directly accessed by the DDCP application processor. The application processor shall never have to wait for analog-to-digital conversion in order to read an analog point. Signal conditioning and excitation shall be internal except for voltage and current inputs, which may be separate. All levels of analog excitation voltage shall be isolated from earth ground. With the removal of an analog input module all field wiring associated with that module shall be disconnected from all DDCP circuiting including excitation power.



- 7. Analog Outputs: The DDCP shall be capable of outputting a 0 to 10V dc analog signal and a 4 to 20 mA analog signal (10-bit resolution minimum). The voltage and current outputs shall be able to be scaled individually by software to any range within the maximum output range. The analog output signals and the pulse signals shall both be capable of driving transducers to result in a modulating 3 to 15 psi pneumatic signal. I/P, E/P, or pulse/p transducers shall be mounted in the field equipment panel. With the removal of an analog output module all field wiring associated with that module shall be disconnected from all DDCP circuitry.
- 8. efPulse Accumulation: Pulses from power meters, turbine meters, or other pulse generating sensors shall be accumulated in the DDCP. Accumulator input shall be capable of a 20Hz pulse rate. Up to 65,000 pulses shall be accumulated before rollover to 0. Provide debouncing circuitry that shall filter out any pulse shorter than two milliseconds. The ability to reset the accumulated data shall be provided by software. No additional hardware shall be required to use a binary input as a pulse accumulation input.
- O. Maintenance and Support
 - 1. The following minimum features shall be provided to facilitate maintenance and support:
 - a. All active circuit components shall be mounted on plug-in circuit cards for ease of removal and replacement.
 - b. A mechanism to allow for disconnecting from the communications trunk. Additionally, the DDCP shall easily be able to be connected to field test equipment.
 - c. Primary power, logic power and each level of excitation power "ON" indicator lights along with indicator lights which demonstrate that the DDCP is receiving and sending transmissions both on the communications trunk, and internally.
 - d. An auxiliary 120V ac duplex power outlet shall be available in, or adjacent to the DDCP to connect test equipment.
 - e. A reset switch in the DDCP to request both hardware and software restart and initialization from the OWS.
 - f. An RS-232 port for the connection of a modem, printer or operator's terminal.
 - g. A "Low Battery" status indication that will annunciate and alarm at the OWS when the battery requires replacement.
- P. Wiring Features
 - 1. Incorporate the following design features to ensure fails afe operation of the system:
 - a. The multiplexing communications interface shall be electrically isolated from the communications trunk so that component failure within the DDCP will not affect the data traffic on the trunk for other DDCPs.



- b. Binary input field electrical circuits shall be electrically isolated on individual circuit cards to minimize damage to DDCPs.
- c. All field wiring to DDCPs shall be terminated at barrier type screwdriver terminal strips not directly to a controller I/O module. Terminal strips shall not be mounted either on the individual point cards or shall be mounted external to the cards and the signals internally routed to the point cards. Provide two screw connectors for each binary input, accumulator input, and analog output point. Four screw connectors shall be provided for each analog input point. Interposing relays where required shall have a terminal for normally open, for normally closed, and for common. Removable terminal strips built in to the DDCP shall be an acceptable alternative to separate terminal strips.

Q. Power

- 1. The DDCP, in normal operation, shall require 120V ac and dissipate no more than 200 watts. A poweron indicator, power switch, power line filter, and power fuse shall be provided. Surge protection for the power lines and the communication lines shall be provided.
- 2. Provide two, 120 VAC 20 amp circuit breakers for BMCS power at each power panel. Provide additional circuit breakers as needed.
- 3. Coordinate with other trades for the final coordinated location of each DDCP panel within the mechanical room spaces.
- R. Battery Back-up
 - 1. All DDCP memory and the DDCP calendar clock shall be battery backed for a period of at least seventy-two hours. The batteries shall be continuously trickle charged when normal power is available. Batteries shall be Alkaline or Lithium and provide indication of the current level of readiness to the BMCS for DDCPs controlling critical equipment where the controller must be insulated from momentary power losses (when the system is between normal power going off and awaiting emergency power, and vice versa, provide an uninterruptible power supply for each DDCP OWS and ROWS. UPS shall allow for full and complete normal operation of the BMCS for a total of one half hour before the system performs a controlled shutdown. Whenever the DDCP is switched to battery power it shall transmit a message to the OWS when polled (indicating that power failure has occurred).

2.11 APPLICATION SPECIFIC CONTROLLERS

- A. The control program shall reside in the application specific controller providing control when host computer communication or DDCP panel communication is not possible. The application program shall be maintained at the application specific controller in ROM, PROM, EPROM OR EEPROM. The default database, i.e., setpoints and configuration information, shall be stored in Electronically Erasable Programmable Read Only Memory (EEPROM).
- B. Application specific controllers requiring the application or database to be downloaded from a host shall not be acceptable. The zone controller must run the control application using the default setpoints and configuration after a power failure with the host disabled.

- C. The controller address shall be set by a hand-held, digital service tool or dip switches. All remaining database parameters shall be set by service tool or host computer.
- D. Each communication trunk shall support up to 96 terminal unit controllers. Each controller shall be assigned an individual address as designated by the contractor. The address shall be set into EEPROM using the service tool.
- E. The network trunks shall be as required by the acceptable manufacturer's system requirements. The network may consist of coaxial cable (Beldon 9369, 9268, 9228, 82269, and 89269 or approved equal), twisted pair cable with 100% foil shield of the gauge recommended by the manufacturer (Beldon 1154A and 1155A or approved equal) or optical fiber (62.5 microns, duplex). All cables used in plenums shall have a maximum peak optical density of 0.5 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 5 ft. or less.
- F. Each controller shall have the appropriate quantity and type of inputs and outputs to control and monitor the equipment served. At minimum, provide inputs for air flow sensor, supply air temperature (each TUC), input for thermostat, input for CO2 sensor (where required) and outputs for primary air damper, fan start/stop and speed control (for fan powered boxes ECM motor), zone humidifiers (if applicable), lighting control, and electric heat control (duct mounted reheat and/or baseboard radiation). Outputs shall be electrically isolated from the inputs and communications line.
- G. The controller shall be an electrical class-II device constructed from UL tested flame and smoke retardant materials to allow mounting in the return air plenum. The controller shall be listed UL-916. The controller shall be surface mounted within an electrical panel, or the controller shall be mounted to a 4 x 4 Junction box and completely enclosed in a dust-proof, flame and smoke retardant housing.
- H. All electrical connections shall be made to a combination base and terminal strip assembly. To ensure long-term reliability, all electrical connections shall be screw type.
- I. Provide isolation transformers to protect and provide surge-free power to the controller. Transformers may be centralized for several controllers or provided individually for each controller.
- J. Provide coordination with the terminal device manufacturer and contractor for the controllability of the minimum and maximum flows, and sound criteria with required CFMs. Controllers shall be sent to the air terminal manufacturer for factory mounting.
- K. Provide coordination with the Commissioner for the final layout of all MERs and equipment rooms where DDCP panels are located.

2.12 FIELD EQUIPMENT PANEL

- A. Provide field equipment panels to interface the DDCP panels with pneumatic control devices. The panels shall house and interface relays and other miscellaneous control components.
- B. Connect the panel to its associated DDCP. Panel shall contain barrier type terminal strips mounted for input and output wiring terminations.
- C. Identify all equipment internal to panel or face mounted with nameplates to match approved shop drawings.
- D. Field equipment panels shall be the same NEMA classification as all other panels located in the same environment, master key locked, hinged gasketed front door cabinet, construction to match DDCP enclosures. Take necessary precautions to protect equipment as described in "Distributed Processing Units".
- E. If panel is located out of doors, its enclosure shall be NEMA 4. Provide auxiliary heating and/or cooling for components as required to keep the panel environment within the enclosed equipment's specifications.

2.13 SENSORS AND CONTROL DEVICES

A. General

- 1. Provide sensors and control devices as indicated on mechanical plans, control flow diagrams and as required to meet specified performance. Where performance specifications exceed capabilities of hardware specified, performance governs. The installation of such devices shall be the responsibility of this contractor.
- 2. Where high accuracy is required equip analog sensors with industry standard 4 to 20 mA or 0-10Vdc transmitters with built-in circuit protection against reverse polarity and supply voltage transients. The transmitters to be matched to the sensing element and compatible with the DDCP.
- 3. All sensor/transmitters assemblies shall be factory calibrated.
- 4. All sensor wiring, analog or binary, input or output, shall be capable of sharing single conduit runs without affecting signal performance.
- 5. The sensor range and type to be suitable to the application.
- 6. Minimum contact rating of relays and switches shall be 4 amp 120 volts resistive.
- 7. Devices UL listed for electrical safety where applicable.
- 8. All components of sensors exposed to process shall be rated to withstand 150 percent of maximum process temperature and pressure.
- B. Thermowells
 - 1. Provide stainless steel thermowells for each immersion type temperature sensor and switch. Thermowells shall have extension for pipe insulation and threaded connection to pipe. Threaded connection shall be a minimum of 1/2 in. NPT. Maximum insertion length shall be 6" or 3/4 the pipe diameter whichever is smaller.
- C. Temperature Sensors
 - 1. Temperature sensor assemblies shall consist of a 100 or 1,000 OHM platinum RTD sensor and a solid state, protected in a housing suitable for the environment in which it is installed. Provide 2-wire, 4-20 mA transmitters where called for in the contract documents. Approved sensor contractor's standard temperature sensor or Minco AS2 or AS3 series, Ebtron, Honeywell or approved equal.

- 2. Sensors for mixed air and coil discharge applications and for fan discharge applications in systems over 50,000 CFM averaging type sensors shall be used. Probe length shall be at least one linear foot per four square feet of duct area or equal to duct width where installed, whichever is longer. Approved sensor contractor's standard temperature sensor or Minco TT809 series, Ebtron, Honeywell or approved equal.
- 3. Sensors for preheat coil applications shall be provided in the same quantity as the number of coil sections 1:1. (One sensor per coil in a bank of coils.).
- 4. Outside air sensors shall be mounted on a northern exposure and mounted within a ventilated enclosure. Indicate exact location in shop drawings. Approved sensor - contractor's standard temperature sensor or Minco TT809PW4.001EN2, Ebtron, Honeywell or approved equal.
- 5. Terminal unit space temperature sensors may be thermistor type, minimum 10K with and accuracy of +/-.5 deg. F and a stability of .25 deg F over a minimum of five years. Approved sensor contractor's standard temperature sensor or Minco TT859PW1H1, Ebtron, Honeywell or approved equal.
- D. Humidity Sensors
 - 1. Humidity sensor assemblies shall consist of a transmitter protected in a housing suitable for the environment where it is installed. Approved sensor contractor's standard temperature sensor or Minco HT2D1 for duct mounting, HT2O1 for outside air mounting, and HT2S1NT or HT2S1H, Ebtron, Honeywell for combo temperature and Humidity or approved equal.
 - 2. The sensor accuracy shall not exceed $\pm 2.0\%$ RH. Sensor span shall be 40 to 90% RH.
- E. Carbon Dioxide Sensors
 - 1. Carbon dioxide sensors shall feature an analog output, utilize automated calibration, and non-dispersive infrared technology.
 - 2. Sensors shall operate with 18 to 30 VAC or 18-2 VDC, have a range of 0 to 2000 ppm, with an accuracy 0f \pm 100ppm @ 72 degrees F.
 - 3. Output shall be 0 to 10 VDC (1,000 Ohm impedance)
 - 4. Approved manufacturer: Telaire Model 5001 (Wall mounting) or 8041 (Duct Mounting), Ebtron, Honeywell or approved equal.
- F. BTU Energy Measuring Station
 - 1. The entire BTU Energy Measuring Station shall be built and calibrated by a single manufacturer, and shall consist of a flow meter, two temperature sensors, a BTU meter, temperature thermowells, and all required mechanical installation hardware. A certificate of NIST traceable calibration shall be provided with each system.
 - 2. The BTU meter shall provide the following points both at the integral LCD and as outputs to the BMCS: Energy Total, Energy Rate, Flow Rate, Supply Temperature and Return Temperature. Output signals shall be either network interface (protocol conforming to BACnet MS/TP or BACnet/IP) and/or



via individual analog and pulse outputs. Each BTU meter shall be factory programmed for its specific application, and shall be re-programmable using the front panel keypad (no special interface device or computer required).

- 3. Temperature sensors shall be loop-powered current based (mA) sensors and shall be bath-calibrated and matched (NIST traceable) for the specific temperature range for each application. The calculated differential temperature used in the energy calculation shall be accurate to within +0.15°F (including the error from individual temperature sensors, sensor matching, input offsets, and calculations).
- 4. The flow meter shall be Clamp-on Transit Time Ultrasonic Flow Meter, complete with matched transducers, self-aligning installation hardware and coaxial transducer cables. The flow meter shall be installed without making any openings in the pipe wall and shall utilize non-wetted ultrasonic transducers that may be located up to 300 ft from the meter. Ultrasonic transducers provided must be optimized for the specific pipe & process conditions for each application and the transducer frequency shall be automatically matched to the resonant frequency of the pipe at start-up. An integral auto-zero function shall be provided for zero precision and high accuracy, even at very low flow velocities. The flow meter shall be capable of measuring bi-directional flow. Accuracy shall be within $\pm 1\%$ of rate from 1 to 40 ft/sec and ± 0.01 ft/sec for velocities below 1 ft/sec. Overall turndown shall exceed 400:1 installed either in the supply or return pipe of the system to be measured.
 - a. Electromagnetic and Turbine type insertion meters shall be considered. Turbine type shall not be acceptable for use in open loop condenser water applications.
 - b. The Contractor shall coordinate the exact locations of each meter including straight pipe lengths needed for proper installation with the Contractor. The Contractor is responsible for the piping required to accommodate the meters properly.
- 5. Manufacturers include: Onicon, Flexim, Ebtron or approved equal.
- G. Air Flow Measurement Station (Fan Inlet)
 - 1. Each thermal dispersion fan inlet sensor shall be designed specifically to be mounted directly in the inlet bell of centrifugal fans. The sensor probes shall utilize two "bead-in-glass" thermistors to determine the airflow rate and temperature at each sensing location. Accuracy shall be plus or minus 2 percent of reading. Provide Ebtron model GTx116, Siemens, Honeywell or approved equal transmitter. Each transmitter shall produce a linear, temperature compensated, output corresponding to the required velocity pressure measurement. Provide BACnet MSTP port for connection to BMCS.
 - 2. Provide Ebtron Gold Series, Siemens, Honeywell or approved equal.
- H. Air Flow Measurement Station (Duct Mounted)
 - 1. Each insertion station shall contain an array of sensor probes, each containing one bead in glass hermetically sealed thermistor. The sensing elements shall be distributed across the duct cross section in a quantity to provide accurate readings. Station construction shall be suitable for operation at airflow from 0 up to 5,000 fpm over a temperature range of -20 to 160 degrees F, and accuracy shall be plus or minus 2 percent of reading. Provide Ebtron model GTx116, Siemens, Honeywell or approved equal



transmitter. Each transmitter shall produce a linear, temperature compensated, output corresponding to the required velocity pressure measurement. Provide BACnet MST/IP port for connection to BMCS.

- 2. Provide Ebtron Gold Series, Siemens, Honeywell or approved equal.
- I. Water Flow Proving Switch
 - 1. Flow switch shall have the following features;
 - a. Stainless steel bellows, NEMA 5 (IP54) enclosure
 - b. Pipe connection 1" MNPT for pipe sizes 1" to 8"
 - 2. Manufacturers
 - a. Caleffi 626600A, Siemens, Honeywell or approved equal
- J. High Temperature Limit Switch
 - 1. High temperature switch shall be SPST open high, manually reset, with an operating range of 100 to 240 deg. F. High limit switch shall use a liquid filled capillary and be well mounted.
 - 2. Manufacturers: Johnson Controls model A19ADB-1C, Siemens, Honeywell or approved equal.
- K. Differential Pressure Transmitter Assembly Water
 - 1. Assembly shall consist of a differential pressure sensor and an electronic 2-wire, 4-20 mA transmitter assembly enclosed in a gasketed, dust and watertight case. All body cavities open to the process fluid shall be provided with drain ports at the cavity bottom and vent ports at the top of the cavity. Both drain and vent ports shall be minimum 1/4" NPT.
 - 2. The transmitter shall be capable of sustaining differential pressures in either direction, up to the body rating without damage to the instrument, loss of accuracy, or zero shift. Provide a sensor with a minimum accuracy of $\pm 1\%$, a linearity of $\pm 0.1\%$, a repeatability of $\pm 0.1\%$, and a hysteresis of $\pm 0.1\%$.
 - 3. The transmitter shall be fully compensated for both process and ambient temperature variations. The transmitter shall be furnished complete with input gauges and factory mounted 3-valve manifold.
 - 4. Manufacturers:
 - a. Siemens
 - b. Rosemont
 - c. Ebtron
 - d. Approved equal
- L. Differential Pressure Switch Liquid



- 1. Shall be Penn Model P74, Siemens, Honeywell or approved equal.
- M. Differential Pressure Switch Air
 - 1. Shall be diaphragm operated and actuate a SPDT snap-acting switch. Operating point shall be adjustable. Range shall suit application.
 - 2. High and low sensing ports shall be 1/8" NPT or ¹/₄" compression connected to angle type tips designed to sense pressure.
 - 3. Switches used for fan shutdown shall be manual reset type.
 - 4. Manufacturers:
 - a. Dwyer
 - b. Johnson Controls
 - c. Honeywell
 - d. Approved equal
- N. Differential Pressure Switch Filters Non-Indicating
 - 1. Shall be diaphragm operated to actuate SPDT snap-acting switch. Operating point shall be adjustable. Setpoint shall be indicated on visual scale. Range shall suit application.
 - 2. High and low sensing ports shall be 1/8" NPT connected to angle type tips designed to sense pressure.
 - 3. Manufacturers: Dwyer Series 1638, Cleveland AFS series, Ebtron Gold or approved equal.
- O. Differential Pressure Switch Filters Indicating
 - 1. The differential pressure sensor shall be configured for air pressure ranges as low as 0.1 in. W.C. full scale, with Pascal ranges as low as 25 Pa full scale.
 - 2. Static standard accuracy is 1.0% full scale in normal ambient temperature environments. The units are temperature compensated to within 0.02%FS/°F (0.036%FS/°C) for zero and span.
 - 3. Utilize an all stainless steel micro-tig welded sensor. The tensioned stainless steel diaphragm and insulated stainless steel electrode, shall position under pressure to form a variable capacitor.
 - 4. Manufacturer: Setra, Siemens, Honeywell or approved equal.
- P. Level Switch
 - 1. Float type level switch with SPDT snap acting contacts. Electronics shall be housed in a watertight enclosure.



- 2. Manufacturers:
 - a. McDonnell & Miller
 - b. Delta
 - c. Ebtron
 - d. Approved equal.
- Q. Damper End Switch
 - 1. Switch shall be actuated by the damper blade reaching the position specified in the sequences of operation required for the next step of control to be completed.
 - 2. Provide encapsulated mercury type switch shall be Kele model TS-470 or non-mercury TS-475 as manufactured by Kele, Ebtron, Honeywell or approved equal.
- R. Low Limit Thermostat
 - 1. Shall have a 20-foot flexible vapor charged element. When temperature sensed by any 12 in. segment of the element falls below setpoint (usually 40°F), thermostat shall operate DPDT manual reset contacts.
- S. Leak Detector Switch
 - 1. Probe type liquid detector. Adjustable detection level. Relay outputs allow the unit to simultaneously alarm the BMCS while shutting down the system.
 - 2. Manufacturers: Liebert LT410, Kele WD-1B, Ebtron or approved equal.

2.14 AUTOMATIC DAMPERS

- A. Provide and install automatic dampers.
- B. Install damper actuators of sufficient quantity and size to limit leakage to specified rate. Damper assemblies consisting of multiple damper sections to be provided with at least one damper actuator per section or be connected with an approved jack shafting arrangement.
- C. Include actuator torque capacity in submittals.
- D. Dampers used in smoke applications shall be UL rated smoke dampers. Where the return fan of an Air Handling Unit is used for smoke removal, the return air damper shall be a smoke damper. In these cases, the return air damper shall be normally closed and held open by the control signal. In the event of a fire alarm that shuts down the air handling unit, the fire alarm system will interrupt the power to the actuator, and the damper will close. Similarly, the spill air damper will be normally open, held closed by the control signal. In the event of a fire alarm that shuts down the air handling unit, the fire alarm system will interrupt the power to the actuator, and the damper will open. During all other times, the damper will be open, closed or modulating based upon the control signal to the damper. During normal shutdown, the return air damper will open and the spill air damper will close unless otherwise directed in the sequences of operation.



E. Coordinate with Specification 23 33 13.

2.15 AUTOMATIC VALVES

- A. Automatic control valves shall be globe type with modulating plug, throttling guides, replaceable seats and discs, and stainless steel stems or Belimo characterized flow control valves.
- B. Valves 2 in. and smaller may be characterized ball valves or globe type. Ball valves shall have nickel plated forged brass bodies, stainless steel stems and balls with fiberglass reinforced Teflon PTFE seals. Globe valves shall have bronze bodies with screwed ends. Valves 2½ in. and larger shall be globe type with iron bodies with flanged ends.
- C. Valve body rating shall be equal or greater than the piping in which it is installed and the valve shall be rated for operation against the maximum system differential pressure. Rangeability shall be at least 40 to 1 or as required to provide proper control. Leakage shall not exceed 0.01 % of rated CV for single seated valves and 0.5% of rated CV for double-seated valves.
- D. The valves shall be quiet in operation and fail safe in either normally open or normally closed position in the event of a power failure. Valves capable of operating at varying rates of speed to correspond to the exact dictates of the controllers and variable load requirements, and shall be capable of operating in sequence when required by the sequence of operation. Submit valve close off pressure ratings.
- E. Valve operators shall be of the electric, spring return type sized to insure tight seating against maximum differential pressure. Provide mechanical direct reading movement indicators on all valves 2½ in. or larger. Provide positive positioning relays on valves operated in sequence and all valves 2½ in. or larger.
- F. Characteristics
 - 1. Hot Water Service: Equal percentage, single seated. For water temperature 250°F or greater provided stainless steel plug and seat.
 - 2. Bypass Service: Linear flow characteristics. Single or double seated.
- G. Valve Action
 - 1. Cooling valves normally closed.
 - 2. Preheat valves normally open (one per coil section).
 - 3. Reheat valves normally closed.
- H. Size valves to meet the coil loads as specified and as follows:
 - 1. All valves shall be sized based upon data from approved equipment submittals.
 - 2. 2-Position Valves: Line size unless noted.
 - 3. Water Service: Maximum pressure drop shall be equal to the pressure drop of the associated coil or exchanger, or 5 psi whichever is greater.

- 4. Relief and Bypass Valves: Sized according to pressure available.
- 5. Hot Water Service: Where load exceeds capacity of 2¹/₂ in. valve, provide two valves. The larger valve shall have a coefficient of flow that is between 2 and 3 times larger than the smaller valve.

2.16 BUTTERFLY VALVES

- A. Butterfly valves permitted for use for two-position operation on low temperature water applications only.
- B. All butterfly valves shall be of the full lug body style with lugs drilled and tapped and have drip tight shutoff capabilities in either direction up to and including maximum system working pressure. Butterfly valves shall be capable of closing tight after long periods of inactivity. All valve bodies 24 inch and above to be dual flanged. Flanges to be drilled through to ANSI Standards.
- C. All valves shall be suitable for use with ANSI Standards flanges. Bodies shall be semi-steel or cast iron.
- D. Valves shall provide tight shutoff up to the full valve rating on dead end or isolation service without the use of downstream flanges. Submit valve close off pressure ratings.
- E. All valves shall be furnished with self-lubricated bronze bearings. Shafts seals shall be provided to prevent leakage and to protect bearings from internal or external corrosion.
- F. Seats shall be of the reinforced resilient type (or retained seat on high performance valves) and shall also act as a body liner to prevent flow from contacting the body casting. Resilient seats shall have flange sealing lips to provide a positive seal without use of flange gaskets.
- G. Seats shall be Nordel suitable for use with HVAC water to 250°F. Shafts shall be one piece and shall of 416 stainless. Shafts shall be finish ground and polished to minimize bearing and shafts seal wear. Shafts of 8 inch and larger valves shall have a non-adjustable thrust collar.
- H. Discs shall be semi-steel with welded nickel edge. The disc-to-shaft connections shall be type 316 stainless steel. Pins, shaft and disc of all valves shall be individually machined and completely interchangeable.
- I. Provide valves with factory installed actuators of the electric or electro hydraulic type and sized for tight shutoff at maximum system differential pressure. Actuators for modulating service shall be equipped with integral position potentiometer. Provide actuators with an integral hand wheel or local manual controls for manual operation. Each actuator shall be equipped with adjustable limit switches. Input voltage shall be 24, 120, or 480 VAC, 60 HZ.
- J. Valves shall be line size unless otherwise noted on drawings.
- K. Manufacturers: Bray, Jamesbury, Posiseal, Belimo, Keystone, or approved equal.

2.17 SERVICE KIT

A. Provide three service kits for use by City of New York's personnel in testing and making minor service adjustments to the system. Include as a minimum:

- 1. All specialized nonstandard tools and adapters and fittings required for operating, maintaining, testing and adjustment of the system.
- 2. Lubricant required for automatic valves and automatic dampers, one-year supply.

2.18 SOFTWARE

- A. General
 - 1. Fully implement, optimize, and commission all software described under this paragraph and required for a complete operable system.
 - 2. Although "Program" implies software, hardware solutions may be acceptable after review and approval of the Commissioner. Such differences are to be considered deviations and presented as such.
 - 3. Software programs are described as to general intent. It is recognized that contractors' software differs; however, the programs that are provided shall incorporate the features described.
 - 4. Each point shall be identified in software with a unique point name. Point names shall be logically and consistently coded to allow identification of the point location (e.g., Building, MER), associated HVAC system (e.g., AHS-1, Chiller-2), and point function (e.g., supply temp, freezestat) as a minimum.
 - 5. Original copies of all software tools and programs utilized to program system shall be turned over to the Commissioner at the completion of the project. This includes but is not limited to; operating system, GUI development software, controller programming software, network management and diagnostic tools.
 - 6. Provide the Commissioner with all software license agreements.
 - 7. Provide the Commissioner with complete system backup, including all user workstations, controllers, databases, etc. on CD format.
- B. Executive Software
 - 1. The executive software shall include all programs needed to manage the scheduling of both system and application programs. It shall also include all programs needed for use of the systems peripheral devices and communications networks. Parts of this software may be restricted from user modification to insure system integrity. However, the following user access to the executive software shall be provided.
 - a. Ability to switch failing output devices to another device without loss of data or otherwise handle device failures (e.g., jammed printers).
 - b. Ability to modify the priorities and scheduling of application programs.
 - c. Ability to add or delete peripheral devices.
 - 2. Provide diagnostic programs to report and display DDCP system failures at all Operator's console both on LCD display and printer. Provide on-line error detection and messages.



- 3. Peripheral Equipment Selection:
 - a. Provide peripheral equipment selection control to apportion data to peripheral console as required (e.g., alarms to alarm printer).
 - b. Apportionment of Data and Control Functions shall be a programmable function by a high-level operator at any console. Initialization of the apportionment of data shall be according to the description of the Functional Requirements stated under each Console Description. Contractor shall provide all software and programming time required to initialize the system. Submit initial apportionment for all monitored and control functions for review prior to final programming.
 - c. The graphics display shall be logically divided to allow the simultaneous occurrence of operator interaction and alarm indication with no interference to each other's screen display.
- 4. System Access Control: Provide a minimum of sixteen levels of access using selectable passwords to the system software. Each higher level will increase the allowed interaction by the user. Each password must be entered by the operator to access a particular level of system operation. The password shall not be displayed or printed. Each password shall be unique for each operator.
- 5. The system shall observe the following command priorities (from highest to lowest):
 - a. Smoke Control and Life Safety
 - b. Manual Operator Command
 - c. Energy Management
 - d. Automatic Control
- C. Operator Interface Program
 - 1. Provide a high-level language as the operator interface with the system for defining and selecting points, parameters, report generation, graphics, and all functions associated with day-to-day operation of the system.
 - 2. Provide software to notify the operator (via a smartphone, tablet, mobile device, etc.) of the occurrence of an alarm condition. All alarm messages shall be displayed on the monitor, on the local printer, and on the remote printer in simple English-language format. System shall print and sound an audible alarm at each occurrence. Operator acknowledgment shall silence the audible alarm. System shall print upon return to normal. The contractor shall set all alarm thresholds.
 - 3. Report Generation Software shall be provided to present system information in an organized manner.
 - a. System Point Log A log for each system, which shall include all points required for operation and monitoring of the system. Do not include points which are used in intermediate calculations and program logic or points used for system tuning and set up.



- b. Display for each point: Point Name, Point Description, Current Value, Engineering Units, Alarm Status and Command Priority.
- c. Application Program Logs Log for each program shall include current values of all points and parameters used in application program.
- d. Summary Logs Logs, which summarize system status. Include as minimum:
 - 1) Alarm Summary
 - 2) Run Time Totalization Summary
 - 3) Disabled Point Summary
- 4. Provide fully implemented interactive graphics with latest available process data fully integrated with the display. Point values shall be dynamically updated at least every 20 seconds or based on change of value settings for the system.
- 5. Use different colors for the various system components to facilitate rapid recognition and ease of interaction. Colors shall be uniform on all displays, such as all master alarms red blinking with reverse field.
- 6. Graphics generation and editing shall be via a high level interactive programming language. The graphics program shall be provided with a library of standard symbols with the capability for user to add custom symbols.

Provide graphics for but not limited to the following:

- a. Graphics shall be arranged such that the opening screen is a representation of the building facade and shall contain depict the outside air temperature, humidity and weather data from NOAA and any other point specifically noted in the sequences of operation.
- b. Clicking on a particular floor will display that floor plan with space temperatures displaying actual space temperatures at the sensor location. If the space sensor is picked, the individual VAV box or associated control loop shall display. The floor plan shall also display the mechanical equipment rooms.
- c. Clicking on a mechanical room will display the equipment in the room. If the room contains only one fan for example, the graphic for that fan shall be displayed. If the room contains several fans, the different fans will display, and picking a particular fan will cause the system to display the flow diagram for that system, with all associated points displaying their data in real time. Provide a pick point on the graphic, that when selected, will bring up the approved sequence of operation for the system. Provide embedded data sheets (PDF Files) for each device so that when the device is selected, its associated data sheet will be displayed.



d. Floor plans showing status of associated points within area including but not limited to: smoke detectors, HVAC equipment, associated lighting contactors. Indicate locations of equipment within area such as DDCPs, FEPs, MERs, space temperature sensors, lighting control panels, etc. Where a floor has several zones, program the graphics to display a color indicating the space temperature with respect to drift from setpoint as follows:

Space Temperature	Zone color
4 or more degrees below setpoint	Dk. Blue
2 to 3.9 degrees below setpoint	Lt. Blue
At setpoint plus or minus 1.9 degrees	Green
2 to 3.9 degrees above setpoint	Orange
4 or more degrees above setpoint	Red

- e. Separate Air and Water Systems Riser Diagrams showing all systems in Block Diagram Form. System status (on, off, alarm) shall be indicated. Risers shall include common sensing points such as outside air and supply and return temperatures in main piping systems.
- 7. Provide software to output a user programmed message in response to an alarm or change of value of any system point. Message length shall be at minimum 4 lines of 80 characters each. All messages shall be submitted for approval, programmed by the contractor during start up, and demonstrated during acceptance.
- D. Application Software
 - 1. System shall contain all of the following application software whether implemented in the present scope of work or required in the future.
 - 2. Time of Day Scheduling:
 - a. A comprehensive program shall be provided to automatically start and stop equipment based on the time of day and day of week, including holidays. The scheduled time-of-day program shall operate in conjunction with and shall be coordinated with optimized Start/Stop, program.
 - b. It shall be possible to individually command a point or group of points. For points assigned to one group it shall be possible to assign variable time delays between each successive start or stop command within that group. The system shall have the capacity to accommodate a minimum of 500 uniquely defined schedules. Each load group shall be capable of accommodating a minimum of 250 loads.
 - c. The operator shall be able to define the following information:
 - 1) Time, day, dates.
 - 2) Commands such as on, off, auto, etc.
 - 3) Load or loads assigned to groups.
 - 4) Time delays between successive commands.



There shall be provisions for manual overriding of each schedule by an appropriate operator.

- d. The following reports shall be provided:
 - 1) Report of any and all defined time schedules.
 - 2) Loads assigned to each time schedule.
- 3. Start/Stop Time Optimization (SSTO):
 - a. The automation system shall include a software program to perform optimized start-up and shutdown of selected equipment and for all system with a design air capacity greater than 10,000 CFM. The SSTO program shall start HVAC equipment at the latest possible time that will allow the equipment to achieve the desired zone conditions by occupancy time. The SSTO program shall also shutdown HVAC equipment at the earliest possible time before the end of the occupancy period, and still maintain desired comfort conditions.
 - b. The SSTO program shall operate in both the heating and cooling seasons. It shall be possible to apply the SSTO program to all individual systems.
 - c. The SSTO program shall operate on outside weather conditions as well as inside zone conditions, and empirical factors. The empirical factors shall relate to the dynamic responsiveness of particular zones such as heat retention and transfer coefficients. The program shall be fine-tuned during the warranty period using empirical data compiled during operation of the building.
 - d. The program shall automatically adjust itself utilizing adaptive control techniques.
 - e. The system operator shall be able to, for each system under control of the SSTO program, establish and modify the following parameters:
 - 1) Occupancy period
 - 2) Desired occupancy temperature
 - 3) Heating/cooling transfer coefficients
 - 4) Heating/cooling retention coefficients
 - 5) Primary equipment lag time
 - f. A report shall be provided detailing SSTO parameters such as zone coefficients, zone occupancy time and temperature, activated/inactivated zones, etc.
- 4. Electrical Demand Limiting:
 - a. The BMCS shall include a software program to perform electrical demand limiting (EDL). The EDL program shall monitor the rate of electrical power consumption and forecast the total demand during each demand interval using a sliding window approach.



- b. The program shall automatically shed and restore loads to prevent the electrical demand from exceeding and operator set level.
- c. Kilowatt rating of each load stored in computer memory to ensure proper number of loads being shed when excessive electrical demand is predicted. For scheduling purposes, each load assigned to one of three priority groups:
 - 1) Priority Group 1 and 2 Automatically shed as required.
 - 2) Priority Group 3 Issue operator advisory to manually shed particular load by operator action at console.
- d. When load shed condition exists, program begins searching for loads in Groups 1 and continues through Group 3 until necessary number of kilowatts have been shed. Loads within each group shall be shed on a round robin or fixed basis. Load restoration procedure is opposite of load shedding procedure.
- e. Each load shall be programmed with maximum off time, minimum on time and minimum off time.
- f. The operator shall be able to define the following information:
 - 1) Load KW and priority
 - 2) Maximum demand setpoint
- g. The following information shall be available in report form:
 - 1) Load Data
 - 2) Maximum Demand for a given period (day, week, month, etc.)
 - 3) Current demand and loads shed
- h. When maximum target is exceeded alarm shall sound, current demand in KW displayed and printed out with time of occurrence on alarm printer.
- i. Degraded Mode: Loss of all or part of data trunk cable shall not cause the shed loads to restart and the electrical load to exceed setpoint. DDCPs shall be capable of cycling connected loads in a stand-alone mode as to eliminate or reduce potential increases in maximum demand level.



- 5. Automatic Restart:
 - a. During a power outage the DDCP operating programs and database shall be protected against loss by memory battery backup. (If the length of the power outage exceeds the battery backup capacity, the programs and database shall be automatically reloaded from the disk storage upon power restoration.) After power has been restored, the system points shall either be returned to the state they would be in if there were no power outage or remain off as defined by equipment and operational requirements. Points to be restarted shall start over a programmed time schedule to affect soft start.
- 6. On/Off normal alarm:
 - a. If any device starts or stops as a result of a local event, overriding the last command of the BMCS, an alarm shall be sounded at the BMCS.
- 7. Automatic False Alarm Lockout:
 - a. When systems are off, certain analog variables may drift past programmed alarm limits. Inhibit analog variable limit alarms until after system is restarted and stabilized.
- 8. Historical Trending:
 - a. Any system point either real or calculated shall be assignable to the historical trending program. All changes in point value shall be recorded for points assigned. The trend interval shall be user selectable. All trend information shall be recorded in nonvolatile memory. Provide system capacity to trend a total of 300 points every 30 seconds without any notable system degradation. Field panels shall be able to store up to 2,500 trend samples per point and can be selected for intervals of 1 minute to 7 days.
- 9. Psychrometric Calculations:
 - a. The system shall be equipped with a Psychrometric calculation module, which will calculate any point on the Psychrometric chart when supplied with two other points of data.
 - b. The calculation shall operate in the dynamic mode, allowing system input points to be used as calculation inputs and the result used in control loops where required by the sequence of operation.
 - c. The system shall be capable of calculating the enthalpy of a sampled air stream using temperature and humidity inputs. The system shall then be capable of comparing the inputs and initiate an action (such as closing the outside air dampers) as a result of the decision.



- 10. Demand Controlled Ventilation:
 - a. The system shall be able to measure outside air CO2 and indoor CO2 (multiple locations) and override outside air damper control on applicable systems to increase O/A intake. Initiation trigger point shall be space concentrations in more than 1,000 PPM above outside air ambient. Once triggered, the system will maintain a differential between outside air ambient and the space of 700 PPM (indicative of 15 CFM/person the referenced space concentration drops below 800 PPM.
- 11. Custom Applications Program:
 - a. Provide a real-time control programming capability to allow operator to create customized control strategies based on arithmetic, logical, conditional, and time logic.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 LOCATION OF EQUIPMENT

- A. The drawings and specifications describe approximate locations of the work. Verify all locations in the field.
- B. Locate equipment and accessories to provide easy access for proper service and maintenance.

3.3 INSTALLATION OF WIRING

- A. Provide wiring for control devices, monitoring devices, instrumentation, and interlocks as required for a complete system. Coordinate with Plumbing, Electrical and HVAC specifications for devices requiring wiring under this Section.
- B. Run all wiring in compliance with the requirements of the electrical specifications (Division 26) and in accordance with NEC and NYC Electrical Code. Provide separate conduit for control wiring under this Section.
- C. Level 1 data network cable shall be run in conduit. Level 2 networks shall be installed using plenum rated cable where allowed by code, but always in EMT where exposed to damage and in all mechanical equipment rooms.

3.4 INSTALLATION OF CONTROL EQUIPMENT

- A. Device locations are the responsibility of the Contractor. Group instrumentation on ductwork and fan casing in organized manner. Locations to be consistent for each type of system. Each control device, field or panel mounted, shall be identified by an engraved lamacoid nameplate permanently attached to its enclosure.
- B. Sensors mounted on air ducts having exterior insulation shall be provided with standoff spacers with insulating material firmly fitted around spacers.

- C. Averaging temperature and low temperature detectors shall be installed in serpentine fashion and supported by steel grid or multiple bulb holders. Minimum coverage for temperature sensors shall be 1 linear foot of sensor element per 4 sq. ft. of coil face area. For low limit (freezestats) 1 linear foot of sensor per sq. ft. of coil face area.
- D. The electronic high limit humidity controller must be mounted in the supply fan discharge and at least 10 feet downstream of the humidifier.
- E. Wall mounted sensors shall be 5 ft. 6 in. A.F.F. 4 ft'- 0 in for ADA Compliance except in service corridors where subject to damage height shall be 7 ft., or if noted otherwise. Coordinate all locations with the Commissioner. Provide insulated base where mounting on exterior wall is required. Provide metal guards where mounted in mechanical, electrical, storage, and maintenance areas or in any area where subject to damage.
- F. Locate pressure transducers within 50 ft of sensing point. Connect to sensors with tubing of diameter recommended by sensor manufacturer and as required to prevent signal phase lag. Provide gauge tees at transducer for connection to pressure gauge.
- G. Digital Processing Units and Field Equipment Panels shall be located in approved locations adjacent to system served. Submit all locations for approval after coordination with all other trades.
- H. Panels shall not be located directly underneath valves or other areas where they may be subject to water or heat damage. In addition, panels shall be mounted with the bottom no lower than 3 feet and the top no higher than 7 feet above the floor, with a minimum of 3 foot clearance at the front.

3.5 INSTRUCTION

- A. The Contractor shall furnish the services of competent instructors who will give instruction in the adjustment, operation and maintenance, including pertinent safety requirements, of the equipment and system specified. The instruction shall be oriented toward the system installed rather than being a general instruction course. Each instructor shall be thoroughly familiar with all aspects of the subject matter they are to teach. All equipment and material required for classroom instruction shall be provided by the Contractor.
- B. The instruction program shall be accomplished in two phases for the time interval specified for each phase.
 - 1. The first phase shall be given prior to the acceptance test period at a time mutually agreeable between the Contractor and the City of New York, and shall be at least five (5) days (8 hours/day) in length. Operating personnel to be trained in the functional operations of the BMCS installed and the procedures that the operators will employ for system operation. The instruction shall include but not be limited to:
 - a. General BMCS Configuration
 - b. Operation of Computer and Peripherals
 - c. Command Line Mnemonics
 - d. Report Generation



- e. Operator Control Functions
- f. Graphics Generation
- g. General equipment layout
- h. Troubleshooting procedures
- i. Preventive Maintenance procedures
- j. Sensor maintenance and calibration
- k. Proper use of service kit.
- 2. The second phase shall be conducted after system acceptance testing for a period of three (3) days. The instruction shall include but not be limited to:
 - a. DDCP Programming
 - b. Data Base Generation
 - c. Supervisory Level Operator Commands
 - d. Topics requested by City of New York.
- C. The Contractor shall furnish a professional quality video and audio recording of the instruction. The Contractor shall engage the services of a qualified videographer to record demonstration and instruction videos. Record each instruction module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. Submit two copies within seven days of the end of each instruction module.
 - 2. The Commissioner may select portions of the instruction to be recorded.
 - 3. Instruction videos shall be delivered to the Commissioner in the MP4 file format container with MPEG-4 video on USB thumb storage drives.
 - 4. Electronic media shall be USB thumb storage drives, with commercial-grade graphic label including the following information.
 - a. Name and Address of Project
 - b. Name and Contact Info of Videographer
 - c. Name and Contact info of Installer
 - d. Date of Video Recording

- 5. Organize folder structure and file locations according to Operating and Maintenance Manual table of contents; confirm with the Commissioner. Provide complete screen-based menu.
- 6. Use file names based upon name of equipment generally described in video segment, as identified in Project specifications.

3.6 CALIBRATION

- A. Perform a three-phase commissioning procedure consisting of field I/O calibration and commissioning, system commissioning and integrated system program commissioning. Document all commissioning information on commissioning data sheets that shall be submitted prior to acceptance testing. Notify the Commissioner in writing of the testing schedule so that operating personnel may observe calibration and commissioning.
- B. Field I/O Calibration and Commissioning
 - 1. Prior to system program commissioning, verify that each control panel has been installed according to the shop drawings and test, calibrate, and bring on-line each control device. Commissioning to include but not be limited to:
 - a. Sensor accuracy at 10, 50 and 90% of range.
 - b. Sensor range.
 - c. Verify analog limit and binary alarm reporting.
 - d. Point value reporting.
 - e. Binary alarm and switch settings.
 - f. Actuator spring ranges.
 - g. Failsafe position on loss of control signal or electric supply.
 - 2. Record calibration and test data on commissioning data sheets and submit. Data sheets shall include the device designation, the date of commissioning and the name of person who performed commissioning.
- C. Fan Speed Control Without Air Flow Sensors
 - 1. The Contractor shall work closely with all trades to setup fan tracking per the following procedure.
 - a. With return fan at minimum speed, set supply fan to produce volume equal to system differential. Record SF output signal.
 - b. Increase supply fan output signal 20% and raise return fan speed until differential is once again obtained. Record return fan output signal.
 - c. Continue this procedure until the supply fan is at full speed. Set all values in a look-up table so fans will track accordingly.



- d. Vary the speed of the supply fan and verify fans are tracking with the proper differential.
- D. System Program Commissioning
 - 1. After control devices have been commissioned, each DDCP program shall be put on-line and commissioned. The contractor shall confirm that the DDCP program logic follows the approved software flow chart and sequence of operation. Each control loop shall be adjusted to provide stable control and control within the specified accuracies. System program test results and loop adjustments shall be recorded on commissioning data sheets and submitted.
 - 2. The sequences of operation are subject to Commissioner onsite approval, modification, and change. Any changes to the sequences of operation shall be performed by contractor at no additional expense.
- E. Integrated System Commissioning
 - 1. After all DDCP programs have been commissioned, the contractor shall verify the overall system performs as specified. Tests shall include but not be limited to:
 - a. Data communication, both normal and failure modes
 - b. Fully loaded system response time
 - c. Impact of component failures on system operation
 - d. Time/date changes
 - e. End of month/end of year operation
 - f. Global application programs
 - g. System backup and reloading
 - h. System status displays
 - i. Diagnostics
 - j. Power fail/restart
 - k. Battery backup
- F. Non- Direct Digital Control Subsystems
 - 1. Subsystems not controlled by Direct Digital Control shall also be tested and commissioned.

3.7 ACCEPTANCE TESTING

A. The contractor shall provide all manpower as required to perform testing and coordinate with contractors to provide necessary support for complete testing of all system parameters.

- B. Submit a detailed acceptance test procedure designed to demonstrate compliance with contract requirements at least 4 weeks before the start of testing. This procedure to be approved prior to the start of the testing.
- C. During acceptance testing provide services of a fully qualified building automation technician who is knowledgeable of the project.
- D. Using the calibration test data, the Commissioner shall select, at random, functions to be demonstrated. These functions shall be demonstrated by the Contractor in accordance with the acceptance test procedure. At least 15 percent of the systems functions as selected by the Commissioner shall be demonstrated. At least 95% of the functions demonstrated must perform as specified and documented on commissioning data sheets or the system must be retested.
- E. Furnish instruments required for testing. Submit catalog data on all instruments for approval prior to performance of tests.

Instrument Accuracy				
Temperature:	¹ /4°F or 1/2% of full scale, whichever is less			
Pressure:	1/2% PSI or 1/2% of full scale, whichever is less			
Humidity:	2% RH			
Electrical:	Class 0.5			

F. After the above acceptance tests are complete and the system is demonstrated to be functioning as specified, a thirty-day endurance test period shall begin. If the system functions as specified throughout the endurance test period requiring only routine maintenance and adjustment, the system shall be accepted. If during the endurance test period the system fails to perform as specified and cannot be corrected within eight hours, the Commissioner may request that the endurance tests be repeated after problems have been corrected.

3.8 AUTOMATIC CONTROL SEQUENCES

- A. General
 - 1. Supply, install necessary sensing, controlling and controlled devices, piping, wiring and commissioning of automatic control systems, so as to provide a complete control system, meet requirements of control sequences hereinafter specified, as noted, and in accordance with Contract Documents.
 - 2. Contractor to customize control strategies and control sequences and be able to define appropriate control loop algorithms and choose the optimum loop parameters for loop control. All control loops shall be tuned to stabilize within $\pm 1\%$ of setpoint within 5 minutes of setpoint change or system startup.
 - 3. Safety devices shall be hardwire-interlocked with "hand" and "automatic" positions in series with motor controller holding coil circuit.

- 4. Startup sequences and automatic control sequences as described on hereinafter shall operate in both automatic and manual modes.
- 5. Smoke control and life safety sequences shall override other automatic control sequences including hardwired safety devices.
- 6. Reset schedules and setpoints shown in sequences are for initial programming and start-up, during system check out and through the warranty period, the reset schedules and setpoints shall be fine-tuned to obtain desired comfort and energy results.
- 7. The output of the reset schedules should be limited between maximum and minimum values. The intent of the reset schedules indicated is that the range of the output be limited between the minimum and maximum values indicated in the reset schedules.
- 8. All functions which use analog points to switch equipment on and off (e.g., fans, pumps) must be programmed with dead bands, and if necessary, time delays to prevent short cycling of equipment. Alarms generated through analog limits as noted in the sequence of operation and where required for proper annunciation of an alarm condition shall be programmed by the contractor at startup.
- 9. The following control sequences, control loops and operational data define the manner by which the project mechanical systems shall function to maintain the environmental conditions described herein.
- 10. The monitoring and control point list is the Commissioner's estimation of the points required to successfully control a particular system as specified. The contractor is responsible to provide all hardware, control loops, and points required to provide a complete and operational system as specified.
- 11. The specified control sequences refer to the application programs described in articles 1 through 10 above. Refer to that Section for more detailed information regarding the requirements of a specific application program.
- 12. All control setpoints and variables shall be fully adjustable in the field through the use of a portable terminal or lap top computer.
- 13. On all systems containing both cooling and heating coils (except in reheat position), the heating coil control valve shall be closed whenever cooling coil is activated and vice versa.
- 14. Variable frequency drives will start in minimum speed position and ramp up to speed over a two-minute adjustable ramp time (minimum).
- 15. All zone loop controllers shall incorporate control error reduction. Where used to control heating and cooling, zone thermostatic control shall incorporate deadband control of at least 5 degrees F. where the heating and cooling energy to the zone is shut off or reduced to a minimum. Refer to individual sequences of operation for exceptions to this requirement (if any).
- 16. Motor status for all motors smaller than 1 HP shall be binary current switches mounted on the motor power leg. All motors 1 HP and above (unless otherwise stated) shall be obtained via analog current sensors mounted on the motor power leg. The sensor shall be calibrated for normal operation and abnormal operation based upon low, normal, and high current sensed. The input from the sensor shall be



programmed with analog alarm limits to indicate sensor failure or loss of power (0 mA), motor off (4 mA), motor running (mA = Normal Running Amps \pm 5 amps) and motor overloaded (mA = Normal Running Amps + 10 amps).

- 17. The BMCS shall annunciate all alarm events as applicable. This includes but is not limited to: Communication failures, Equipment Failures, Low Temperature Detection, Duct Pressure Limits, Water Leak Detection, High or Low Discharge Air Temperature, High or Low Mixed Air Temperature, High or Low Zone Temperature, Low Outside Air Volume, High Zone CO2 Concentration, High Filter Differential Pressure (Dirty Filter), Smoke Detection, and Third-Party System Alarms and Faults. Refer to sequences of operation for additional requirements.
- 18. Zone temperature alarms for non-critical spaces shall be on a 10-minute (adjustable) time delay to minimize nuisance alarms. Zone temperature alarms for critical spaces shall be on a 3-minute (adjustable) time delay.
- 19. For VAV terminal unit dampers and/or valves, the BMS contractor may elect to utilize floating control (2 binary outputs) for modulation of actuators in lieu of analog control (as specified). Where floating control is used, the BMS contractor shall provide actuator position feedback via an analog input.
- 20. All manually reset safeties and limiting devices (e.g. high limit pressure switches, etc.), shall have the manual reset pushbutton (or other resetting mechanism) located so that it is easily accessible to the building operator.
- 21. Provide and install all sequences as indicated in the sequences of operations on the Contract Drawings.

3.9 SEQUENCES OF OPERATION FOR SYSTEMS

A. Refer to contract drawings for sequences of operation.

END OF SECTION 23 09 23



SECTION 23 21 23 PUMPS

PART 1 - GENERAL

1.1 **RELATED DOCUMENTS**

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].
- B. Provide pumps in accordance with the Contract Documents.

1.2 WORK INCLUDED

- A. Vertically Mounted Pumps.
- B. In-line Pumps.
- C. Condensation Pump Units.

1.3 SUBMITTALS

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures" for all submittals.
- B. Submit manufacturer's latest data.
- C. Shop drawing submittals to indicate certified pump curves NPSH, pump performance characteristics with pump and system operating points plotted.

1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Select pumps to operate at or near their point of peak efficiency, allowing for operation at capacities of approximately 25% beyond design capacity. In addition, select the design impeller diameter so that the design capacity of each pump (GPM and TDH) does not exceed 85% of the capacity obtainable with maximum impeller diameter at the design speed for that model.



- C. In order to insure stable operation and to prevent any possibility of hunting, the pump curve must be continuously rising from maximum capacity up to the shutoff point.
- D. Make the entire pump assembly including, but not limited to, the casing or enclosure, suction and discharge flanges, and seals, suitable for operation with the "Pump Working Pressure" and temperatures indicated on the Drawings. For the purpose of this specification, the pump working pressure is defined as the sum of the scheduled maximum suction pressure and the maximum dynamic head at shutoff developed by the pump for pumping duty specified. Test each entire pump assembly hydrostatically at the factory at least 50 psig pressure above the pump working pressure.
- E. Perform a complete factory electric operating and sequence test, capacity performance test, and hydrostatic test for each factory assembled pumping system prior to shipment. Include a system operating flow test from zero to 100% of design flow for the pumping unit with the specification suction and net discharge pressure conditions specified on the Drawings. Verify the accuracy of the system flow meter with an independent calibrated test flow meter. The factory operating and performance test may be witnessed by the Commissioner. Notify the commissioner in writing at least three (3) weeks prior to the factory performance test data for factory testing including flow, head, and horsepower at all flow rates on a plot of the system flow test. Certify that the pumps have been satisfactorily tested as specified hereinbefore and are in compliance with the requirements of the Contract Documents. Do not install the pumping system before the test data has been reviewed by the Commissioner.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide pressure gauge tap and cock on suction and discharge connection of each pump.
- B. Motors to be of such size that they will operate continuously without exceeding it's H.P. rating, exclusive of service factor, at design capacity and head.
- C. Provide pump casing of close grained cast iron free from blow holes, sand pockets and other detrimental defects. Liquid passageways to be smooth and contoured to permit maximum efficiency. Casing to be designed for working pressure as scheduled and to be hydrostatically tested at 150% of the maximum working pressure. Suction and discharge flanges to be drilled to ANSI standards for operating pressure specified.
- D. Provide on the mechanical seals for each open system water pump, an impurity eliminator type that is constructed throughout of 316 stainless steel and suited to the system scheduled working pressure. Factory pipe the impurity eliminator and provide with isolating ball valves and valved bypass piping. Piping to be Schedule 40 galvanized steel pipe.
- E. The impeller supplied for the specified conditions to limit shaft deflection at the seal to no more than .002 inches.
- F. For vertical and in-line pumps, manufacturers are:
 - 1. Armstrong



- 2. Bell & Gossett
- 3. Buffalo Pump
- 4. Weinman
- 5. Paco
- 6. Peerless Pump
- 7. Ingersoll Dresser
- 8. Or approved equal

2.2 VERTICALLY MOUNTED PUMPS

- A. Provide pumps of the close coupled type with gray iron casing. Bronze impeller, bronze replaceable wear ring, stainless steel pump shaft and mechanical seal vented to suction with copper tubing.
- B. Motor shall be mounted on a separate adjustable steel frame with lifting holes or lugs on the top and sides and a drip base drain. The pump shall be permanently bolted and doweled to the frame at the factory.
- C. Provide a spacer type coupling to permit easy seal replacement.
- D. Provide a thrust bearing and thrust collar sleeve to prevent the rotating assembly from dropping on a bearing failure.
- E. Mechanical seal shall be single spring inside type with carbon against O-ring mounted Ni-Resist faces. EPDM elastomer with stainless steel spring and hardware shall be provided. Seal vent line shall be factory installed and shall be piped from the seal area to the pump suction connection.
- F. A bronze shaft sleeve, extending the full length of the mechanical seal area, shall be provided.

2.3 IN-LINE PUMPS

- A. Provide vertical in-line bronze fitted, single stage, centrifugal pumps, close-coupled to a ball-bearing, drip proof totally enclosed NEMA standard vertical electric motor.
- B. Models 3 inch and larger to have balanced double volute design to minimize radial shaft deflection. Suction and discharge connections to be the same size, flanged 125 PSI rating, 180 degrees opposite on centerline for pipeline mounting. Casing to have bronze replaceable wear ring. Impeller to be bronze, enclosed, statically, dynamically, and hydraulically balanced. Motor shaft to be one-piece stainless steel. Pump to have mechanical shaft seal of the Ni-Resist type and be properly vented to the suction connection.
- C. When in-line pumps are horizontally mounted, support them from overhead.

2.4 CONDENSATION PUMP UNITS

A. Provide $\frac{1}{2}$ gallon nylon tank with float operated switch.



- B. Pump to be cast aluminum with epoxy coating and ¹/₄" MNPT discharge connection.
- C. Motor to be 120 volt, 1/40 horsepower.
- D. Overall height to be maximum of 6".
- E. Manufacturer to be Little Giant Model VCMA, Beckett CB, Diversitech CP or approved equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. Rigidly bolt the pump base to the vibration isolation base and fill with concrete or grout after installation on the isolation base. After final alignment, dowel all pumps and motors 25 horsepower and over to the base. All vertically mounted pumps to be doweled into place after final alignment.
- B. The pump manufacturer to be responsible for aligning in the field prior to startup of flexibly coupled pumps. Alignment to be with dial indicator with accuracy of plus or minus .002 inch. The pump manufacturer must submit a written report certifying that the alignment work has been performed by his personnel and that the pumps are ready for operation.
- C. Pumps to be leveled up on tapered steel wedges in such manner to permit a minimum of 3/4 inch of grout between the pump base and the top of the concrete base.
- D. Pump motors are to be covered during construction period and if the motor has to be run the Mechanical Subcontractor will be responsible to make sure that the area in which the motor is running is clean.
- E. Contractor to provide lifting eye ring above each vertical in-line pump to facilitate removal of motors for repair.
- F. Paint the entire assembly of each pump with two coats of enamel after shop testing.
- G. All operating controls and safety devices must be demonstrated after each system has been installed and put into operation at the project site.
- H. Provide drains for bases and stuffing boxes piped to discharge into floor drains.
- I. Provide air cock and drain connection on horizontal pump casings.
- J. Provide pumps with bronze mesh start-up strainers. Mechanical Subcontractor to remove fine mesh strainer after system has been flushed.
- K. Locate all floor mounted equipment on a 4" high concrete pad, extending 6" all around beyond the equipment. Coordinate size and location with subcontractor providing concrete pads.

END OF SECTION 23 21 23



SECTION 23 25 00 PIPE CLEANING AND CHEMICAL WATER TREATMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].
- B. Provide flushing, cleaning and chemical treatment program in accordance with the Contract Documents.

1.2 WORK INCLUDED

- A. Pipe Cleaning.
- B. Cleaning Chemicals.
- C. Water Treatment Chemicals.

1.3 SUBMITTALS

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures" for all submittals.
- B. Submit shop drawings listing chemicals and services provided for all systems. Provide layouts of feeding equipment, details of equipment and describing treatment program, including calculations and quantities of chemicals to be used. Provide system schematics showing the following:
 - 1. Hot Water Systems:
 - a. volume
 - b. pressures
 - c. circulation rate
 - d. temperature differentials
- C. Provide written report containing log and procedure of system cleaning, giving times, dates, problems encountered and condition of water.

- D. Provide inspections and submit written reports as necessary to complete the work. Provide for one (1) year after substantial completion of system. Take samples of water at each inspection, analyze, and certify. Submit the analysis made on the water to the Commissioner. Include in the analysis report, recommendations as to any changes in water treatment required. Provide an initial dosage of 1.5 gallons of an aqueous solution of sodium nitrite base corrosion inhibitor (Nalco 2536, Dow Chemical, DuPont), or approved equal, for each 100 gallons of water in the system.
- E. Provide written maintenance instructions to be included in Maintenance and Operating Manual.

1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Retain a water treatment company, approved by the City of New York, to provide water treatment, feed equipment, testing equipment and chemicals for the systems as defined herein and as may be required to maintain the integrity of the piping systems and mechanical equipment.
- C. The water treatment chemical and service supplier must be a recognized specialist, active in the field of industrial water treatment for at least three (3) years, whose major business is in the field of water treatment, and who has full time service personnel within the trading area of the job site. Laboratory facilities must be available.
- D. Furnish and install all equipment and material on this project in accordance with the U.S. Environmental Protection Agency (EPA), and local Department of Environmental Protection, and so certified by the manufacturer.
- E. Analyze water from the local water company to be used on the project, before establishing treatment procedures.
- F. Provide a two-hour instruction course to the City of New York's operating personnel, instructing them clearly and fully on the installation, care, maintenance, testing and operation of the water treatment system. Arrange the instruction course at the start up of the system.
- G. Treatment Standards
 - 1. Closed Recirculating Water Systems:

System	Treatment and Chemical Conditions	Control Level
Hot Water, Glycol Water 140°F maximum	Non-toxic organic corrosion and scale inhibitor	2000 ppm as total organic inhibitor
	Molybdate as Na2MoO4 or Nitrite as NO2	200-300 ppm 500-700 ppm
	pH	7.0-9.0

System	Treatment and Chemical Conditions	Control Level
Hot Water over 140°F	Nitrate as NO ₂	1500-2000 ppm
	pH	8.0-10.0

PART 2 - PRODUCTS

2.1 PIPE CLEANING

- A. Furnish all required pipe cleaning chemicals, chemical feed equipment, materials, and labor necessary to clean the piping as herein specified. In addition, permanently install necessary chemical injection fittings complete with stop valves and coupon racks, etc.
- B. Provide a pre-startup non-foaming, liquid detergent dispersant cleaner for cleaning of all systems to remove oil and foreign matter from the piping and equipment prior to the final filling of the systems. Use a chemical that is not injurious to persons, piping, pipe joint compounds, packings, coils, valves, pumps and their mechanical seals, tubes or other parts of the system.
- C. Furnish instructions dictating the quantities of the cleaner to use, methods and duration of the operation.

2.2 MANUFACTURERS

- A. Water treatment program to be provided and maintained by:
 - 1. Tower Water Management
 - 2. Nalco
 - 3. Metropolitan Refining Co.
 - 4. Hayes-Trane, Mogul
 - 5. Tenco.
 - 6. Or approved equal

PART 3 - EXECUTION

3.1 GENERAL

A. Install all equipment, chemicals, water devices, etc. in accordance with water treatment specialist's directions and drawings, for all systems previously noted. Contractor will provide 1-inch taps to bring system water to desired locations. Minimum 2 on each main supply and return on closed loop systems.

- B. pH adjustment, inhibitor and dispersant tanks shall be shipped in use containers. Pump suction assemblies previously specified will pump directly from these shipping drums.
- C. Installation and startup shall be supervised by factory representatives of the equipment manufacturer and chemical manufacturer.
- D. Shipping containers shall be disposed of or refilled off the premises at no additional cost.
- E. The Contractor shall coordinate with the facility on the existing chemical water treatment programs currently in place at the site. The addition of new / foreign chemical additives to existing hydronic HVAC Systems must be carefully coordinated with the requirements / restrictions specified by existing chemical water treatment program vendors and original HVAC equipment Manufacturers. Failure to provide proper coordination / implementation of cleaning chemical addition can result in physical injury and/or equipment damage. Contractor to confirm all requirements to integrate the pipe cleaning and treatment program proposed. Contractor to coordinate with the existing chemical water treatment program vendor at the site for coordination of work to be performed. With a validated chemical cleaning program established, Contractor to contact the original HVAC equipment damage. Contractor to identify and perform all remedial work required to be performed if tested pipe pressure capacity and/or flow rate fails to meet specified performance level.

3.2 WATER TREATMENT PROGRAM

Analysis	Submittal Concentrations
Sodium	ppm as Na
Silica	ppm as SiO ₂
Calcium	ppm as Ca
Magnesium	ppm as M _n
Iron and aluminum oxides	ppm as Fe ₂ O ₃ AL ₃ O
Bicarbonates	ppm ca CaCO ₃
Carbonates	ppm as CL
Phosphates	ppm as PO ₄
Carbon dioxide (free CO ₂)	ppm
Total hardness	ppm as CaCO ₃
Total dissolved solids	ppm
Suspended solids	ppm
Free acid	ppm as CaCO ₃

A. Obtain an approved representative sample of the water supply and perform the following analyses:



B. Based on this analysis prepare and submit a water treatment program for approval.

3.3 PRELIMINARY CLEANING

- A. Clean new piping internally by flushing prior to the application of pressure tests, and before the chemical cleanout procedures specified herein. Provide temporary strainers at the inlet to the hot water pumps before the start of cleaning procedures.
- B. Block off and isolate circulating pumps, cooling coils, heating coils, heat exchangers, and steam traps during the preliminary flushing and draining process.
- C. Provide temporary by-passes to fully circulate through all branch piping.

3.4 PIPE CLEANING

- A. All Piping Systems
 - 1. Provide temporary connections with valves to fill and drain the piping and equipment after completion of the chemical cleanout procedure. Provide temporary blind flanges and/or caps to isolate the piping and equipment.
 - 2. Provide temporary piping connections, valves, strainers, bypasses, and blank connections where required to clean out systems.
 - 3. After each hydrostatic leak testing procedure is complete, drain the system until empty. The piping systems are internally chemically treated and protected during the hydrostatic testing procedure as described in the Section entitled "Testing, Balancing and Adjusting". Thoroughly clean the piping and flush as follows:
 - a. Cleaning will not take place more than 14 days prior to startup. Give the chemical manufacturer's representative at least 30 days notice prior to startup.
 - b. Prior to the start of the chemical cleaning procedure submit three two (2) foot lengths of the piping installed on this project to the chemical manufacturer for analysis of the interior coating on the piping. Refer to the Section entitled "Testing, Balancing and Adjusting" for additional requirements.
 - c. Add chemical pipe cleaning compound and corrosion inhibitor as recommended by the chemical manufacturer's representative to the system simultaneously with the filling of the system.
 - d. Circulate the cleaning compounds in the system for the time period specified by the chemical manufacturer.
 - e. Drain the system until empty from its lowest point.
 - f. Fill the system again with fresh water and flush thoroughly until clean water is obtained. (Maintain continuous blowdown and make-up as required during flushing operation). Use a one (1) micron cartridge type strainer element at end of drain hose to confirm that discharge water is free of foreign material.



- g. The cleaning and flushing procedure must be approved in writing by the chemical manufacturer. The chemical manufacturer's representative shall supervise and certify in writing the cleaning and flushing of the piping systems. The Contractor shall provide and install injection pumps, water meters, and coupon racks to control and monitor the cleaning process.
- B. Additional Requirements for Hot Water Heating System
 - 1. Fill system with City water; start circulation pump and vent high points manually until all air is released from the system.
 - 2. Flush the system with fresh water, drain a second time and refill. After final filling, the pH of the water must not exceed the pH of the fresh incoming water by more than 0.5 pH.
 - 3. Introduce the chemical cleaning solution into the system gradually by injecting into the suction side of the circulating pump, or by means of a bypass chemical feeder. Slowly raise and then maintain the temperature of the circulating hot water at 150°F by circulating through the hot water heat exchanger.
 - 4. While the water is being heated and circulated open each drain connection for a short flow. Repeat at hourly intervals. Replace water drained during blowdown with chemical solution as required until air is eliminated from the system. The chemical cleanout procedure shall be continuous in this manner for two full 8-hour periods.
 - 5. At the conclusion of the chemical cleanout period completely drain the entire system and allow to cool. Flush out with fresh City water prior to final activation of the system. Remove temporary equipment and strainers, reconnect permanent pump and replace items previously removed.

3.5 FILLING OF WATER SYSTEMS

- A. After completion of chemical cleanout, fill each water system with fresh water, air vent, and immediately add chemical treatment to passivate metal.
- B. Furnish the following chemicals as required for the system until the City of New York has issued a "certificate of substantial completion":
 - 1. pH Adjustment Chemicals: Provide suitable pH adjustment chemicals in 50 gallon drums to control pH at the 7.8-8.8 level.
 - 2. Corrosion Inhibitor: Provide non-polluting corrosion inhibitor
 - 3. Dispersant: Provide non-polluting dispersant
 - 4. Biocide: Provide both oxidizing and non-oxidizing biocide. Provide non-polluting biocide
 - 5. Recommend pH adjustment chemical, corrosion inhibitor, dispersant, and biocide for the local water characteristics.



3.6 GLYCOL SOLUTIONS

- A. Any piping systems subject to outdoor exposure shall contain a 30-40% glycol solution and means to feed glycol into system to protect from freezing conditions. Coordinate with Commissioner.
- B. Clean systems with a 1% to 2% solution of trisodium phosphate in water prior to the installation of industrially inhibited glycol fluid.
- C. Clean extensively corroded systems using the services of an industrial cleaning company. Make all necessary replacements and repairs.
- D. Use only good quality water in solution with the glycol fluid. Use water with low levels (fewer than 25 ppm each) of chloride and sulfate; and fewer than 50 ppm each of hard water ions (CA⁺⁺, Mg⁺⁺) with total hardness not to exceed 100 ppm. Distilled or deionized water is recommended. If good quality water is unavailable, purchase pre-diluted solutions of industrially inhibited glycol fluid from the fluid manufacturer.

END OF SECTION 23 25 00



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SECTION 23 26 00 WATER SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Air Vents.
- B. Relief Valves.
- C. Strainers.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Shop Drawings: Submit shop drawings prior to manufacture. Do not proceed with fabrication of equipment until fully approved shop drawings have been returned.
- B. Product Data: Submit manufacturer's latest published data indicating rating data, catalog cuts, model numbers, dimensional information, and pressure drops.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Comply with all New York State and City Building and Mechanical codes and regulations.
- C. Comply with the applicable requirements of ASME, ANSI, U.L., ASTM and National Electric Code.


PART 2 - PRODUCTS

2.1 AIR VENTS

- A. Provide air vents with 3/4" IPS inlet connection and 3/8" outlet, suitable for the system and for the system working pressure and temperature. Design vents to eliminate air from the system automatically without permitting the passage of water. Construct vents of brass body, copper float and stainless steel valve parts.
- B. Manufacturers
 - 1. Bell & Gossett
 - 2. Sarco
 - 3. Hoffman
 - 4. Or approved equal

2.2 **RELIEF VALVES**

- A. Provide diaphragm operated safety relief valve, ASME labeled, for relieving pressure. Refer to Drawings for pressure rating of valve and relief setting. Discharge water to be through NPT connection.
- B. Provide valve with a low blow-down differential constructed of bronze or iron body. The valve seat and all moving parts exposed to fluid will be of non-ferrous material.
- C. Manufacturers
 - 1. Bell & Gossett
 - 2. Amtrol
 - 3. Armstrong
 - 4. Or approved equal

2.3 STRAINERS

- A. Provide basket "Y" pattern iron body water strainers for the pressure ratings as described herein. Strainers to be self-cleaning with screen free area a minimum of three times the inlet pipe area. Provide strainer basket cleanout cap with tapping to permit connecting of blow-down valve.
- B. The following Sarco model numbers are provided to establish a minimum standard:
 - 1. 150 psig up to 2" "Y" pattern, Type IT with 20 mesh stainless steel screen with screw ends.
 - 2. 150 psig 2¹/₂" to 12" "Y" pattern, Type IF-125 with .125" perforations, stainless steel screen, flanged ends.

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- 3. 14" to 20" Basket, Type 528-B with .125" perforations, stainless steel screen, flanged ends to match pressure of system.
- C. Manufacturers
 - 1. Sarco
 - 2. Hoffman
 - 3. Crane
 - 4. Or approved equal

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 GENERAL INSTALLATION

- A. Provide automatic air vents at high points of all piping and as required for removal of air from the system using 3/4" steel pipe suitable for the pressure service between the main pipe and inlet. Provide 3/8" OD hard drawn Type L copper tubing from vent outlet for overflow in case of defective action. Copper tubing shall run into a suitable drain. When vents are located above hung ceilings, connect all vent drains to a common drain main and pipe to nearest slop sink or floor drain. Provide 3/4" stop valve in the inlet line for servicing of automatic air vent. Manual vents may be substituted for automatic vents, at system high points, only as directed by the Commissioner.
- B. Provide at each heat transfer element supplied with water, not less than one ¹/₂" manual air vent. Furnish ten (10) keys.
- C. Provide manual air vent valves in the piping connections to each hot water heating coil and each chilled water coil (both supply and return where such are not automatically vented). Provide a ¹/₄" vent line from each air vent to nearest floor drain, or as directed, to suit job conditions. At Commissioner's discretion, provide soft temper copper tube pigtail on manual vents, in lieu of ¹/₄" vent line, so that vent can be discharged into a bucket.
- D. Install relief valves in upright position with discharge piped to nearest floor drain.

3.3 STRAINER INSTALLATION

- A. On open systems, install strainers immediately upstream of each automatic control valve with the same size as the inlet pipe indicated on the drawings, not reduced size serving the control valve.
- B. Provide approved valved dirt blowout extensions on each strainer. Locate each blowout valve at hand-height.
- C. Clean the strainers as necessary until accepted by Commissioner.

- D. Provide temporary strainer in the suction line of each pump during construction, testing and balancing. Replace with permanent strainers after acceptance by the Commissioner.
- E. Minimum strainer body at pump inlet connections: 3 inch.
- F. Prior to installation, disassemble strainer, coat with anti-seize compound and reassemble.
- G. Install strainers with ample space for basket removal. Where shown on the Drawings, provide quick opening 1" blow-off valve with hose bibb end.
- H. Install suction diffusers on pump inlets with ample space for basket removal. Where pumps are mounted on inertia pads, suction diffuser will be supported with steel pipe section on inertia pad. All other installations, the suction diffuser will be supported by steel pipe section and a neoprene pad 1" thick. Remove startup strainer after startup and pipe cleaning has been accepted by Commissioner.

END OF SECTION 23 26 00



SECTION 23 30 00 HVAC AIR DISTRIBUTION

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.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Section Includes:
 - 1. Single-wall rectangular ducts and fittings.
 - 2. Double-wall rectangular ducts and fittings.
 - 3. Sheet metal materials.
 - 4. Flexible connectors.
 - 5. Access doors in sheet metal.
 - 6. Turning vanes.
 - 7. Belt guards.
 - 8. Plenums and equipment casing.
 - 9. Auxiliary Drain pans.
 - 10. Wire mesh screens.
 - 11. Sealants and gaskets.

1.3 PERFORMANCE REQUIREMENTS

- A. Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" and performance requirements and design criteria indicated in the "DUCT SCHEDULE" article in part 3.
- B. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.5 SUBMITTALS

- A. Submit a line-by-line statement of compliance / non-compliance / deviation for each clause of this specification section.
- B. Certificates / Product Data
 - 1. Welding certificates.
 - 2. Prior to ductwork fabrication, submit to the Commissioner for review certifications and data on all sheet metal materials proposed for use (Mill certificates, galvanizing, etc.).
 - 3. Sealants and gaskets.
- C. Shop Standard / Details Submittal
 - 1. Submit sheet metal shop details for approval before any duct layouts are submitted for review. Shop drawings will not be acted on before shop details have been reviewed.
 - 2. Sheet metal shop details shall include:
 - a. A chart listing each ducting system to be installed on the project similar to the "DUCT SCHEDULE" article in part 3.
 - b. Joint and seam construction and sealing.
 - c. Reinforcement details and spacing.
 - d. Damper construction.
 - e. Plenum wall construction.
 - f. Access door construction.
 - g. Fitting construction.
 - h. Materials, fabrication, assembly, and spacing of hangers and supports.



- D. Shop Drawings
 - 1. Submit computer generated drawings of all ductwork drawn to a scale of 3/8" to the foot for approval. Ducting layouts shall be submitted for each individual phase of the project and for the entire completed project. Shop drawings shall include:
 - a. Ductwork plans, elevations, sections, components, and attachments to other work.
 - b. Duct layouts indicating duct system, duct sizes, configuration, duct liner, static-pressure classes, elevations, dimensions of main duct runs from building grid lines, fittings and accessories including dampers, turning vanes and access doors/panels, reinforcement and spacing, and penetrations through fire-rated and other partitions.
 - c. Equipment layouts shall be based on actual equipment being used on Project.
 - d. Hangers and supports, including methods for duct and building attachment, seismic restraints, and vibration isolation. Submit plan drawings showing duct point loads to structure and supplementary steel layouts for all systems.

1.6 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Construct ductwork according to the pressure-velocity classifications established by SMACNA's "HVAC Duct Construction Standards Metal and Flexible", and as called for on the duct drawings.
- C. 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.
- D. Comply with OSHA standards and requirements.

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class – but no less than 2" – unless otherwise indicated.

- B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible," figure for "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible," figure for "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible," chapter for "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards Metal and Flexible."

2.2 DOUBLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. Rectangular Ducts: Fabricate ducts with indicated dimensions for the inner duct.
- B. Outer Duct: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
- C. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible," figure for "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
- D. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- E. Inner Duct: Minimum 0.028-inch solid sheet steel.
- F. Interstitial Insulation: Interstitial Insulation: in accordance with the ductwork insulation requirements as indicated in Specification 23 07 00 Insulation.
- G. Formed-on Transverse Joints (Flanges): Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible," figure for "Rectangular Duct/Traverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
- H. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," figure for "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: G90.
 - 2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- C. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.
- D. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304 or 316, as indicated in the "DUCT SCHEDULE" section of this specification; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in the "DUCT SCHEDULE" section of this specification.
- E. Aluminum Sheets: Comply with ASTM B 209 Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.
- F. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
 - 1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.
- G. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.
- H. Underground Ductwork
 - 1. Underground ductwork shall be approved for underground installation.
 - 2. Plastic ducts shall be constructed of PVC having a minimum pipe stiffness of 8 psi at 5 percent deflection when tested in accordance with ASTM D 2412.
 - 3. Plastic duct fittings shall be constructed of either PVC or high-density polyethylene.
 - 4. Plastic duct and fittings shall be utilized in underground installations only.

2.4 FLEXIBLE CONNECTORS

- A. Construct flexible connectors as follows:
 - 1. Indoor low pressure systems: glass fabric double coated with neoprene.

- 2. Medium pressure systems, high pressure systems, commercial kitchen exhaust, laboratory exhaust and all outdoor systems: glass fabric double coated with weatherproof, synthetic rubber resistant to UV rays and ozone such as Thermafab by DuroDyne.
- 3. Flexible connections must be suitable for the operating pressure and temperature of the system in which they are installed.

2.5 ACCESS DOORS IN SHEET METAL

- A. Access doors in ductwork:
 - 1. Where required in ductwork or casings, provide suitable latch type access doors and frames to permit inspection, operation and maintenance of apparatus concealed behind the sheet metal work.
 - 2. Provide access doors in insulated ducts of insulated double panel construction and same material as the duct.
 - 3. Provide access doors in uninsulated ducts of single panel construction equal and same material as the duct.
 - 4. Provide all access doors with sponge rubber gaskets around their entire perimeter.
 - 5. Where required in ducts carrying humid air, or grease laden air, locate access doors in the side of ducts.
 - 6. Fabricate access panels in ductwork according to SMACNA's "HVAC Duct Construction Standards -Metal and Flexible"; figure for "Duct Access Doors and Panels," and figure for "Access Doors - Round Duct."
 - B. Access doors in plenums / casing:
 - 1. Install hinged walk-in type casing access doors where required and indicated on the Drawings.
 - 2. Fabricate access panels in plenums and casing according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible"; figure for "Casing Access Doors 2in," figure for "Casing Access Doors 3-10in," and table for "Plenum and Casing Access Doors."

2.6 TURNING VANES

- A. Provide curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
- B. For acoustic turning vanes, fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrousglass fill.
- C. Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible"; figure for "Vanes and Vane Runners," and figure for "Vane Support in Elbows."
- D. For square elbows, use single thickness vanes for ducts up to 18 inches wide and double thickness airfoil vanes in ducts over 18 inches wide.



E. Construct turning vanes of the same material as the ductwork in which they are installed.

2.7 BELT GUARDS

- A. Provide guards on all belt drives.
- B. Provide split type with tachometer opening at shafts fabricated from galvanized metal and braced to prevent rattling.
- C. Use solid or expanded metal on motors up to 5 horsepower.
- D. Use expanded metal on motors $7\frac{1}{2}$ horsepower and up.
- E. Use angle frames on motors 25 horsepower and larger.
- F. Provide sufficient space so that sheaves can be changed to larger sizes

2.8 PLENUMS AND EQUIPMENT CASING

- A. Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," chapter for "Equipment and Casings," for acceptable materials, material thicknesses, and casing construction methods unless otherwise indicated.
- B. Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for sheet metal thickness based on indicated static-pressure class unless otherwise indicated.
- C. Fabricate casings with standing seams and angle-iron reinforcements unless otherwise indicated.
- D. Reinforce casings with galvanized-steel angles.
- E. Small plenums:
 - 1. Provide discharge and intake air plenums for connecting the fresh air intake and discharge openings to the various systems, as shown on the Drawings, of insulated double wall aluminum construction.
 - 2. All other air plenums to be single-casing construction.
- F. Large plenums:
 - 1. Provide large walk-in air plenums of insulated double-wall construction.
 - 2. Construct the casing panels of two sheets of galvanized sheet steel: the outer sheet (outdoor) solid 20 gauge, the inner sheet (mechanical room) solid 16 gauge. Use "Fiberglass 704" (Owens Corning), Johns Manville, CertainTeed or approved equal, 4-inch-thick fibrous glass, 6 pound per cu. ft. density insulating board between these sheets.



- G. Equipment casing:
 - 1. Provide air chambers for field assembled air supply apparatus, and as shown on the Drawings, entirely of insulated double-wall casing construction.
 - 2. Construct the casing panels of two sheets not less than 20 gauge galvanized sheet steel: the outer sheet solid, the inner sheet perforated. Use "Fiberglass 704" (Owens Corning), Johns Manville, CertainTeed or approved equal, 4-inch-thick fibrous glass, 6 pound per cu. ft. density insulating board between these sheets

2.9 AUXILIARY DRAIN PANS

- A. Construct drain pans of 16 gauge galvanized steel with all joints brazed. Construct pans watertight with hemmed edges.
- B. Provide auxiliary drain pans under any equipment for which a pan is shown on the Drawings, and under all horizontal air handling units, condensate producing heat exchangers, duct mounted hot water or chilled water coils located above hung ceilings or electrical equipment, piping over electrical equipment, etc.
- C. Extend the auxiliary drain pan at least 6" beyond the equipment it is serving.
- D. Drain pan shall be at least 2" high.
- E. Drain pan shall be sloped at least 0.125" per foot from the horizontal toward the drain outlet.
- F. Provide drain pipe outlet at the lowest point (s) of the drain pan with a connection size of at least 3/4", or as shown on the Drawings.
- G. Route the galvanized steel or Type "L" copper tube to the nearest equipment room floor or hub drain independent of any air handling unit drains.

2.10 WIRE MESH SCREENS

- A. Furnish and install all wire mesh screens indicated in the Contract Documents.
- B. Fabricate frame of extruded aluminum with mitered reinforced corners.
- C. Provide non-rewireable frame with permanently secured screen mesh.
- D. Provide mesh of ¹/₂ inch square, .063 inch intercrimped aluminum wire.

2.11 SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
- B. Sealant to be water based, fast curing to a firm rubbery seal, and have gap filling properties with smooth easy caulking characteristics.



- C. Follow the manufacturer's application instructions.
- D. Solvent based sealants are permitted only for underground ductwork as well as ductwork that will be sealed during freezing conditions when a water based sealant will not be effective.
- E. Sealant Manufacturers:
 - 1. Childers CP-146
 - 2. Foster 32-19
 - 3. MEI 44-39
 - 4. Or approved equal
- F. Gaskets shall be Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings and where necessary to accommodate conditions arising at the building.
- B. Install ducts according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible" unless otherwise indicated. Execute the Work in strict accordance with the best practices of the trade and with these Specifications.
- C. Duct sizes indicated in the Drawings for internally lined ducts are the net duct dimensions. Increase ducts in both dimensions by twice the thickness of the liner making the actual sheet metal dimension larger by thickness of the liner.
- D. Install ducts with fewest possible joints. Make joints and seams smooth on the inside and a neat finish on the outside. Make duct joints airtight with laps made in the direction of air flow and no flanges projecting into the air stream. Provide ducts adequately braced to prevent vibration. Provide intermediate reinforcing and/or tie rod construction where necessary.
- E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.



- G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- J. On horizontal ducts exhausting humid air from restrooms, the space/building in general and as called for on the drawings provide pan construction with longitudinal seams at the side or on top. Provide drain pipes to indirect waste at all low points of the ductwork.
- K. All welds on welded stainless steel duct to be pickled to remove weld oxide. Passivate stainless surface after welding to remove embedded foreign material.
- L. Install duct connected grilles, registers and ceiling diffusers shown on the Drawings. Exact dimensions of openings must await approval of registers and diffusers. Submit exact locations for approval. Do not cut joints for the installation of outlets.
- M. Where possible, fabricate all ductwork in such a manner that seams and/or joints will not be cut for the installation of grilles, registers, or ceiling outlets. If cutting of seams or joints is unavoidable, properly reinforce the cut portion to original strength
- N. Wherever it may be necessary to make provision for vertical hangers of the ceiling construction passing through ducts, provide streamlined shaped sleeves around such ceiling construction hangers. Make all such streamlined sleeves airtight at top and bottom of ducts.
- O. Do not suspend ductwork or any device, or allow work installed by any trade to be suspended from ductwork (for example: lighting conduit, lighting fixtures, piping, ceiling construction, etc.).
- P. 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.
- Q. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers and / or fire smoke dampers as required by the NYC DOB and Specification 23 33 13 Dampers.
- R. Provide approved firestopping material around all ducts penetrating floors, walls, roofs, etc., in accordance with NYC Building codes, NFPA, and Commissioner's requirements.
- S. Provide any ductwork passing through waterproof walls or roof construction with counter flashing.
- T. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Cap openings in ducts during progress of construction tightly. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."
- U. Thoroughly clean the interior of all ductwork after installation, and prior to use. Operate all fans and remove all debris and foreign matter from the duct.

V. Replace, without any additional cost to the contract, any ductwork or components found to be noisy after installation, with said noise resulting from faulty materials or workmanship.

3.3 INSTALLATION OF EXPOSED DUCTWORK (INDOORS)

- A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.
- B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.
- C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.
- D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.
- E. Repair or replace damaged sections and finished work that does not comply with these requirements.
- F. Coordinate painting of ductwork with the Architectural requirements.

3.4 INSTALLATION OF EXPOSED DUCTWORK (OUTDOORS)

- A. Insulated Ductwork
 - 1. Provide a "watershed" installation for all insulated outdoor ductwork to prevent water pooling on top of the duct.
 - 2. Cover all insulated outdoor ductwork with an outdoor cladding product similar to K-FLEX CLAD AL, Johns Manville, CertainTeed or approved equal. Seal seems with butyl tape.
 - 3. Install cladding according to the manufacturer's instructions.
 - 4. Coordinate insulation thicknesses with Specification 23 07 00 Insulation if providing cladding with integral insulation.
 - 5. Coordinate cladding color with the Commissioner.
- B. Uninsulated Ductwork
 - 1. Uninsulated outdoor ductwork shall be of the same material as indicated in the "DUCT SCHEDULE" article for each associated system type.

3.5 FLEXIBLE DUCTWORK

- A. Maximum standard length of low pressure flexible duct sections to be 4 feet 0 inches. Length of high pressure duct sections not to exceed 18 inches in length and 16 inches in diameter.
- B. Flexible ductwork to be rated for the pressure of the system in which it is to be installed.



- C. Flexible ducts must not extend through partitions, walls, or floors.
- D. Provide bends with minimum centerline radius equal to two (2) times duct diameter. No more than the equivalent of one (1) 90° bend will be permitted on installed flexible duct.
- E. Factory fabricate oval ends on spiral aluminum helix flexible ductwork which may be required to connect to various air distribution devices. At the Contractor's option oval ends may be field-fabricated on special mandrels subject to the review of the Commissioner.
- F. Flexible duct clamps of stainless steel with swivel action screw or 100% nylon self-locking clamp for all connections.
- G. For connection to single diffuser or air troffer boot with flexible duct, use spin-in tap with damper. Provide rigid sheet metal air plenum boxes on top of diffusers. Connect flexible duct to this box.
- H. Support flexible duct per SMACNA standards. Do not lay duct on ceiling grid or tiles.

3.6 CONNECTIONS

- A. Make connections to equipment with flexible connectors.
- B. Flexible connections to be approximately 6 inches long, after installation is complete securely held in place with heavy metal bands to prevent any leakage. Align ductwork and fans to be plumb prior to connection. Allow at least 1 inch of slack.
- C. Provide flexible connection in ductwork connected to the inlets and/or outlets of all air handling units, fans, etc., except fan air handling units with internal isolators and flexible fan connections. Overlap ends of fabric 2" and apply contact glue. Sewing or stapling will not be permitted. Allow at least one inch slack in all flexible connection installations to ensure that no vibration is transmitted.
- D. Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.7 ACCESS DOORS IN SHEET METAL

- A. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
 - 1. On both sides of duct coils.
 - 2. Upstream and downstream from duct filters.
 - 3. At outdoor-air intakes and mixed-air plenums.
 - 4. At drain pans and seals.
 - 5. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.

- 6. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
- 7. At each change in direction and at maximum 50-foot (15-m) spacing.
- 8. Upstream and downstream from turning vanes.
- 9. Upstream or downstream from duct silencers.
- 10. Control devices requiring inspection.
- 11. Elsewhere as indicated
- B. Install access doors with swing against duct static pressure.
- C. Provide access doors not smaller than 18 inches by 18 inches. Ducts smaller than 18 inches are to be provided with access doors 2 inches smaller than the width by 18 inches long.
- D. Where removable hung ceiling panels are installed below access doors, provide markers showing the access door location clearly.
- E. Label access doors according to Specification 23 05 53 "Systems Identification" to indicate the purpose of access door.

3.8 PLENUMS AND EQUIPMENT CASING

- A. Install casings according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
- B. Seal all penetrations airtight. Cover with escutcheons and gaskets, or fill with suitable compound so there is no exposed insulation. Apply sealant to joints, connections, and mountings.
- C. Field-cut openings for pipe and conduit penetrations; insulate and seal according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
- D. Support large casings on floor or foundation system. Secure and seal to base.
- E. Support components rigidly with ties, braces, brackets, and anchors of types that will maintain housing shape and prevent buckling.
- F. Small plenums:
 - 1. Provide standing seams with additional right angle bend and cap with No. 18 gauge galvanized "U" cap galvanized steel plenums for in-line centrifugal and axial flow fans.
 - 2. Provide the number of access doors as shown on the Drawings, minimum of one (1), for each sheet metal plenum.



- 3. Provide drain pan construction for air intake and discharge plenums; apply two (2) coats of mastic sealant to all joints; pitch bottoms for effective drainage.
- G. Large plenums and equipment casing:
 - Butt top edges of vertical panel into the bottom of the horizontal or sloping top panels with the joint fully caulked. Form the interior top and bottom edges of the casing with continuous angle, caulked where it adheres to casing. Form panels occurring at corners of casings to "L" shape so that no joint occurs at such corners. Make vertical and horizontal seams (connecting any panels) with caulked 1¹/₂ inches by 1¹/₂ inches b
 - 2. Caulk joints to make them airtight. Gasket the bottoms of air chambers at the curb to prevent air leakage. Provide knee braces and additional bracing for chamber roofs, as required, to prevent sagging.
 - 3. Place longitudinal reinforcing angles on the inside of the casing in accordance with the following schedule:

Height of Side Walls or Width of Roof	Number Angles	Angle Spacing	
Up to 6 feet	0		
6 feet to 8 feet	1	Middle	
8 feet to 12 feet	2	1/2 points	
Over 12 feet	Variable centers	4 feet	

- 4. Provide angle size of 1¹/₂ inches by 1¹/₂ inches by 1/8 inch to 12 feet casing length, and 1-3/4 inches by 1 3/4 inches by 3/16 inch over 12 feet casing length.
- 5. Size mixed air plenums for air handling units to prevent stratification across coils. Install baffles as required to maintain plus or minus 5°F temperature variation across coil face area.

3.9 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in the "DUCT SCHEDULE" section of this specification according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
- B. Ductwork leakage in excess of SMACNA Standards for the seal class listed will not be acceptable. Seal ductwork and seams with an approved sealant as required to comply with this leakage requirement.
- C. Clean and dry all surfaces thoroughly prior to application.
- D. Apply with caulking gun, trowel or spatula.



- E. Join surfaces to be sealed immediately after application of sealant.
- F. Follow manufacturer's instructions carefully for application, storage and cleanup.
- G. Do not use sealant which is beyond manufacturers recommended shelf life.
- H. Underground ductwork shall be sealed with a solvent based sealant.

3.10 DUCT MOUNTED SMOKE DETECTORS

A. Coordinate duct mounted smoke detectors with Division 26. Locate duct mounted smoke detectors in the ductwork in accordance with the manufacturer's recommendations, the requirements of NFPA, and the NYC DOB.

3.11 DUCT SCHEDULE

A. The ductwork on this project falls into classifications as indicated below. Follow SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for material gauge unless otherwise noted.

Ductwork / System	Pressure Classification ''W.G.''	Seal Class	Duct Material	Material Gauge
Ductwork on the discharge of air handling units, except outside air handling units.	+2"	А	Galvanized Sheet Steel	SMACNA
Outside air and toilet exhaust ductwork on the building side of the volume damper on each floor.	+2" & -2"	А	Galvanized Sheet Steel	SMACNA
Outside air makeup and exhaust duct for smoke exhaust systems.	+2" & -2"	А	Galvanized Sheet Steel	SMACNA
Outside air handling unit discharge ductwork, risers, and ductwork to the volume damper on each floor.	+3"	А	Galvanized Sheet Steel	SMACNA

- B. Comply with the pressure class and seal class listed for the construction in each classification. Cross-break or use mechanical transverse beading on rectangular ductwork 12" and wider and install as indicated on the Drawings and as specified. Make beading at least 1/16" deep at the center of the bead and a maximum of 3/8-inch-wide at the base of the bead.
- C. Elbow Configuration:



- 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," figure for "Rectangular Elbows."
 - a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
 - b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
 - c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," figure for "Vanes and Vane Runners," and figure for "Vane Support in Elbows."
- D. Branch Configuration:
 - 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," figure for "Branch Connection."
 - a. Rectangular Main to Rectangular Branch: 45-degree entry.
 - b. Rectangular Main to Round Branch: Spin in.

END OF SECTION 23 30 00



SECTION 23 33 13 DAMPERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Fire Dampers.
- B. Combination Fire/Smoke Dampers.
- C. Smoke Dampers.
- D. Volume Dampers.
- E. Backdraft Dampers.
- F. Automatic Dampers.

1.3 CODES AND STANDARDS

- A. SMACNA HVAC Duct Construction Standards Metal and Flexible.
- B. SMACNA Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems.
- C. UL 555: Standard for Fire Dampers.
- D. UL 555S: Standard for Smoke Dampers.
- E. UL 33: Standard for Heat Responsive Links for Fire-Protection Service.
- F. AMCA 500-D: Laboratory Test Methods for Testing Dampers for Ratings.



- G. NFPA 90A: Standard for the Installation of Air-Conditioning and Ventilating Systems.
- H. NFPA 90B: Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.
- I. NFPA 92A: Recommended Practice for Smoke-Control Systems.
- J. NFPA 92B: Guide for Smoke Management Systems in Malls, Atria, and Large Areas.
- K. NFPA 101: Life Safety Code.

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.5 SUBMITTALS

- A. Submit complete manufacturers data on all dampers required by this section. Include a damper schedule indicating the type, size, location, fire rating, leakage rating, fail position, power connections, fire alarm connections quantity, construction details and, where applicable, actuator data.
- B. Submit UL rating data and UL listed installation details and instructions.
- C. Manufacturer's installation instructions and details.
- D. Include damper pressure drop data based on tests and procedures performed in accordance with AMCA 500-D.
- E. Submit samples of dampers as requested by the Commissioner.
- F. Submit wiring diagrams

1.6 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Fabrication, testing and installation of fire dampers, smoke dampers and combination fire/smoke dampers shall be in compliance with U.L. listed installation details published by the damper manufacturer.
- C. Fire dampers to be U.L. labeled for 1¹/₂ or 3-hour rating as indicated on the Drawings.
- D. Comply with Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Details and details as shown on the Drawings.
- E. Fire dampers shall be listed and labeled in accordance with UL555.
- F. Smoke dampers shall be listed and labeled in accordance with UL555S.
- G. Combination fire/smoke dampers shall be listed and labeled in accordance with UL555 and UL555S.



H. Dampers shall be warranted against manufacturing defects for a period of five (5) years

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.
- B. Storage: Store materials in a dry area indoor, protected from damage and in accordance with manufacturer's instructions.
- C. Handling: Handle and lift dampers in accordance with manufacturer's instructions. Protect materials and finishes during handling and installation to prevent damage.

PART 2 - PRODUCTS

2.1 FIRE DAMPERS

- A. Provide fire dampers at ducts penetrating fire rated walls and floors at locations indicated on contract documents.
- B. All fire dampers shall meet all requirements of UL-555 Standard.
- C. All fire dampers shall be rated for use in dynamic systems for a closure against the airflow velocity of 2000 fpm and the maximum pressure of 4" w.g. across a damper in closed position.
- D. All fire dampers shall be rated for installation in vertical and horizontal arrangements.
- E. Fire dampers designated as FD on the Drawings shall be 1¹/₂-hour fire resistance rated.
- F. Fire dampers designated as FD-3 on the Drawings shall be 3-hour fire resistance rated.
- G. Fire dampers designated as FD-H on the Drawings shall be provided with an integrally mounted heat sensor in lieu of a fusible link. Such dampers shall be wired for 24 volt operation.
- H. Fire Dampers shall be of the curtain type with frames of 18 gauge steel and blades of 21 gauge steel.
- I. Fire dampers shall be spring-loaded and provided with stainless steel springs.
- J. Fire dampers shall be provided with a U.L. rated 160°F fusible link. Dampers must lock in closed position.
- K. Manufacturers
 - 1. Ruskin
 - 2. Prefco
 - 3. Pottorff



4. Or approved equal

2.2 COMBINATION FIRE/SMOKE DAMPERS

- A. Provide combination fire/smoke dampers as shown on the Drawings at ducts penetrations through fire rated walls and floors at locations shown on the Contract Drawings.
- B. Provide electrically 120V or 24V with control transformer operated, normally closed dampers equipped with factory-mounted U.L. approved actuators, relays and damper position switches.
- C. Dampers shall be of opposed-blade construction and listed in accordance with U.L. Standards 555 and 555S in all respects including size limitations.
- D. Class 1 dampers with maximum leakage of 8 cfm/sq.ft at 4 in. wg. (1 kPa) differential pressure shall be installed in ducts with velocities at or over 2000 FPM. Minimum size Class 1 damper, 12" x 12".
- E. Class 2 dampers with maximum leakage of 20 cfm/sq.ft., at 4 in. wg. (1 kPa) differential pressure shall be installed in ducts with velocities under 2000 FPM. Minimum size Class 2 damper, 9" x "9.
- F. Damper construction to be minimum 16 gauge galvanized steel frame and blades. Side seal to be Type 304 flexible stainless steel with bronze or stainless steel shaft bearings in end plate. Damper linkage to be outside air stream.
- G. Provide dampers designated as "FSD-FL" with a fusible link which will close and lock damper on increased air temperature over 250°F.
- H. Provide dampers designated as "FSD" or "FSD-3" with an electrically resettable link which will close and lock damper on increased air temperature over 165°F. The link to be manually resettable at the damper linkage without need of link replacement. Provide damper position indicator external of damper.
- I. Provide dampers designated as "FSD-HS" or "FSD-HS3" as normally closed and provided with a means of automatically opening dampers remotely from the Fire Command Center when the air temperature is below the damper linkage degradation temperature of 350°F. This will be accomplished by a thermal link which will disengage the damper actuator at or above the degradation temperature of the damper. The release of the link will cause the damper to close and lock until the link has cooled to below the degradation temperature. Activation of the actuator will re-engage the damper linkage.
- J. Manufacturers
 - 1. Ruskin
 - 2. Imperial
 - 3. Potorff
 - 4. Or approved equal.



2.3 SMOKE DAMPERS

- A. Provide smoke dampers as shown on Drawings designated as "SD".
- B. Dampers shall be electrically operated.
- C. Provide factory-mount UL listed actuators, relays and damper position switches provided by Controls subcontractor.
- D. Provide dampers of opposed multi-blade construction Class 2, with maximum leakage of 10 cfm/sq.ft. at 1" w.g. when in the closed position for ducts with velocities of 2000 FPM or less, and Class 1 with maximum leakage of 4 cfm/sq.ft. at 1" w.g. for ducts with velocities over 2000 FPM. Minimum size Class 1 damper, 12 x 12. Minimum size Class 2 damper, 9 x 9.
- E. Damper construction to be minimum 16 gauge galvanized steel frame and blades. Side seal to be Type 304 flexible stainless steel with bronze or stainless steel shaft bearings in end plate. Damper linkage to be outside air stream.
- F. Provide dampers with means of remote opening from the Fire Command Station and with position indicator switches to enable remote status of open or closed positions.
- G. Manufacturers
 - 1. Ruskin
 - 2. Imperial
 - 3. Nailor-Hart
 - 4. Or approved equal.

2.4 VOLUME DAMPERS

- A. Provide volume dampers as shown on the Drawings and as required for proper balancing and distribution of air, in the various branches of the ductwork for use in balancing the system. Dampers to be installed separately and independently of the registers hereinafter specified to be set behind supply, return and exhaust air grilles. Provide multi-blade dampers in ducts above 24 inches in width or 16 inches in height. Coordinate with the air balancing specialist and provide all additional dampers required for proper air balance.
- B. Provide volume dampers of the quadrant type in ducts under 24 inches in width or 16 inches in height. Quadrant type volume dampers shall be of heavy construction, pivoted to turn easily and provided with approved operating and locking devices mounted on outside of the duct in an accessible place.
- C. For all volume dampers located above inaccessible ceilings, provide remote cable operators complete with fastening devices and hex key operators.



2.5 BACKDRAFT DAMPERS

- A. Provide balanced, tight closure, 1/8-inch thick aluminum backdraft dampers of the self-operating type where indicated on the Drawings. Fabricate damper frames from extruded aluminum with mitered corners. Blades to be extruded aluminum with extruded vinyl edge seals. Blade/frame assembly to be weather resistant with blades overlapping the frame. Damper bearings to be bronze oilite nylon or cycolox. Provide bird screen over opening.
- B. Manufacturers
 - 1. Ruskin
 - 2. Prefco
 - 3. Greenheck
 - 4. Or approved equal

2.6 AUTOMATIC DAMPERS

A. Install all automatic dampers being supplied by controls subcontractor.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 EXAMINATION

A. Inspect areas to receive dampers. Notify the Commissioner of conditions that would adversely affect the installation or subsequent utilization of the dampers. Do not proceed with installation until unsatisfactory conditions are corrected.

3.3 INSTALLATION

- A. Fire Dampers and Fire/Smoke Dampers
 - 1. Install dampers at locations indicated on the drawings and in accordance with manufacturer's UL approved installation instructions.
 - 2. Install dampers square and free from racking with blades running horizontally.
 - 3. Do not compress or stretch damper frame into duct or opening.
 - 4. Handle damper using sleeve or frame. Do not lift damper using blades, actuator, or jackshaft.



- 5. Install bracing for multiple section assemblies to support assembly weight and to hold against system pressure. Install bracing as needed.
- 6. Provide conveniently located access doors, of ample size for resetting the dampers. Duct mounted grilles, registers or diffusers can be used for access as long as such access is readily available as determined by the Commissioner.

B. Actuators

- 1. All actuators of automatic fire dampers (FD-H) and combination fire/smoke dampers (FSD), except for those designated as FSD-HS, are connected by the subcontractor to the controlling device. The subcontractor will provide all wiring, conduit pneumatic tubing, circuit protective devices, etc., as necessary to meet this requirement.
- 2. All damper actuators serving dampers with single or multiple sections shall be readily accessible. Provide access doors as required.

C. All Dampers

- 1. Mount dampers plumb and level. Provide additional duct bracing and supports to properly support dampers.
- 2. Provide duct access doors for access to all fire dampers, combination fire/smoke dampers, smoke dampers, automatic dampers, and backdraft dampers.
- 3. Damper construction shall be same as the ductwork to which it connects.

3.4 TESTING

- A. Source Quality Control
 - 1. Factory Tests: Factory cycle damper and actuator assembly to assure proper operation.

B. Field Testing

- 1. Refer to the commissioning procedures for testing requirements.
- 2. All fire and combination fire/smoke dampers shall be tested in accordance with the requirements of NFPA 92.

END OF SECTION 23 33 13



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SECTION 23 34 00 FANS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Centrifugal Fans
 - 1. Scroll
 - 2. Tubular Centrifugal
- B. Axial Fans
 - 1. Vaneaxial Adjustable Blade
- C. Roof Exhaust Fans.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Submit manufacturer's latest published data for dimensions, materials, accessories and installation details.
- B. Submit full technical rating data based on tests in accordance with current AMCA standards and in an AMCA approved laboratory. Include manufacturer's certified fan performance curves, and certified sound power ratings. Correct all ratings and curves for altitude and temperature where applicable.



1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Construct all fans, except vaneaxial adjustable blade, to comply with the requirements of the latest editions of the Air Moving and Conditioning Association (AMCA) Standards and Bulletins. Certify these fans by AMCA for performance ratings and provide the AMCA Performance and Construction Seal.
- C. Install fans, with their accessories, to comply with NYC Building Codes and with the recommendations of the National Fire Protection Association (NFPA).

PART 2 - PRODUCTS

2.1 GENERAL - ALL FANS

- A. Unless noted otherwise, provide discharge direction and drive arrangement to suit space conditions and conform as closely as possible to the layouts shown on the Drawings.
- B. Provide fans that are quiet operating and non-overloading over the entire range of operation.
- C. Provide fan motors in accordance with section 23 05 13 entitled "Electric Motors." Size motor to drive its respective fan when the fan is operating at a speed 5% in excess of that required to meet the scheduled fan performance. Do not select motors within the service factor for this range.
- D. Provide fan starters in accordance with section 23 86 00 entitled "Motors Controllers" for installation by Division 26.
- E. Statically and dynamically balance fan wheels/impellers at the factory and so certify.
- F. Provide precision self-aligning bearings designed to prevent leakage of oil or grease. Provide cups, oil chambers, Zerk or Alemite lubrication fittings in accessible locations for ease of lubrication. Provide heavy duty split pillow block bearings with tapered, double-row spherical roller assemblies. Provide bearings with service life in excess of 200,000 hours at maximum cataloged fan operating conditions.
- G. Provide copper lubrication leads, for lubrication of internal motors and bearings, extending to a capped termination point external to the fan casing.
- H. Extend wire leads on fans driven by direct motor drive from the motor in air tight rigid walled conduit, to a junction box mounted external to the fan casing.
- I. On fans driven by belt drive provide standard "V-groove" type belts and sheaves suitable for the service intended. Fan sheaves are non-adjustable type with removable machined bushings. Provide adjustable pitch type motor sheaves with double locking feature, to 10% above and below the rated fan speed. Dynamically balance sheaves with over three grooves. For fan motors over 10 horsepower, provide at least two belts. Design multiple belt drives capable of carrying the entire load with one belt broken. Provide preformed expanded metal or sheetmetal belt guards, with grommeted tachometer ports at the fan and motor shafts, for all exposed sheaves and belts.



- J. For motors in the airstream, provide TEAO or ODP type motors.
- K. Provide solid hot rolled steel drive shafts, accurately turned and polished to a close tolerance where in contact with bearings. Secure fan wheels/impellers to the drive shaft by a key and keyway assembly.
- L. Manufacture fans of materials and finishes suitable for the service intended.
- M. Construct wheels/impellers exposed to normal atmospheres of mild steel, hot dip galvanized, and finished with two layers of factory applied non-scaling paint.
- N. Construct fans exposed to corrosive atmospheres of corrosion resistant materials suitable for intended use, and factory finished with epoxy or other approved corrosion resistant coatings.
- O. Provide fans exposed to elevated temperatures with components rated for high temperature service. Do not use belt drive assemblies exposed to the airstream. Use direct drive motors certified for high temperature service.
- P. Construct fans used to convey flammable vapors of non-sparking (non-ferrous) materials, and use explosion proof motors.
- Q. Electrically ground fan and drive to prevent accumulation of static charge.
- R. Completely house fan assemblies exposed to weather in weatherproof enclosures including motor and drive.
- S. Fan wheels/impellers and casings shall be relieved of residual stresses produced in the forming process.
- T. Provide housings with integral inlet and discharge flanges, complete with bolt holes for duct connections.
- U. Provide parallel vane pre-rotation vortex dampers at the fan inlet for variable volume control. Furnish and install all necessary linkages and accessories required for automatic control.
- V. Provide variable frequency drive as specified in section entitled "Adjustable Frequency Controllers."
- W. Provide gasketed access doors to permit routine maintenance and inspection of motor and internal components.

2.2 CENTRIFUGAL FANS

- A. Scroll Type
 - 1. Provide backward inclined (BI), backward curved (BC), airfoil (AF), forward curved (FC) fan wheels, and single width single inlet (SWSI), or double width double inlet (DWDI), as indicated on the Drawings, enclosed in a scroll shaped fan housing.
 - 2. Weld or securely rivet fan blades to the hub plate and rim.
 - 3. Rigidly build and brace curved scroll shaped housings with continuous welded seams and joints. Lockseam construction may be accepted for smaller fan sizes where it is standard construction for models listed on Drawings.

- B. Tubular Type
 - 1. Provide backward inclined or airfoil fan wheels as indicated on the Drawings, in a cylindrical housing, with integral inlet venturi and airflow straightening vanes, arranged to impart unidirectional air flow.
 - 2. Weld fan blades to the hub plate and rim. Backward inclined blades may be securely riveted to the hub plate and rim. Precisely cast aluminum fan wheels and machine finish.
 - 3. Match the wheel inlet ring to a close tolerance with integral deep spun aerodynamic venturi inlets.
 - 4. Provide radial air flow straightening vanes at the fan discharge.
- C. Manufacturers
 - 1. Buffalo
 - 2. Trane
 - 3. Greenheck
 - 4. Or as approved equal
- D. Vaneaxial Fixed Blade Type
 - 1. Include impeller, motor, drive and cylindrical housing.
 - 2. Construct fan blades, airfoil cross section, varying in camber and twist from base to tip, of die-formed steel or aluminum.
 - 3. Fixed pitch fans shall have form impeller blades and hub in a single casting, or precision weld blades to the hub assembly.
 - 4. Mount impeller directly on the drive shaft and secure in place with locking keyway assembly. Design motor and impeller to be removable from the inlet side of the fan.
 - 5. Cross brace motor support base on direct drive fans to the fan housing for structural rigidity to prevent motor misalignment.
 - 6. On belt drive fans protect belts and bearings from the airstream in an air insulated enclosure. Design to apply belt loads to the hub in the same plane as the bearings to eliminate overhang load.
 - 7. Construct cylindrical fan housings of heavy gauge hot rolled steel with continuous weld seams.
 - 8. Provide venturi inlet bell and discharge diffuser accessories of the same gauge and material as the fan housing.
 - 9. Manufacturers
 - a. Trane



- b. Greenheck
- c. Cook
- d. Or approved equal.
- E. Vaneaxial Adjustable Blade Type
 - 1. Include impeller and hub, guide vanes, motor, drive and cylindrical housing.
 - 2. Construct fan blades of die-formed aluminum, sized for the fan diameter. Blades cut down from longer sections will not be acceptable. Provide double thickness blades with airfoil cross section and profile, varying in camber and twist, from base to tip.
 - 3. Provide fans designated as adjustable pitch fans with blades which can be manually adjusted in the field. Provide pitch indicators at the base of each blade. Secure blades in place with set screws or locking adjustment nuts.
 - 4. Provide fans designated as controllable pitch fans with in flight blade pitch modulation. Vary blade pitch through an external actuator furnished by the fan manufacturer with the fans connected via linkages to an internal, lubricated thrust bearing assembly, shall vary blade pitch in response to a command from the system air volume controller. Indicate blade angle on an external pitch index plate. Furnish and install all necessary linkages and accessories required for automatic control. Provide limit control set to the maximum allowable blade angle to prevent motor overload and burnout. Upon fan shutdown or power failure, pitch shall be reset to the minimum setting.
 - 5. Mount impeller directly on the drive shaft and secure in place with locking keyway assembly. Design motor and impeller to be removable from the inlet side of the fan.
 - 6. Provide an aerodynamic spinner cap over the hub face of impellers, to protect and conceal blade adjustment bearings.
 - 7. Construct guide vanes of heavy gauge material and match the camber and twist of the impeller blades.
 - 8. Cross brace motor support base and motor fairing on direct drive fans to the fan housing for structural rigidity to prevent motor misalignment.
 - 9. On belt driven fans, protect belts and bearings from the airstream in an air insulated enclosure. Design to apply belt loads to the hub in the same plane as the bearings to eliminate overhang load.
 - 10. Construct cylindrical fan housings of heavy gauge hot rolled steel with continuous weld seams.
 - 11. Provide venturi inlet bell and discharge diffuser accessories of the same gauge and material as the fan housing.
- F. Manufacturers
 - 1. Woods



- 2. Flakt
- 3. Joy
- 4. Or approved equal.

2.3 ROOF EXHAUST FANS

- A. Provide roof exhaust fans of the centrifugal, belt-driven type. Construct fan housing of heavy gauge aluminum.
- B. Construct all spun parts with a rolled bead for added rigidity and spun so as to seal the pores of the aluminum providing greater resistance against oxidation and deterioration.
- C. Provide all-aluminum fan wheel of the centrifugal blower type backward inclined blades and a tapered inlet shroud. Statically and dynamically balance wheels.
- D. Provide inlet cone of aluminum centrifugal blower type.
- E. Enclose motor and drives in a weather-tight compartment, separate from the airstream. Design to provide air for cooling the motor to the motor compartment by way of an air passage from an area free of contaminated exhaust fumes.
- F. Provide motors of the heavy duty, permanently lubricated, sealed ball bearing type. Size drives for 165% of motor horsepower capabilities and of the cast iron type, keyed to the fan and motor shafts. Provide variable pitch drives.
- G. Construct fan shaft of steel construction, turned, ground and polished to precise tolerances in relationship to the hub and bearings.
- H. Provide drive belts of the oil-resistant, non-static, non-sparking type with life expectancy of over 24,000 hours.
- I. Provide bearings flanged and of the permanently lubricated, permanently sealed, ball bearing type capable of over 200,000 hours bearing life.
- J. Design the entire drive assembly and wheel removable, as a complete unit, from the support structure without disassembling the external fan housing. Mount the complete drive assembly on rubber vibration isolation.
- K. Provide direct drive units of identical construction as belt drive units, except for drives, belts, and fan shaft bearings.
- L. Construct units of Type B construction and carry a five-year warranty.
- M. Construct all belt drive units requiring Type A construction, interior and exterior parts, including wheel, wheel hub, supporting posts, fan shaft, drive assembly, and all outside fasteners, of aluminum or non-ferrous material. Include a five-year warranty.
- N. Provide fans licensed to bear the AMCA ratings seal for air and sound performance.



- O. Manufacturers
 - 1. Loren Cook
 - 2. Greenheck
 - 3. Penn
 - 4. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

- A. Install fans in accordance with manufacturer's recommendations and as shown on the Drawings. Follow SMACNA and AMCA recommended procedures for fan installations, belt guards, duct connections, etc.
- B. Provide flexible connections as described in specification section entitled "Sheetmetal" to provide sufficient separation of ductwork from fan assembly to prevent metal-to-metal contact.
- C. Install fans and motors with proper support and vibration isolation as specified in section entitled "Vibration Isolation".
- D. Provide sufficient clearances around fans for access and servicing of components. Install fans such that access doors, motors, belts, lubrication lines, electrical connections, etc. are readily accessible and not obstructed by other installations or structures.
- E. Bump start fans to check that fan wheel/impeller rotation corresponds to the desired direction of air flow. Correct fans found to be rotating in a direction opposite to that desired.
- F. Tighten belt drives, taking into account the service factor and any other design of the drive. Exercise care not to overtension belts.
- G. Check all bolts and fasteners to ensure proper tightness. Do not overtighten nuts and bolts.
- H. Check bearings and motor for proper lubrication, taking care not to overlubricate. Use only lubricants recommended by the manufacturer.
- I. Provide a drain at the bottom of the housing for fans discharging upward from the roof. Pipe drains from housings of interior fans discharging directly up through the roof indirectly to a floor drain.
- J. Locate all floor mounted equipment on a 4" high concrete pad, extending 6" all around beyond the equipment. Coordinate size and location with subcontractor providing concrete pads.

END OF SECTION 23 34 00



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SECTION 23 36 10 AIR OUTLETS AND INLETS

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.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Air Outlets.
- B. Air Inlets.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Submit manufacturer's data indicating air distribution, outlet velocities, and acoustic performance.
- B. Submit manufacturer's specifications of construction including materials, installation instruction and adjustment data. Include "K" factors for balancing.
- C. Submit product accessories.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Air outlets and inlets to be tested in accordance with ADC (Air Diffusion Council).


PART 2 - PRODUCTS

2.1 GENERAL

- A. Size the air distribution outlets as shown on the drawings to accommodate the air volume and throw indicated so as to maintain a maximum terminal velocity of 50 feet per minute in the occupied area. The overall noise level produced by all of the supply air outlets and return air inlets in various rooms are not to exceed specified limits. Design outlets to distribute in such a manner that the space temperature will not vary more than 2°F over the entire conditioned area. The conditioned area is defined as the area 2'-0" above the floor to 7'-0" above the floor, inclusive. If the Contractor cannot comply with the above requirements by following the arrangement shown on the Drawings, he is to notify the Commissioner, in writing, setting forth requested modifications.
- B. At the discretion of the Commissioner, air outlets may be smoke tested to determine their compliance with these Specifications. See the Section entitled "Testing, Balancing and Adjusting" for testing requirements. At no cost to the City of New York make any revisions required for compliance with terminal velocity requirements, noise level requirements.
- C. Refer to Drawings and Specifications for ceiling type and construction. Provide proper frames and borders to fit the ceiling specified.

2.2 OUTLET TYPES

- A. Type CD-A Square Ceiling Diffuser Perforated Face
 - 1. Perforated face star pattern supply diffuser, steel construction with removable/stationary deflectors. Deflectors to provide horizontal air pattern towards the corners of the diffuser. Sizes indicated on the Equipment Schedule are neck sizes. Face area is approximately 24" x 24". Air pattern is as indicated on the Drawings. Baked enamel finish and black inner finish.
- B. Type CD-B Square Diffuser
 - 1. Same as CD-A, except face area is approximately 12" x 12".
- C. Type SR-A Exposed Duct Supply Register
 - 1. Steel register with front vertical and rear horizontal adjustable air foil type blades on 0.75" centers and steel opposed blade volume control damper. Baked enamel finish. Install register on a reverse knuckle joint in accordance with SMACNA Manual.
- D. Type SR-B Sidewall Supply Register
 - 1. All aluminum register with front vertical and rear horizontal adjustable air foil type blades on 0.75" centers and aluminum opposed blade volume control damper. Baked enamel finish.

2.3 INLET TYPES

- A. Type ER-A Louvered Register
 - 1. For sidewall or ceiling return or exhaust. All aluminum construction with one set of horizontal fixed blades, set at 45° fixed deflection, 3/4" spacing. Provide a steel opposed blade damper. Baked enamel finish.
- B. Type ER-B Sidewall Perforated Register
 - 1. All aluminum construction with a steel opposed blade damper. Holes to be 3/16" diameter staggered. Baked enamel finish.
- C. Type ER-C Ceiling Perforated Register
 - 1. All steel construction. Face area as shown on Drawings. Provide steel opposed blade damper.

2.4 MANUFACTURERS

- A. Titus
- B. Price
- C. Anemostat
- D. Or approved equal

PART 3 - EXECUTION

NOT USED.

END OF SECTION 23 36 10



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SECTION 23 52 10 PIPING AND ACCESSORIES

PART 1 - GENERAL

1.1 **RELATED DOCUMENTS**

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Copper Tube and Fittings.
- B. Black Steel Pipe and Fittings.
- C. Unions and Couplings.

1.3 PERFORMANCE REQUIREMENTS

A. Piping and piping auxiliary components shall meet or exceed the performance requirements specified in this specification section.

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.5 SUBMITTALS

- A. Shop Standard / Details Submittal
 - 1. Submit piping shop standards and details for approval before any piping layouts are submitted for review. Shop drawings will not be acted on before shop details have been reviewed.
 - 2. Piping shop standards and details shall include:
 - a. A schedule for pipe material, construction, and fittings similar to the "PIPE SCHEDULE" section of this specification.



- b. A table listing all systems, floors, and system working pressure classifications.
- c. A valve schedule.
- d. Manufacturer's product data.
- e. Mill certificates for piping and fittings.
- f. Fitting construction.
- g. Welding / Brazing specifications and procedures for each pipe service.
- h. A list of pipe welders proposed for all shop and field welding and their certifications.
- i. Materials, fabrication, assembly, and spacing of hangers, anchors, and supports.
- j. Typical Pipe and Valve Trim Details
- 3. All sections shall be indexed and a table of contents provided accordingly.
- B. Submit computer generated shop drawings indicating anchoring details, anchor points, guide details, etc.
- C. Submit computer generated drawings of location and size of sleeves for openings in floors and walls.
- D. Submit computer generated detailed piping layouts at $3/8^{"} = 1^{-0"}$ scale for approval. Piping layouts shall be submitted for each individual construction phase, and for the entire completed project.
- E. Submit dimensioned drawings to the Commissioner for approval showing pipe penetrations through core walls, slabs and other structural elements, anchor and guide locations, etc.
- F. Submit a schedule for pipe sleeves.
- G. Submit an overall piping schematic drawing (similar to a riser or isometric diagram) showing entire installed system.
- H. Submit plan drawings showing piping point loads to structure and supplementary steel layouts for all systems.

1.6 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. All piping work to conform to the latest edition of the appropriate ASME/ANSI Code for Pressure Piping and Power Piping, including latest amendments.
- C. Employ only skilled welders, each holding a currently active certificate, dated within 12 months, from a recognized testing laboratory, indicating satisfactory welding test results per the American Welding Association or ASME Boiler and Unfired Pressure Vessel Code, Section IX, Welding Qualifications. Retest is required if welder has not performed welding for a period of 90 days. Maintain copies of certificates at the job site. Non-certified welders shall not be employed.



D. All piping shall be sourced from the United States (domestic supply).

PART 2 - PRODUCTS

2.1 GENERAL PIPING

- A. All piping shall comply with the latest editions of the standards indicated.
- B. Piping, fittings and accessories shall be suitable for the pressure and temperatures of the service. Refer to the "PIPE SCHEDULE" section of this specification for system working pressure, temperature, and pipe requirements.

2.2 GENERAL FITTINGS

- A. All fittings shall comply with the latest editions of the standards indicated.
- B. All steel elbows shall be long radius pattern.
- C. Fittings to be of the same schedule (weight) as the pipe to which it will be adjoined. Provide fittings which maintain full wall thickness throughout, ample radius and fillets, and proper bevels or shoulders at ends.

2.3 PIPE SCHEDULE

A. Provide piping systems construction as indicated in the table below:

System	Tag	Max. Temp.	Floors	Fitting Class	Working Pressure	Pipe Size	Material Type and Weight	Connections	
								Mains	Trim
Closed Water Systems	-	200 deg F	All	C150	150 psi	12" and Larger	SCH 40 or Std, A53, GR B, ERW	Butt Weld	Flanged
						3" to 10"	SCH 40, A53, GR B, ERW	Butt Weld	Flanged
						2½" and Smaller	SCH 40, A53, GR B, ERW	Butt Weld	Threaded
							Hard Type L Copper	Soldered	Soldered
			All	C300	300 psi	18" and Larger	SCH 40, A53, GR B, ERW	Butt Weld	Flanged
						12" to 16"	SCH 40 or Std, A53, GR B, ERW	Butt Weld	Flanged
						3" to 10"	SCH 40, A53, GR B, ERW	Butt Weld	Flanged
						2½" and Smaller	SCH 40, A53, GR B, ERW	Butt Weld	Threaded
							Hard Type K Copper	Brazed	Brazed



System	Тад	Max. Temp.	Floors	Fitting Class	Working Pressure	Pipe Size	Material Type and Weight	Connections	
								Mains	Trim
						14" and Larger	SCH 40, A53, GR B, ERW	Butt Weld	Flanged
			All	All C300	400 psi	2" to 12"	SCH 40 or Std, A53, GR B, ERW	Butt Weld	Flanged
						1½"" and	SCH 40, A53, GR B, ERW	Butt Weld	Threaded
						Smaller	Hard Type K Copper	Brazed	Brazed
Gravity Drains and Condensate	D	N/A	All	N/A	N/A	3" and Larger	SCH 40, A53, GR B, ERW	Butt Weld	Threaded
							SCH 80 CPVC	Solvent Weld	Solvent Weld
						2½" and Smaller	Hard Type L Copper	Soldered	Soldered
							SCH 80 CPVC	Solvent Weld	Solvent Weld
Pumped Drains and Condensate	PD	N/A	All	N/A	N/A	3" and Larger	SCH 40, A53, GR B, ERW	Butt Weld	Threaded
						2½" and Smaller	Hard Type L Copper	Soldered	Soldered
Refrigerant	REF	N/A	All	N/A	N/A	All	Hard Type L (ACR) Copper	Soldered	Soldered
Refrigerant Relief	RR	N/A	All	C150	N/A	All	SCH 40, A53, GR B, ERW, Galv.	Butt Weld	Flanged
Normal Air Vents	V	N/A	All	C150	N/A	All	SCH 40, A53, GR B, ERW, Galv.	Threaded	Threaded

2.4 COPPER TUBE AND FITTINGS

- A. Material:
 - 1. Unless otherwise noted, all copper tubing shall be hard drawn, ASTM B 88 Type K, ASTM B 88 Type L, or ASTM B 280 Type ACR as indicated in the "PIPE SCHEDULE" section of this specification.
- B. Solder and Brazed Fittings:
 - 1. Wrought-Copper Fittings and Unions shall be manufactured to ASME B16.22.
 - 2. Type L Copper shall be soldered.
 - 3. Type K Copper shall be brazed.
 - 4. Solder Filler Metals: ASTM B 32, lead-free alloys of 95-5 tin-antimony or tin and silver. Include waterflushable flux according to ASTM B 813.

5. Brazing Filler Metals: AWS A5.8, BCuP Series, silver-copper-phosphorus alloys for joining copper with copper; or BAg-1, silver alloy for joining copper with bronze or steel with a melting point at or above 1,000 deg F.

2.5 BLACK STEEL PIPE AND FITTINGS

A. Material:

- 1. ASTM A53 or A106, black steel with plain ends; welded (ERW) and seamless (SMLS), Grade B.
- 2. Provide galvanized (galv.) piping where called for in the "PIPE SCHEDULE". Hot process inside and outside of pipe with zinc coating, minimum 3 oz per sq.ft.
- 3. Wall thickness and fitting class shall be as indicated in the "PIPE SCHEDULE" section of this specification.
- B. Welded Fittings:
 - 1. Butt Weld: ASME B16.9, ASTM A 234, fitting construction and wall thickness to match adjoining pipe.
 - 2. Socket Weld: ASME B16.11, fitting construction and wall thickness to match adjoining pipe.
 - 3. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- C. Flanged Fittings:
 - 1. Manufactured to ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
 - a. Material Group: 1.1.
 - b. End Connections: Butt welded, welding neck.
 - c. Facings: Raised face.
 - 2. Gasket: Compatible with the system fluid and system temperature. ASME B16.21, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.
 - a. For Steam: Flexitallic style CG, Garlock, Dynaflo or approved equal.
 - 3. Bolts and Nuts:
 - a. Bolts and nuts shall be manufactured to ASME B18.2.1.
 - b. Zinc galvanized finish, ASTM A307 Grade B7 bolts, studs, and threaded rods with Grade 2H heavy pattern hexagonal nuts.



- D. Threaded / Screwed Fittings:
 - 1. Fitting shall be manufactured to ASME B16.11.
 - 2. Inside threaded with threads cut clean and true.

2.6 UNIONS AND COUPLINGS

- A. Provide unions where required for the removal of equipment. For piping 3" and smaller, use ground joint type of malleable iron with brass seats for iron pipe, and made of brass for brass pipe and copper tubing. For piping 4" and larger use 150 psi forged steel slip-on flanges for ferrous piping and bronze flanges for copper piping.
- B. Insulating Coupling Type: At each joint between steel or zinc (galvanized) and copper; up to 2" size, Capitol Series CS, Epco "Dielectric Union", Garlock or approved equal; larger sizes, Capitol Series FG, Epco, Garlock or approved equal flange type with insulator spacers and washers.

2.7 MANUFACTURERS

- A. Pipe:
 - 1. U.S. Steel "National"
 - 2. Ohio Pipe
 - 3. LTV-Е
 - 4. Van Lewen
 - 5. Or approved equal.
- B. Welding Fittings:
 - 1. Weldbend
 - 2. Tubco
 - 3. Cajon
 - 4. Naylor
 - 5. Ladish
 - 6. Van Lewen
 - 7. Or approved equal.



- C. Copper Pipe and Fittings:
 - 1. Mueller Brass
 - 2. Nibco
 - 3. Reading Tube
 - 4. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 SLEEVES

- A. Provide sleeves for all pipes passing through floors, rated partitions and walls of sufficient diameter to accommodate pipe covering where such is required. Set sleeves for concrete floors, walls, and other masonry work in place before the floors or walls are poured or built. Locate sleeves secure in place so that space all around the pipes, after the pipes are installed in place is about equal. Anchor sleeves by use of anchor flanges embedded in concrete or at each end of sleeve. Properly firestop around sleeves after wall is constructed.
- B. Provide sleeves for all pipes passing through non-rated partitions or ceilings. Size sleeves to accommodate pipe covering where applicable. Sleeve seam to be drive slip. Sleeve to be flanged 1" at each end to lock sleeve into penetration.
- C. For sleeves at penetrations of the metal deck, attach to the deck prior to the pouring of the deck concrete. Set sleeves in such a manner so that no concrete fills their interior during the concrete pouring operations.
- D. Caulk floor sleeves for exposed pipes watertight and project sleeve approximately 2" above the finished floor. Finish sleeves flush with the bottom of slab and also with the finished faces of wall.
- E. Provide sleeves with an inside diameter at least ¹/₂" greater than outside of pipe served, including pipe insulation which must be continuous through sleeve, except as detailed on the Drawings.
- F. Where piping penetrates non-rated walls, partitions, etc., pack space between piping and sleeve with mineral wool. At penetrations through foundation walls, rated walls, and floor slabs provide firestop material as specified and shown on the Drawings.
- G. Do not support pipes by resting clamps on sleeves. Clamps must extend beyond sleeve and be supported outboard of sleeve in an approved manner. In no case shall sleeves be cut or slotted to accommodate pipe clamps.
- H. Where space for future pipes and conduits is required, provide sleeves and fill with lightweight concrete.
- I. Sleeves penetrating floor and roof slabs shall extend at least 2" above slab.



J. Cover all pipe/sleeve/firestopping gaps using escutcheons.

3.3 FIRESTOPPING

- A. Deliver materials to site in original unopened containers or packages bearing the manufacturer's name, brand designation, product description and U.L. Classification Mark.
- B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job site.
- C. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.
- D. Comply with recommended procedures, precautions or remedies described in Material Safety Data Sheets as applicable.

3.4 EXAMINATION

- A. Examine areas and conditions under which work is to be performed and notify the Contractor in writing of conditions detrimental to proper and timely completion of the work.
- B. Verify that openings are properly sized and in suitable condition to receive the work of this section.
- C. Verify manufacturer's printed instructions for installation and when applicable, curing in accordance with temperature and humidity. Conform to ventilation and safety requirements.
- D. Verify the condition of the substrates before starting work.
- E. Verify Weather Conditions. Do not proceed with installation of firestop materials when temperatures fall outside the manufacturer's suggested limits.
- F. Verify that firestopping materials are installed so as not to contaminate adjacent surfaces.
- G. Where firestopping in installed at locations which will remain exposed in the completed work, provide protection as necessary to prevent damage to adjacent surfaces and finishes, and protect as necessary against damage from other construction activities.
- H. Verify that all pipe, conduit, ducting which penetrate fire-rated construction have been permanently installed prior to installation of firestop.
- I. Firestopping may be required by other Subcontractors under related sections of the project specifications. Identify all locations requiring firestopping and coordinate the work of this section with work performed under other sections of the project to provide a uniform system of firestopping.
- J. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.
- K. Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation.

L. Firestop systems do not re-establish the structural integrity of load bearing partitions. Contractor shall consult the Commissioner prior to penetrating any load bearing assembly.

3.5 **PIPING INSTALLATIONS**

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. While pipe sizes must not be decreased, follow the design drawings as closely as the actual construction and the work of other trades will permit. Provide offsets, fittings, and accessories which may be required but not shown on the drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas. Closely plan and coordinate concealed piping and ductwork above suspended ceilings to avoid interferences, and install to maintain suspended ceiling heights shown on architectural drawings.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas in a neat, workmanlike manner, at right angles or parallel to building walls with maximum headroom. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Install piping to allow application of insulation.
- I. Select system components with pressure rating equal to or greater than system operating pressure.
- J. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- K. Install drains, consisting of a tee fitting, ³/₄" ball valve, and ³/₄" threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage. Provide vent traps at high points.
- L. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
- M. Install branch connections to mains using mechanically formed tee fittings in main pipe, with the branch connected to the bottom of the main pipe for water and to the top of the pipe for steam. For up-feed risers, connect the branch to the top of the main pipe.
- N. Install valves according to Specification Section 230523 "Valves".
- O. Make piping connections to coils and equipment with offsets provided with screwed or flanged unions so arranged that the equipment can be serviced or removed without dismantling the piping. Do not screw unions directly to coil header piping connections.
- P. Make riser branches and other offsets with sufficient elbows and pipe lengths to prevent buckling due to thermal expansion.

- Q. Install unions in piping, 3" and smaller, adjacent to valves, at final connections of equipment and instruments, and elsewhere as indicated.
- R. Install flanges in piping, 4" and larger, at final connections of equipment and instruments, and elsewhere as indicated.
- S. Install automatic valves, insertion pipe wells and energy meters in piping systems. Valves, wells and meters will be furnished under the work of other Sections or Divisions of the Specifications.
- T. Comply with requirements in Specification Section 230553 "Systems Identification" for identifying piping.
- U. Install sleeves for piping penetrations of walls, ceilings, and floors.
- V. Install sleeve seals for piping penetrations of concrete walls and slabs.
- W. Install escutcheons for piping penetrations of walls, ceilings, and floors.
- X. Pipe Nipples: Pipe 3 inch in length and less is considered a nipple. Nipples to be of extra heavy construction. Do not use close nipples.
- Y. Do not use short lengths or nipples at locations where a full length of pipe will fit.
- Z. Cap all openings in pipes during progress of the work.
- AA. Do not connect bottom of pipe risers until riser is complete. Rod or tap to clear loose material before making bottom connection.
- BB. Correct leaks in piping immediately using new materials. Leak-sealing compounds or peening is not permitted.
- CC. After systems are in operation, if coils do not circulate quickly and noiselessly (due to trapped or air-bound connections), make proper alterations in these defective connections including altering finished construction and refinishing without additional cost.

3.6 HANGERS AND SUPPORTS

- A. Comply with Specification Section 230529 "Hangers, Anchors, and Supports".
- B. Comply with Specification Section 230548 "Vibration Isolation".
- C. Support or suspend piping properly on stands, clamps, hangers, etc., of approved design and make. Design supports to permit free expansion and contraction while minimizing vibration. Anchor pipes where shown or required by means of steel clamps, or other approved means, securely fastened to the pipe and the building construction. Follow MSS standards for supports of piping.
- D. Provide structural pipe supports including supplemental steel channels, angles, columns, etc., necessary to complete the installation. The provision of structural supports over and above that required for the building structure is the responsibility of this Section.

- E. Prior to installation of hanger rods and other pipe supports, obtain approval from the Commissioner for proposed method of hanging and for exact location of all mounting points. Submit weights and location of all piping to the Commissioner for approval well in advance of general construction work to allow sufficient time for structural redesign to accommodate the installation.
- F. Place piping in proper alignment and position prior to connection to anchors, expansion loops, joints and equipment. Furnish jacking devices, temporary steel structural members and assembled structures as necessary. Remove temporary equipment and structures at the completion of the work.
- G. Reinforce piping at anchor points.

3.7 PIPE JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. 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.
 - 1. Thoroughly clean solder joints before the application of the solder. Cut pipe square with burrs removed and apply flux before soldering.
- D. 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.
- E. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- F. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to "QUALITY ASSURANCE" section of this specification.
 - 1. Use main sized saddle weld-o-lets or thread-o-lets, type branch connections for directly connecting branch lines to mains in steel piping if main is at least one pipe size larger than the branch for up to 6 inch mains and if main is at least two pipe sizes larger than branch for 8 inch and larger mains. Do not project branch pipes inside the main pipe. Use of welding tees are permitted for all sizes.
 - 2. Where shown on drawings, specified or directed, use welded joints, outlets and flanges. Welded joints may also be provided elsewhere, at Subcontractor's option, except at points where it may be explicitly specified or directed to leave flanged joints.

- 3. Whenever welded piping connects to equipment valves or other units needing maintenance, servicing, or possible removal, flange the connecting joints. Match the pressure rating of the pipe flanges with the pressure rating of the flanges on the equipment to which the piping connects. Provide flanged pipe sections to permit removal of equipment components.
- 4. Welding Process: Sizes 4 inch and smaller, use either gas welding (oxyacetylene process) or metallic arc process; sizes above 4 inch, use metallic arc process.
- G. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads. Make flanged connections with flange faces true and perpendicular to the center line of the pipe to which the flanges are attached.
 - 1. Provide carbon steel welding flanges at all flanged valves and equipment, and as required for union connections. Flanges to be either slip-on type, bored to match diameter of pipe and front and back welded thereto, or welding neck pattern. Use flanges with a working pressure equal to 150 psi, or a minimum of 150 percent of the maximum system working pressure. Flanges for high pressure steam service to be 300 psi rating. High pressure steam service as relates to piping, fittings, valves and accessories is defined under these Contract Documents as steam at an operating pressure of 15 psig or higher.
- H. Grooved Joints: Assemble joints with coupling and gasket, lubricant, and bolts. Cut or roll grooves in ends of pipe based on pipe and coupling manufacturer's written instructions for pipe wall thickness. Use grooved-end fittings and rigid, grooved-end-pipe couplings.
- I. Press-Connect Pressure Fittings: Use manufacturer required tool and procedure. Leave insertion marks on pipe after assembly.

3.8 **PREPARATION**

- A. Clean substrate of dirt, dust, grease, oil, loose materials, rust or other matter that may affect the proper fitting or adhesion of the firestopping materials.
- B. Clean metal and glass surfaces with a non-alcohol solvent.
- C. Coordinate construction of openings, penetrations and construction joints to ensure that the fire stop systems are installed according to specified requirements.

3.9 INSTALLATION

- A. Install firestop materials as indicated in accordance with design requirements and manufacturer's instructions.
- B. Seal all holes or voids made by penetrations to ensure an air, smoke and water-tight seal.
- C. Consult with the Commissioner and damper manufacturer prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
- D. Apply firestops in accordance with fire test reports, fire resistance requirements, acceptable sample installation and manufacturer's recommendations.

- E. Unless specified and approved, all insulation used in conjunction with through-penetration shall remain intact and undamaged and may not be removed.
- F. Insulation types specified in other sections shall not be installed in lieu of firestopping material specified herein.
- G. Firestop systems are not intended to support live loads or traffic. Contractor shall consult the Commissioner if they have reason to believe these limitations may be violated.

3.10 FIRESTOPPING

- A. Insulated Cold Pipes
 - 1. Install a pipe sleeve with an inside diameter large enough to include the specified thickness of insulation.
 - 2. Eliminate insulation for depth of wall and fill space between with firestop expanding foam leaving sufficient space at each end of sleeve for proper depth of firestop, unless the UL tested system being used does not require the removal of any pipe insulation to restore the rating of the penetration.
 - 3. Install firestop material at each end of sleeve to form a U.L. approved system.
 - 4. Insulate pipe on each side of wall and caulk all around insulation at joint of wall and insulation.
- B. Hot Pipes (Up to 220°F)
 - 1. Install a pipe sleeve with an inside diameter large enough to include the specified thickness of insulation.
 - 2. Eliminate insulation for depth of wall and, using section of specified insulation as backing, install proper depth of firestop material on each end of sleeve to form a U.L. approved system, unless the UL tested system being used does not require the removal of any pipe insulation to restore the rating of the penetration.
 - 3. Insulate pipe on each side of wall and caulk all around insulation at joint of wall and insulation.

3.11 FIELD QUALITY CONTROL

- A. Prepare and install firestopping systems in accordance with manufacturer's printed instruction and recommendations.
- B. Follow safety procedures recommended in the Material Safety Data Sheets.
- C. Finish surfaces of firestopping which are to remain exposed in the completed work to a uniform and level condition.
- D. All areas of work must be accessible until inspection by the NYC DOB.
- E. Correct unacceptable firestops and provide additional inspection to verify compliance with this specification.



3.12 CLEANING

- A. Remove spilled and excess materials adjacent to firestopping without damaging adjacent surface.
- B. Leave finished work in neat, clean condition with on evidence of spill overs or damage to adjacent surfaces.

3.13 DRAIN INSTALLATION:

- A. Provide coils and vessels which contain water with connections and valved outlets suitably located to permit individual venting and draining.
- B. Provide valved drains with hose bibb at low points of piping systems and at the bottom of each riser.
- C. Provide cooling coil condensate drains, fan drains, and all unit casing drains with 2" minimum trap seal, unless otherwise noted, to spill over floor drains.
- D. Provide 1" minimum drain lines in sheet metal intake and discharge plenums not indicated to have floor drains. Pipe drains to nearest approved indirect waste.

3.14 ADDITIONAL INSTALLATION REQUIREMENTS FOR REFRIGERANT PIPING

- A. Install refrigerant piping according to ASHRAE 15.
- B. Refrigerant tubing shall be cleaned and dehydrated at the factory and shipped sealed with a holding charge of nitrogen.
- C. Back purge refrigerant tubing with nitrogen during brazing operations.
- D. Grade all refrigerant lines for proper oil return to compressor.
- E. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection.
- F. Install refrigerant piping in protective conduit where installed belowground.
- G. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.
- H. Slope refrigerant piping as follows:
 - 1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
 - 2. Install horizontal suction lines with a uniform slope downward to compressor.
 - 3. Install traps and double risers to entrain oil in vertical runs.
 - 4. Liquid lines may be installed level.
- I. When brazing, remove solenoid-valve coils and sight glasses; also, remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.



END OF SECTION 23 52 10



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SECTION 23 62 10 AIR COOLED AIR CONDITIONING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Split System Air Cooled A/C Unit.
- B. Air Cooled Condensers.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Shop Drawings
 - 1. Submit dimensioned drawings with operating weights, piping connections, wiring diagrams, and control interface diagrams.
 - 2. Submit wiring diagrams for all controls, including panel layout and remote devices.
- B. Product Data: Manufacturer's latest listed data for materials, equipment and installation.

C. Test Reports

- 1. Certified sound power levels.
- 2. Certification of all factory tests as required herein.
- 3. Statement of compliance with NYC DOB.

- D. Submit sound power levels and rating data for all units. Noise level from the units are not to exceed NC-38 beyond 10 feet from fan room.
- E. MEA or BS&A number.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Each unit, including factory-installed options, is to be U.L. listed, performance tested and rated in compliance with ARI 210 and ARI 360, Commercial and Industrial Unitary Air Conditioning Equipment.
- C. Design unit to conform to ANSI-B9.1 and UL 465.
- D. Performance test all units at the factory prior to shipment.
- E. Manufacturer of the unit is responsible for the performance of units, including static pressure and sound attenuation effects of the discharge plenum arrangement.

1.6 GUARANTEE

A. Contractor shall provide one (1) year guarantee from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SPLIT SYSTEM AIR COOLED UNITS

- A. General
 - 1. Units to be completely packaged, including filters, evaporator coils, compressors, internal vibration isolation and fan section. Units to require only connection of three phase power, refrigerant piping, remote sensors, control wiring and duct connections prior to operating units. Units to be mounted on 1" cork and neoprene pads, to be provided by the unit manufacturer.
 - 2. Provide units pre-piped, pre-wired, factory assembled and factory tested, with all controls pretested prior to shipping.
 - 3. Provide a terminal strip with each electrical component individually and separately wired to strip.
 - 4. Provide a separate fuse, internally mounted, for each electrical component. A single fuse for multiple compressors or fan motors will not be accepted.



- B. Cabinet, Casing and Frame
 - 1. Unit framework to be formed of structural steel members of 12 to 14 gauge mild steel. After assembly paint the framework for maximum protection against rust. Exterior panels to be fabricated of 18 gauge galvanized steel finished with a baked acrylic enamel over an epoxy primer. Provide neoprene gasketing between panels and frame members; panels to be attached to the frame with quick release latches (no sheetmetal screws). Insulate sections including compressor compartment with 1" thick, 3-lb./cu. ft. density fiberglass having an R value of 4.16.
 - 2. Arrange units for full front, side and rear service access to all mechanical, electrical and refrigeration controls, adjustment of expansion valves, check out of compressors, adjustment of head pressure controls, check out of electrical control panel, without disrupting or interfering with air flow.
 - 3. Provide discharge acoustical plenums lined internally with a minimum of 2" thick, 4 lb/cu.ft. density fiberglass that is in accordance with prototype designs previously tested in a full-scale mock-up environment by an acoustical consultant. If the plenum is not built at the factory, it is the manufacturer's responsibility to provide the Contractor with the exact construction details and specifications for the plenum to be constructed by the sheetmetal subcontractor.
- C. Supply Fan and Motor
 - 1. Provide single width, forward curved Class I supply fans secured to a machined, ground and polished solid steel shaft. Coat shaft with a rust inhibitor and support by two outboard bearings selected for a minimum 200,000 hours' average life. Provide drives with variable pitch sheaves with multiple V-belts sized for 150% of nominal motor horsepower. Mount supply fan motor on a sliding base. Mount fan and motor assembly on a heavy-duty steel frame supported by springs designed for 90-99% isolation efficiency.
 - Provide three-phase NEMA design 'B', 40°C continuously rated fan motor with energy-saving design, .85 power factor, NEMA 'T' frame, open drip-proof, operating at 1750 rpm and supplied with greaselubricated ball bearings.
- D. Compressors
 - 1. Provide multiple compressors of the heavy-duty suction cooled, 1750 rpm, accessible semi-hermetic hermetic type complete with forced feed lubrication, suction and discharge service valves, suction strainer, oil level sight glass, internal relief valve, crankcase heater, and internal 3-phase solid state thermal motor protection. The compressors are to be mounted on 1" deflection spring vibration isolators.
- E. Direct Expansion Coil
 - 1. Provide direct expansion coil with ¹/₂" OD seamless copper tubes expanded into aluminum fins, not less than 3 rows deep or more than 12 fins per inch. Provide evaporator coil with a distributor with side port for hot gas bypass and thermostatic expansion valve with adjustable superheat and external equalizer. Test coil at 300 PSIG air pressure under water, completely dehydrate and pressure test with refrigerant.

- 2. Provide coils with heavy gauge, insulated, galvanized steel drain pans complete with mastic coating for corrosion protection.
- F. Heating Coil
 - 1. Hot Water Coil:
 - a. Provide hot water coil with ¹/₂" OD seamless copper tubes expanded into aluminum fins. Coil to be not more than two rows with not more than 12 fins per inch, factory mounted. Water valve and valve operator to be field supplied and piped. Rate coil for working pressure.

G. Filters

- 1. Provide filters having a minimum requirement of MERV 13 efficiency.
- H. Refrigerant Circuits
 - 1. Each refrigerant circuit is to be an independent circuit completely piped, tested, dehydrated and fully charged with oil and refrigerant R-410A. The refrigerant circuits are to include condenser coil with integral liquid sub-cooler, liquid line service and charging valve, filter drier, and sight glass.
- I. Evaporator Defrost Thermostat
 - 1. Provide defrost thermostat package with enclosure, wiring and hardware for field installation.

2.2 AIR COOLED CONDENSER

- A. General
 - 1. Provide units pre-piped and pre-wired, factory assembled and factory tested, with all controls pre-tested prior to shipping.
 - 2. Units shall be suitable for use with Refrigerant R-410A.
 - 3. Assemble all condenser components on a common base in a weatherproof housing. Provide condenser coil, condenser fans and motors, refrigerant reservoir, charging valve, all controls and holding charge of R-410A.
- B. Condenser Coil
 - 1. Construct condenser coil of aluminum plate fins, mechanically bonded to seamless copper tubes. Circuit coil for sub-cooling. Test coils to 425 psi.
- C. Condenser Fans and Motors
 - 1. Furnish direct-driven, propeller-type belt-driven, centrifugal fans arranged for vertical horizontal discharge. Provide condenser fan motors of the permanently lubricated type, resiliently mounted. Provide a safety guard for each fan. Include controls for cycling fans for intermediate season operation and low ambient control. Balance each fan statically and dynamically.



- D. Controls
 - 1. Locate factory wired controls in a separate enclosure. Provide high- and low-pressure switches and compressor overload devices. Incorporate a positive acting timer to prevent short cycling of compressor if power is interrupted. Timer to prevent compressor from restarting for approximately 5 minutes after shutdown.
- E. Casing
 - 1. Make unit casing fully weatherproof for outdoor installation. Construct casing of galvanneal steel, zinc phosphatized and finished with baked enamel.
 - 2. Provide openings for power and refrigerant connections. Make panels removable for servicing. Provide heavy duty coil guards, unit mounting rails and drain holes.

2.3 MANUFACTURERS

- A. AAON
- B. Carrier
- C. Trane
- D. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 UNIT ERECTION, DELIVERY AND INSTALLATION

- A. Interior air handling unit shall be knock down type. Each unit section shall not exceed 36 inches in order to pass through a standard single door frame. Unit shall be built at factory, tested, broken down, shipped to site and re-erected once in place by qualified personnel to do so.
- B. Contactor to coordinate with the manufacturer to facilitate a knocked-down type of interior air handling unit. It is the Contractor's responsibility for all rigging operations in order to facilitate a complete and successful installation in the unit's final installation location.
- C. The Contractor shall include all rigging and placement labor and material in their bid. If general construction items, including but not limited to, envelope, doors, windows, louvers, must be removed and replaced to facilitate the successful and complete rigging and installation of units this shall be included in the project scope and bid.



3.3 STARTUP AND TESTING

- A. Manufacturer's service technician to check alignment of bearings, drives and motors after installation to ensure that no misalignment exists, or make any necessary alignment adjustments prior to startup.
- B. The manufacturer shall furnish a startup check list to the Commissioner at least two months prior to start up. The list must be explicit as to the various items to be checked prior to start up.
- C. Before units are started up, manufacturer to pump new grease into bearing housings to force out old grease and provide adequate lubrication.
- D. Before acceptance of the equipment by the Commissioner, conduct all tests as required to demonstrate that the equipment operates mechanically, electrically and acoustically as specified.
- E. Conduct a satisfactory performance test in the presence of the Commissioner. Any units found to vibrate beyond acceptable levels must be rebalanced in the field at the Contractor's expense.
- F. Locate all floor mounted equipment on a 4" high concrete pad, extending 6" all around beyond the equipment. Coordinate size and location with subcontractor providing concrete pads.

END OF SECTION 23 62 10



SECTION 23 82 16 COILS

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.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Water Heating Coils.
- B. Refrigerant Coils.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

A. Submit manufacturer's latest product data on construction, capacities and installation details.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Certify coil performance in accordance with ARI 410-72.
- C. Test all water and steam coils at 250 psig air pressure under water prior to shipment.



PART 2 - PRODUCTS

2.1 WATER COILS

- A. Construct coils of seamless copper tubing, approximately 5/8 inch outside diameter, 0.025 minimum wall thickness with aluminum copper fins. Provide tubes expanded or joined in an accepted manner to cast iron, copper or steel headers and connections. Design each water coil to withstand the working pressure of the service in which it is installed. Provide coils with positive means for completely draining and venting each coil. Fit each vent and drain outlet with a hose-end valve of the packless type and a pipe cap, rated for system pressure.
- B. In built-up systems, provide stainless steel drain pans for the full length of every coil section in height.

2.2 **REFRIGERANT COILS**

- A. Construct coils of seamless copper tubing 5/8" O.D., with aluminum fins mechanically bonded to tubes, permanently spaced, attached to seamless copper tube headers. Provide seamless copper tube U-bends, machine die-formed and silver brazed to the tubes.
- B. Provide low pressure drop, venturi-type distributor, arranged for down-feed, 12 circuits per distributor maximum. Two distributors required for split evaporator.
- C. For built-up casings, provide stainless steel drip pans for the full length of every coil section in height.
- D. Test each coil at 300 psig air pressure under water and seal with a holding charge of dry nitrogen at 10 psig.

2.3 MANUFACTURERS

- A. Water Coils
 - 1. Trane
 - 2. Carrier
 - 3. Aerofin
 - 4. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions execution requirements.

3.2 INSTALLATION

A. Mount coils in suitable flanged frame arranged for connection to unit casing. Casings for coils in cold service to be insulated.



- B. Provide suitable supports for mounting or hanging coil sections.
- C. Provide piping connections and accessories as shown on detail drawings.
- D. Provide each section of coil in a bank with separate valved supply and return connections.
- E. Repair crushed or dented return bends to the Commissioner's satisfaction or the entire coil must be replaced.
- F. Comb out crushed or bent fins to the satisfaction of the Commissioner. If more than 5% of the coil face area is damaged, coil must be replaced.

END OF SECTION 23 82 16



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SECTION 23 85 00 VARIABLE FREQUENCY MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. Variable Frequency Controller.
- B. Control Interface.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."

1.4 SUBMITTALS

- A. Provide manufacturer's descriptive literature, installation instructions, operating instructions, and maintenance and repair data.
- B. Provide all electric wiring control diagrams for the VFC operation.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Test all integrated circuits (TTL) and all components used for circuit board construction to the acceptance criteria of 0.5% AQL (Acceptance Quality Limit).
- C. Conduct in-circuit testing of all printed circuit boards to insure proper mounting and correct value of all components.
- D. Burn-in all printed circuit boards for at least 24 hours, at a minimum of 70°C, and temperature cycled.

- E. Functionally test final printed circuit board assemblies via computerized test equipment where all tests and acceptance criteria are preprogrammed and test results are stored as detailed quality assurance data. The Commissioner may witness the factory tests. Provide at least two (2) weeks written notice prior to start of the factory test.
- F. Combine-test all fully assembled controls for performance and functionality at the manufacturer's factory with fully loaded induction motors. Analyze the combined test data to insure adherence to quality assurance specifications.
- G. Design and build the variable frequency controllers to the following standards:
 - 1. E.T.L. and/or U.L.
 - 2. NEMA ICS-3-303.
 - 3. F.C.C. Class A.
 - 4. IEEE STD 444 (ANSI C34.3).

1.6 GUARANTEE

A. Contractor shall provide one (1) year guarantee in accordance with DDC Addendum to the General Conditions, Schedule B.

1.7 MANUFACTURERS

- A. If in compliance with this Section, variable frequency motor controllers (VFC) made by the manufacturers listed below shall be acceptable
 - 1. ABB
 - 2. Siemens (Sinamics)
 - 3. Toshiba
 - 4. Or approved equal

PART 2 - PRODUCTS

2.1 GENERAL

- A. The manufacturer must provide local, in-house service backup which must include factory trained personnel specifically trained for electrical component maintenance and troubleshooting.
- B. Purchase motors and variable frequency controllers from a single source. Verify in writing that the motors and variable frequency controllers operate together as a system; fully compatible and without excessive noise or vibration.

2.2 VARIABLE FREQUENCY CONTROLLERS

- A. Provide 208 VAC variable frequency controllers of the pulse width modulated (PWM) design that operate directly from three phase, 208 VAC ±10%, 60 hertz utility power. The VFC will generate a sine-coded, adjustable voltage/frequency three phase output for complete speed control of any NEMA B squirrel cage induction motor. The VFC shall maintain a 100% current overload capability for 60 seconds with automatic stall prevention and voltage boost to prevent nuisance tripping during load or line side transient conditions. The VFC shall not induce voltage line matching distortion back to the building electrical power supply system. The VFC shall maintain a power factor of not less than 0.95 throughout its speed range. Provide a minimum of 5% DC bus impedance to minimize reflected current. The VFC shall be compliant with FCC Class A noise emissions standard and so labeled.
- B. Provide the variable frequency controller with the following basic design:
 - 1. Converter: VFD input power stage shall convert three-phase AC line power into a fixed DC voltage via a solid-state full wave rectifier, with MOV (metal oxide varistor) surge protection.
 - 2. Inverter: The inverter shall use power transistor semiconductors with a minimum rating of 1100 VAC on 460 VAC controls to invert the converter generator fixed DC voltage into a sine-coded pulse width modulated output.
 - 3. Control Logic: The control logic shall consist of a single printed circuit board and incorporate an 8-bit, or larger, microcomputer central processing unit to control all inverter, converter, base drive and external interface functions.
 - 4. Terminal Strip: A terminal strip shall be provided for input and output signals from the Building Management System and safety devices.
 - 5. Enclosure: NEMA 1 enclosures shall be provided for typical indoor locations. NEMA Type 3 enclosures shall be utilized for outdoor locations and NEMA Type 4 enclosures for wet indoor and outdoor locations subject to water spray or very high humidity.
 - 6. The VFD's shall include EMI/RFI filters. The onboard RFI filter shall allow the entire VFD assembly to be CE Marked and the VFD shall meet product standard EN 61800-3 for the First Environment restricted. VFD's without EMI/RFI filters will not be accepted.

2.3 FEATURES

- A. Include with the variable frequency controller the following minimum design features as standard:
 - 1. Sine-coded, pulse width modulated output.
 - 2. Eight (8) bit, or larger, microcomputer control logic.
 - 3. Maximum and minimum speed adjustment capability.
 - 4. Controlled speed range of 20:1, or greater.



- 5. Overload capability of 20% for 60 seconds.
- 6. Process follower 4-20 mA or 1-10 VDC, input.
- 7. Minimum of three (3) selectable output frequency ranges.
- 8. Fifteen selectable volts/hertz patterns.
- 9. Touch-pad operator controls or adjustable potentiometer with at least four (4) segment digital frequency/speedometer or digital readout displaying: output frequency, status, percent current, and percent response signal.
- 10. Input disconnect/circuit breaker with thru-door handle.
- 11. Torque or current limiting circuit.
- 12. Coast or ramp to stop.
- 13. Electronic reversing.
- 14. Adjustable acceleration and deceleration.
- 15. Fault indicators.
- 16. Built-in real-time clock for time and date stamping events along with timer functions for starting, stopping and speed changes without the need for external controls.
- 17. Common fault output signal (dry contact) for fault monitoring by the Building Management System.
- 18. Motor current output signal (4-20 mA or 0-10 VDC) for equipment status monitoring by the Building Management System.
- 19. External start/stop function to receive an input signal (dry contact) from the Building Management System.
- 20. External speed control function to receive an input signal (4-20 mA or 0-10 VDC) from the Building Management System.
- 21. Fire / Freeze safety interlock function to receive an input signal (dry contact) from the Fire Alarm System and/or a low temperature thermostat (freezestat) which will prevent motor operation when opened. A factory jumper shall be installed where this application is not required.
- 22. Overpressure safety interlock function to receive an input signal (dry contact) from a high-pressure limit switch which will prevent motor operation when opened. A factory jumper shall be installed where this application is not required.



- 23. Damper Control Output / Run Enable Input: Coordinate with the mechanical sequences of operation, provide this function where required.
 - a. Damper Control Output: The damper control output shall indicate that the drive has received a Start command and the drive is not prevented from starting by fault trip or an open safety input. The damper control relay output serves as the command to open a damper such as an outdoor air damper, isolation damper, etc.
 - b. Run Enable Input: The Run Enable input operates as a run permissive input. Once the damper control status is achieved, closing the Run Enable input shall allow the motor to run. When the damper is fully open, a normally open dry contact (e.g. damper end-switch) closes and provides the Run Enable command and allows the motor to operate.
- 24. Firefighter's Override Input (for smoke control/smoke purge): Coordinate with the Fire Alarm System design documents and mechanical sequences of operation, provide this function where required. This external start/stop function shall receive a dry contact input signal from the Fire Alarm System. Upon receiving this signal, this password protected input:
 - a. Overrides other local and external inputs as required (analog/digital, serial communication, and all keypad commands).
 - b. Forces VFC to operate motor, without any other run or speed command, at a field-adjustable, preset speed.
 - c. Causes display of override mode on the VFC display (and the Building Management System where applicable).
 - d. Reset VFC to normal operation on removal of override signal automatically.
- 25. BACnet network interface communications card and gateway with software and firmware for direct interface with the Building Management System. BACnet devices shall be BTL listed. Coordinate with section 23 09 23.
- B. Provide the variable frequency controller with the following protective features as a minimum:
 - 1. Ground fault protection.
 - 2. Electronic thermal motor overload or current limit control.
 - 3. Current limited stall prevention during acceleration, deceleration, and run conditions.
 - 4. Automatic restart, after momentary power loss or momentary over-voltage. No restart into ground fault.
 - 5. Controls for start into a rotating motor.
 - 6. Anti-windmill protection.

- 7. Fault indicators shall indicate the following fault conditions:
 - a. Over-current
 - b. Overload
 - c. Over-voltage
 - d. Over-temperature
 - e. Control function error.
- 8. DC bus discharge indicator.
- 9. Current limiting DC bus fuse.
- 10. Isolated operator controls.
- 11. Phase-to-phase short circuit protection.
- 12. Heat sink over-temperature protection.
- C. Make the following adjustments available on all variable frequency controllers:
 - 1. Acceleration 0to 6,000 seconds
 - 2. Deceleration 0 to 6,000 seconds
 - 3. Volts/hertz adjustments.
 - 4. Maximum frequency range.
 - 5. Minimum frequency.
 - 6. Maximum frequency.
 - 7. Carrier frequency.
 - 8. Torque limit.
 - 9. The inverter supplier to provide line filters on the line to prevent interference from the line to the drive and prevent any electrical harmonic distortion back to the building electrical power supply system.
 - 10. Provide a signal isolator to isolate the control signal to and from the inverter drive.
- D. Provide the variable frequency controller with the following additional features:
 - 1. Main input circuit breaker with a pad-lockable through-the-door handle mechanism with 100k AIC package rating.



- 2. One (1) complete set of spare parts for each size inverter consisting of the following:
 - a. Control fuses.
 - b. Control board.
 - c. Drive board.
 - d. Transistors.
 - e. Capacitors.

E. Manual Bypass

- 1. Provide all the circuitry necessary to safely transfer the motor from the VFC to the power line, or from the line to controller at zero speed. Include a separate cabinet for the bypass circuit to house all devices which must be energized at either 480 VAC or 115 VAC.
- 2. On the bypass cabinet include a door interlocked main power input disconnect circuit breaker, providing positive shutdown of all input power to both the bypass circuitry and the VFC. Motor protection to be provided in both the "Controller" mode and the "Bypass" mode by a motor overload relay.
- 3. Factory install the manual bypass with magnetic contactors.
- 4. Controller to be constructed so as to allow power to be disconnected from either mode yet maintain power to the other mode for uninterrupted motor operation. This disconnecting means must completely isolate either mode for maintenance purposes.

2.4 ENVIRONMENT

A. Design the variable frequency controller to operate within the following environmental and service conditions:

1.	Ambient service temperature:	0°F to 104°F (- 17°C to 40°C).
2.	Ambient storage temperature:	- 4°F to 140°F (- 20°C to 60°C).
3.	Humidity (noncondensing):	0% to 95%.
4.	Altitude:	up to 3300 feet.
5.	Service factor:	1.0
6.	Input voltage:	460 VAC $\pm 10\%$, three phase
7.	Input frequency:	60 hertz \pm 5%.


PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

- A. All drive components including motor, sheaves, belts, fans, pumps etc. must have vibration levels checked at all speeds between 20 percent and 100 percent of the driven unit's design rpm. Vibration must be checked at fan pump shaft bearings in radial (vertical and horizontal) and axial directions. If excessive vibration is found at any frequency, special balancing and structural changes must be provided to minimize harmonic vibrations.
- B. Long Lead Filters for motor protection in long motor lead lengths exceeding 150 Feet shall be provided on the output side of the drive in a separate NEMA 1 or NEMA 3R Enclosures.

END OF SECTION 23 85 00



SECTION 23 86 00 ELECTRIC MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Combination Starters and Disconnect Switches.

1.3 SUBMITTAL PROCEDURES

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures."
- B. Motor Controllers: Comply with Underwriters' Laboratories standard UL-508 (being transitioned to WL 60947) and National Electrical Manufacturers Association Standard ICS 2-2000.
- C. Disconnect Switches: Comply with National Electrical Manufacturers Standard ICS 2-1996, Part 8 (R 2004, R 2009).
- D. Warranty shall be for five (5) years from date of substantial completion and shall cover replacement parts on all components.

1.4 SUBMITTALS

- A. Shop Drawings
 - 1. Submit a list of motor controllers required for the project. This list should include equipment tag, equipment motor size, starter type, starter features.
 - 2. Submit a statement of compliance, or non-compliance for each clause of this specification section.
 - 3. Submit a statement of understanding that each starter has a withstand rating that is coordinated with the electrical system installation.

- 4. Submit shop drawings and manufacturer's data for all items in accordance with the conditions of the contract.
- 5. Include control diagrams, unit wiring diagram for each motor controller, assembly outline drawings, summary sheets, shop interwiring diagrams, field connection diagrams, and nameplates with legends.
- B. Include a statement verifying coordination with the automatic temperature controls and the fire alarm system.

1.5 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."

PART 2 - PRODUCTS

2.1 COMBINATION STARTERS AND DISCONNECT SWITCHES

- A. Provide suitable fully coordinated starting and controlling equipment for motors as required. Arrange the starting equipment as indicated in other sections of these specifications.
- B. Consult with each trade affected to determine the exact requirements for each device.
- C. Coordinate with the Building Management and Control System (BMCS) subcontractor and the Fire Alarm subcontractor to establish required auxiliaries, including relays, contacts, terminals and the like. All three phase starters to have a minimum of two (2) normally open and two (2) normally closed auxiliary contacts.
- D. All starter interface and termination points for the Building Controls subcontractor and the Fire Alarm subcontractor shall be made at a terminal strip provided with the motor controller.
- E. Provide individual starters fully enclosed in neatly finished ventilated boxes of code gauge steel, machine formed and welded. Provide boxes arranged for floor, wall or angle iron frame mounting including a door with a spring catch handle with facility to lock handle in open position.
- F. Provide engraved nameplates for each unit, nomenclature of each to be approved prior to fabrication.
- G. Provide starters for motors less than 1/2 horsepower, as 120 volt, 1-phase, 60 cycle, or 277 volt 1-Phase, 60 cycle, alternating current service with pilot light. Provide manual starters with overload protection and lockout type disconnect switch to control such motors, except where interlocks or automatic controls are required. In such cases, provide magnetic across-the-line starters.
- H. Fire smoke dampers, smoke dampers and automatic louver dampers will be started using addressable relay modules provided by the fire alarm or building control compactor.
- I. Provide starters for motors 1/2 horsepower to 100 horsepower as magnetic across-the-line, combination Motor Circuit Protector or Circuit Breaker type. Such starters to be 208 volt, 3-phase, 60 cycle, alternating current service.
- J. Provide starters for motors over 100 horsepower to be magnetic, combination Soft Start with Motor Circuit Protector Switch. Such starters to be 208 volt, 3-phase, 60 cycle, alternating current service.

- K. Provide magnetic starters subject to manual start and in direct view of the motors they control with momentary contact start and stop buttons built into cover. Provide magnetic starters subject to electrical interlock or automatic control with Hand-Off-Automatic switches built into cover. Provide selector switches in starters to be of the maintained-contact type, water tight and dust tight.
- L. Provide starters with water tight and dust tight, (5) pilot lights on the following indications: Hand, Off, Auto, Run, and Overload.
- M. Provide starters for service at voltages higher than 120 volt with transformers for 120 volt secondary service built into each starter casing to serve control circuits.
- N. Provide each starter subject to electrical interlock and/or automatic control with the necessary auxiliary contacts plus one spare set of normally open and normally closed auxiliary contacts. Provide one set of terminals for each control circuit.
- O. Provide magnetic starters with Solid State Electronic Overload Relay which shall protect all three phases with a wide range current setting and trip class to allow field adjustment for specific motor FLA. Interchangeable heater elements are not acceptable. Overload relay shall provide phase failure, phase loss, locked rotor and stall protection.
- P. Provide coils, cores, resistance, insulation, contacts, trippers, etc., for starters and relays. The motor circuit protector shall be UL listed 508 current limiting manual motor starters with magnetic trip elements only. The breaker shall carry a UL 508F rating which provides for coordinated short circuit rating for use with the NEMA rated motor contractor and provides a minimum interrupting rating of 30 KAIC for the combination starter.
- Q. Provide over/under voltage and phase monitoring capability. Monitor shall be field adjustable for both over and under voltage levels and a delay time before returning to normal operation after a trip.
- R. Mount individual motor controllers in NEMA Type 1A enclosures for typical indoor locations. Utilize NEMA Type 3R for outdoor locations and NEMA Type 4 for other wet locations or locations subject to water spray or very high humidity.
- S. Coordinate the withstand rating of all starter components with the Electrical subcontractor and with the requirements of the electrical system. Starters that do not have appropriate withstand rating shall be removed from the project at no cost for operator safety.

2.2 MOTOR CONTROL CENTERS

A. Provided by Division 26.

2.3 MANUFACTURERS

- A. General Electric
- B. Square Dee
- C. Siemens



D. Or approved equal

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

- A. Motor controllers will be installed under work of Division 26.
- B. Various pieces of packaged equipment will be provided with starters installed by manufacturer at the factory. Coordinate the Division 26 work with these starters.
- C. Review Division 26 and 23 09 23 Building Management Control System (BMCS) Documents for required accessories, interlocks, etc. Failure to fully coordinate this item with the other Divisions in no way relieves the Contractor from providing a complete, functional, and coordinated system as described.

END OF SECTION 23 86 00



SECTION 26 00 02 ELECTRICAL SPECIAL CONDITIONS

PART 1 - GENERAL

1.1 **RELATED DOCUMENTS**

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 WORK INCLUDED

- A. Provide labor and materials required to install, test and place into operation the electrical systems as called for in the Contract Documents, and according to applicable codes and regulations.
- B. Furnish and install all labor, materials, apparatus, and appliances essential to the complete functioning of the systems described and/or indicated herein, or which may be reasonably implied as essential whether mentioned in the Contract Drawings and Specifications or not.

1.3 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Comply with current governing codes, ordinances and regulations, as well as with requirements of the NYC DOB, Con Edison, NYCEC, OSHA and U.L.
- C. Comply with the requirements of NYC construction inspectors over any part of the work and secure all necessary permits.
- D. Where codes or standards are listed herein, the applicable portions apply.
- E. Plans, specifications, codes and standards are minimum requirements. Where requirements differ, apply the more stringent.
- F. Should any change in plans or specifications be required to comply with governing regulations, notify the Commissioner.

- G. Execute work in strict accordance with the best practices of the trades in a thorough, substantial, workmanlike manner by competent workmen. Contractor to provide a competent, experienced full-time Superintendent as part of the their team who is authorized to make decisions.
- H. All equipment shall meet or exceed minimum requirements of NEMA, IEEE, UL, ADA, NFPA and OSHA.

1.4 EQUIPMENT AND MATERIALS

- A. If products and materials are specified or indicated on the Contract Drawings for a specific item or system, use those products or materials. If products and materials are not listed in either of the above, use first class products and materials, subject to the review of the Commissioner.
- B. Provide products and materials that are new, clean, free of defects and free of damage and corrosion.
- C. All products and materials used for this project shall not contain any material which is considered hazardous by the Department of Environmental Protection or DOB.
- D. Replace materials of less than specified quality as designated by the Commissioner and relocate work incorrectly installed as determined by the Commissioner.
- E. Provide name/data plates on all components of equipment with manufacturer's name, model number, serial number, capacity data and electrical characteristics are attached in a conspicuous place.
- F. Install materials and equipment with qualified trades people.
- G. Maintain uniformity of manufacturer for equipment used in similar applications and sizes.
- H. Applicable equipment and materials shall be listed by Underwriters' Laboratories and manufactured in accordance with ANSI standards, and as approved by NYC DOB.
- I. Fully lubricate equipment to manufacturer's requirements when installed and prior to operation.
- J. Locate all floor mounted equipment on a 4" high concrete housekeeping pad. Concrete work shall be provided by another trade. Coordinate size and location with the Contractor providing the concrete pads.
- K. Secure equipment with bolts, washers and locknuts of ample size to support equipment. Embedded anchor bolts shall have bottom plate and conduit sleeves. Grout machinery set in concrete under the entire bearing surface. After grout has set, remove wedges, shims and jack bolts and fill space with grout.
- L. Follow the manufacturers' instructions for installing, connecting, and adjusting all equipment. Provide one (1) copy of such instructions to the Commissioner before installing any equipment. Provide a copy of such instructions and attach to the equipment. Include a copy in the O+M manuals.
- M. Where factory testing of equipment is required to ascertain performance and attendance by the Commissioner's representative is required to witness such tests, all associated costs shall be borne by the Contractor.
- N. Equipment capacities, etc., are scheduled or specified for the job site operating conditions. Equipment sensitive to altitude shall be derated with the method of derating identified on the shop drawings.



PART 2 - PRODUCTS

2.1 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- A. Immediately after notice to proceed by the City of New York submit to the commissioner for review, a complete typed list of all electrical equipment manufacturers and material suppliers for the equipment intended to be furnished and installed on this project as well as names of all subcontractors.
- B. Immediately after notice to proceed by the City of New York, prepare an index of all submittals for the project. Include a submittal identification number, a cross-reference to the Specification sections or Contract Drawing number, and an item description. Prefix the submittal identification number by the Specification sections to which they apply. Indicate on each submittal, the submittal identification number in addition to the other data specified. All subcontractors will utilize the assigned submittal identification number.
- C. After the project is awarded, obtain complete shop drawings, product data and samples from the manufacturers, suppliers, vendors, and all subcontractors, for all materials and equipment specified in the various sections of the specification. Submit data and details of such materials and equipment for review by the commissioner. Prior to the submission of the shop drawings, product data and samples to the commissioner, review and certify that these items are in compliance with the Contract Documents. Check all materials and equipment upon their arrival on the job site and verify their compliance with the Contract Documents. Modify any work which proceeds prior to receiving reviewed shop drawings as required to comply with the Contract Documents and the shop drawings, at no cost to the project.
- D. Prior to fabrication or installation of any work, completely coordinate work of all trades and prepare a complete set of Coordination Drawings.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 DRAWINGS & PRODUCT DATA

- A. Submit materials and equipment by manufacturer, trade name and model number. Include copies of applicable brochure or catalog material. Do not assume applicable catalogs are available in the Commissioner's office. Maintenance and operating manuals are not suitable substitutes for shop drawings.
- B. Identify each sheet of printed submittal pages (using arrows, underlining or circling) to show applicable sizes, types, model numbers, ratings, capacities and options actually being proposed. Cross out non-applicable information. Note specified features.
- C. Include dimensional data for roughing in and installation, technical data sufficient to verify that equipment meets requirements of the Contract Drawings and specifications. Include wiring, conduit, outlet-type and service connection data, motor sizes complete with voltage ratings and schedules.
- D. Maintain a complete set of reviewed and stamped shop drawings and product data on site.

- E. Prepare and submit detailed shop drawings for major electrical and telecommunications conduit duct banks and other distribution services in 3/8'' = 1'-0'' scale, including locations and sizes of openings in floor decks, walls and roofs.
- F. For each room or area of the building containing switchgears, switchboards, panelboards, motor control centers, transformers, emergency generators, substations, dimming cabinets, low voltage systems, bus ducts, fire alarm terminal panels, etc. the following is required to be submitted for review and acceptance at the time of the equipment submittal.
 - 1. Floor Plans:
 - a. Plan views (including sections & elevations when requested) of the equipment indicated in the exact location in which it is intended to be installed. These plans shall be of a scale not less than 1/4" = 1' 0". They shall be prepared in the following manner:
 - 1) Indicate the physical boundaries of the space including door swings and ceiling heights and ceiling types (as applicable).
 - 2) Illustrate all electrical equipment proposed to be contained therein. Include top & bottom elevations of all electrical equipment. The drawings must be prepared utilizing the dimensions contained in the individual equipment submittals. Illustrate all access space requirements.
 - 3) Illustrate all other equipment therein such as conduits, detectors, luminaries, ducts, registers, pullboxes, wireways, structural elements, etc.
 - 4) Note the operating weight of each piece of equipment.
 - 5) Note the heat release from each piece of electrical equipment in terms of BTU per hour. This information shall be that which is supplied by the respective manufacturers.
 - 6) Illustrate all dimensions of concrete pads, curbs, etc.
 - 7) Note all code and maintenance required clearances from all equipment by dimensions, including overhead.
 - 8) Indicate maximum normal allowable operating temperature for each piece of equipment (as per each respective manufacturer's recommendation).
 - 9) Indicate any exterior wall or foundation penetrations.
 - 2. Equipment Installation/Removal Routes:
 - a. Provide in conjunction with the above, a set of documents reproduced from the then current Contract Documents indicating the methods of equipment installation/removal for all major pieces of equipment.
 - b. Indicate on floor plans by means of arrows, the complete path for equipment installation/removal.

- c. Where equipment will be required to be hung temporarily from a slab or beam, note same on the submission including the weight of the equipment to be hung and the weight of the hoisting equipment.
- d. Note all heights of conduits, ductwork, link beams, doorways, transoms, piping, etc. in the proposed path assuring that adequate headroom is provided.
- G. The Contractor is not relieved of the responsibility for dimensions or errors that may be contained on submissions reviewed by the Commissioner, or for deviations from requirements in the Contract Documents.

3.3 CONTRACTOR'S COORDINATION DRAWINGS

- A. Coordinate efforts of all trades and furnish, in writing, any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.
- B. Prepare a complete set of construction Coordination Drawings indicating the equipment actually purchased and the exact routing for all lines such as busway, conduit etc., including conduit embedded in concrete. Use the sheet metal shop drawings as the base drawings to which all other contractors will add their work. Complete each Coordination Drawing and have them signed-off by the other subcontractors and the Contractor prior to the installation of the work in the area covered by the specific drawing.
- C. Indicate structural loads and support points for all racked conduit and busway and submit to the Commissioner for review and approval. Indicate the elevation, location, support points, static, dynamic and expansion forces and loads imposed on the structure at support, anchor points, and size of all conduits. Indicate all beam penetrations and slab penetrations sized and coordinated. Indicate all work routed underground or embedded in concrete by dimension to column and building lines.
- D. This requirement for Coordination Drawings is not authorization for the Contractor or Subcontractor to make any unauthorized changes to the Contract Drawings. Maintain all Contract Drawing space allocations such as ceiling height, space directly above the ceiling for tenant buildout and flexibility, chase walls, equipment room size, etc., unless prior written authorization is received from the Commissioner to change them.
- E. Work installed which interferes with work of any other trade shall be corrected at no cost to the project.
- F. The Contractor shall not install any work prior to "sign-off" of final coordination drawings by all trades. If electrical work proceeds prior to this sign-off, this Contractor shall be responsible for all costs resulting to correct interferences and conflicts.

3.4 COORDINATION OF WORK

A. The Contract Drawings show the general arrangement of equipment and appurtenances. Follow these drawings as closely as the actual construction and the work of other trades will permit. Provide offsets, fittings, and accessories which may be required but not shown on the Contract Drawings. Investigate the site, structural and finish ground conditions affecting the work, and arrange the work accordingly. Provide such work and accessories as may be required to meet such conditions, at no additional cost to the City of New York.

- B. The locations of lighting fixtures, outlets, panels and other equipment indicated on the Contract Drawings are approximately correct, but they are understood to be subject to such revision as may be found necessary or desirable at the time the work is installed in consequence of increase or reduction of the number of outlets, or in order to meet field conditions or to coordinate with modular requirements of ceilings, or to simplify the work, or for other legitimate causes.
- C. Exercise particular caution with reference to the location of panels, outlets, switches, etc., and have precise and definite locations reviewed by the Commissioner before proceeding with the installation.
- D. The Contract Drawings show only the general run of raceways and approximate location of outlets. Any significant changes in the location of outlets, cabinets, etc., necessary in order to meet field conditions shall be brought to the immediate attention of the Commissioner and receive his review before such alterations are made. All such modifications shall be made without additional cost to the City of New York.
- E. Obtain from the Commissioner in the field the location of such outlets or equipment not definitely located on the Contract Drawings.
- F. Circuit "tags" in the form of numbers are used where shown to indicate the circuit designation numbers in electrical panels. Show the actual circuit numbers on the as-built drawings and on a typed panel directory card. Where circuiting is not indicated, electrical trade must provide required circuiting in accordance with the loading indicated on the Contract Drawings and/or as directed by the Commissioner.
- G. The Contract Drawings generally do not indicate the number of wires in a conduit for the branch circuit wiring of fixtures and outlets. Provide the correct wire size and quantity as required by the indicated circuiting; circuit numbers indicated on the control wiring diagrams; specified voltage drop or maximum distance limitations; or the applicable requirements of the NYCEC. All power branch circuits shall be equipped with a ground conductor.
- H. Certain materials will be provided by other trades. Examine the Contract Documents to ascertain these requirements.
- I. Carefully check space requirements with other trades to insure that material can be installed in the spaces allotted thereto including finished suspended ceilings.
- J. Wherever work interconnects with work of other trades, coordinate with other trades to insure that they have the information necessary so that they may properly install the necessary connections and equipment. Identify items (remote ballast, pull boxes, etc.) requiring access in order that the Ceiling Trade will know where to install access doors and panels.
- K. Consult with other trades regarding equipment so that, wherever possible, motor controls and distribution equipment are of the same manufacturer.
- L. Furnish and set sleeves for passage of bus ducts and conduits through structural masonry and concrete walls and floors and elsewhere as will be required for the proper protection of each bus duct and conduit passing through building surfaces. Provide fireproofing where required. Sleeves shall extend 2" beyond both sides of the building surface.

- M. Properly provide firestopping around all conduits, bus ducts, sleeves, etc. which pass through rated walls, partitions and floors.
- N. Provide detailed information on openings and holes required in precast members for electrical work. Cast holes 4 inches and larger in diameter. Field-cut holes smaller than 4 inches.
- O. Provide required supports and hangers for conduit and equipment, designed so as not to exceed allowable loadings of structures.
- P. Examine and compare the electrical Contract Drawings and specifications with the Contract Drawings and specifications of other trades and report any discrepancies between them to the Commissioner and obtain written instructions for changes necessary in the work. Install and coordinate the work in cooperation with other related trades. Before installation, make proper provisions to avoid interferences.
- Q. Wherever the work is of sufficient complexity, prepare additional detail drawings to scale similar to that of the design drawings. With these layouts, coordinate the work with the work of other trades. Such detailed work shall be clearly identified on the drawings as to the area to which it applies. Submit these drawings to the Commissioner for review. At completion include a set of such drawings with each set of as-built drawings.
- R. Contractor shall furnish the services of an experienced Superintendent, who shall be in constant charge of all work, and who shall coordinate his work with the work of other trades. No work shall be installed before coordinating with other trades.
- S. Coordinate, with the other trades.
- T. Before commencing work, examine adjoining work on which this work is in any way dependent for perfect workmanship and report conditions which prevent performance of first call work. Become thoroughly familiar with actual existing conditions to which connections must be made or which must be changed or altered.
- U. Adjust location of conduits, panels, equipment, etc., to accommodate the work to prevent interferences, both anticipated and encountered. Determine the exact route and location of each conduit prior to installation.
 - 1. Right-of Way: Lines which pitch have the right-of-way over those which do not pitch. For example: condensate, steam and plumbing drains normally have right-of-way. Lines whose elevations cannot be changed have right-of-way over lines whose elevations can be changed.
 - 2. Make offsets, transitions and changes in direction in conduit as required to maintain proper head room and pitch on sloping lines.

3.5 CUTTING AND PATCHING

A. Lay out the work in advance, fully coordinated with other trades. Where cutting, channeling, chasing or drilling of floors, walls, partitions, ceilings or other surfaces is necessary for the proper installation, support or anchorage of conduits or other equipment, do the work carefully so as not to damage adjacent work. Restore any damage to the building, conduit, equipment or defaced finish plaster, woodwork, metalwork, etc. using skilled mechanics of the trades involved at no additional cost to the City of New York.

- B. Do no cutting, channeling, chasing or drilling of unfinished masonry, tile, etc., unless permission from the Commissioner is first obtained. If permission is granted, perform this work in a manner reviewed by the Commissioner.
- C. Where conduits or equipment are mounted on a painted finished surface, or a surface to be painted, paint to match the surface. Utilize cold galvanize bare metal whenever support channels are cut.
- D. Provide slots, chases, openings and recesses through floors, walls, ceilings, and roofs as required to properly install work. Be responsible to properly locate such openings and provide for any cutting and patching caused by the neglect to do so.

3.6 PAINTING

- A. All manufactured electrical equipment such as panelboards, control equipment, lighting fixtures, etc., shall have factory-applied finish as specified in the appropriate article in other sections of this Division.
- B. All other uncoated steel items such as boxes, supports, hangers, rods, etc., shall be galvanized or have a shop coat of paint applied under this Part of the Specification. Normally, shop coats shall be an approved primer containing at least 50 percent rust inhibitive pigment, applied before assembling the different parts.
- C. Include painting and retouching of:
 - 1. Prefinished enclosures of switchgear, unit substations, panelboards, transformers, switches, wireways, and bus ducts, etc., where the finish has been slightly damaged in transit before assembling the different parts.
 - 2. Fixture hangers, except those received from manufacturers that are prefinished.
 - 3. Miscellaneous iron brackets and supports.
 - 4. Steel conduits buried in earth.

3.7 FIRE ACCESS TO FIRE APPARATUS

A. Do not interfere with access to hydrants and fire alarm boxes. In no case allow material or equipment to be within twenty (20) feet of a hydrant or fire alarm box; or within paths of egress.

3.8 EQUIPMENT PAD AND ANCHOR BOLTS

A. Concrete pads for various pieces of floor mounted electrical equipment shall be furnished and installed by the Contractor. Pads shall be provided in all electrical equipment rooms. Generally form equipment pads to the shape of the piece of equipment it serves with a minimum 3" margin around the equipment and supports. Pads will be a minimum of 4" high and made of a minimum 28 day, 2500 psi concrete reinforced with 6" x 6" 6/6 gauge welded wire mesh. Trowel tops and sides of the pad to smooth finishes, equal to those of the floors, with all external corners bullnosed to a 3/4" radius. Use shop drawings stamped "No Exceptions Noted" for dimensional guidance in sizing pads.

- B. Furnish and install galvanized anchor bolts for all equipment placed on concrete equipment pads, inertia blocks, or on concrete slabs. Provide bolts of the size and number recommended by the manufacturer of the equipment and locate by means of suitable templates. When equipment is placed on vibration isolators, secure the equipment to the isolator and secure the isolator to the floor, pad, or support as recommended by the vibration isolation manufacturer.
- C. Where control panels, motor controllers, etc., are mounted on gypsum board partitions, the mounting screws shall pass through the gypsum board and be securely attached to the partition studs. At the Contractor's option, the mounting screws may pass through the gypsum board and be securely attached to 6" square, 18 gauge galvanized metal backplates which are attached to the gypsum board with an approved non-flammable adhesive. Toggle bolts installed in gypsum board partitions will not be acceptable.

3.9 DELIVERY, DRAYAGE AND HAULING

- A. Include all drayage, hauling, hoisting, shoring and placement in the building of equipment specified herein. Be responsible for the timely delivery and introduction of equipment to the project as required by the construction schedule for this project. If any item of equipment is received prior to the time it is required, be responsible for its proper storage and protection until such time as it may be required. Pay for all costs of demurrage or storage.
- B. If any item of equipment is not delivered to or installed at the project site in a timely manner as required by the project construction schedule, be solely responsible for disassembly, re-assembly, manufacturer's supervision, warranty, shoring, general construction modification, delays, overtime costs, etc. No additional cost or delays shall be incurred by the City of New York.

3.10 MOUNTING HEIGHTS

- A. Unless otherwise noted or required because of special conditions, locate outlets as follows:
 - 1. Mounting heights shall conform to ADA latest requirements.
 - 2. Heights listed are from the finished floor to the center of the device. Verify exact locations with the Commissioner before installation.
 - a. Convenience Receptacles: 15 inches, unless otherwise noted.
 - b. Lighting Switches/Wall Occupancy Sensors: 42 inches (maximum 48).
 - c. Disconnect Switches and Motor Controllers: 5 feet (to the handle).
 - d. Wall Tele/Data Outlets: 15 inches. Wall phones: 48 inches.
 - e. Exit Lights: 2 inches above the top of the door to the bottom of the fixture.
 - f. Wall-Mounted Light Fixtures: 7 feet 6 inches or over mirrors (as applicable) or 1 foot below ceilings lower than 8 feet. Stairwell fixtures shall be mounted 8 feet 6 inches above finished floor or 1 foot below ceiling, whichever is lower.



- g. Fire Alarm Audio/Visual Alarms: 80 inches (centerline) above the floor level within the space or 6 inches below the ceiling whichever is lower.
- h. Fire Alarm Manual Pullstations: 4 feet.
- i. Fire Fighter Jacks or Warden Stations: 4 feet.
- j. Fire Alarm Data Gathering Panels: The top of the cabinet shall not be more than 72" above the finished floor.

3.11 DEMOLITION AND CONTINUANCE OF EXISTING SERVICES

- A. All existing electrical services not specifically indicated to be removed or altered shall remain as they presently exist.
- B. Should any existing services, etc., interfere with new construction, the Contractor shall (after obtaining written authorization from the Commissioner) alter or reroute such existing equipment to facilitate new construction.
- C. Under no circumstances shall existing services, etc., be terminated or altered unless deemed necessary by the Commissioner or specified herein; also, prior to altering any existing situation, the Contractor shall notify the Commissioner in writing giving two (2) weeks advance notice of planned alteration.
- D. It shall be solely the Contractor's responsibility to guarantee continuity of present facilities (with respect to damage or alteration due to new construction) and any unauthorized alteration to existing equipment shall be corrected by the Contractor to the Commissioner's satisfaction at the Contractor's expense.
- E. All shutdowns shall be pre-approved by the Commissioner and Utility Company in writing a minimum of 72hours prior to scheduled commencement of work.

3.12 EQUIPMENT AND MATERIAL PROTECTION

- A. Protect the work, equipment and materials of all other trades from damage by work or workmen of this trade, and correct all damage thus caused without additional cost to the City of New York.
- B. Be responsible for all work, materials and equipment until finally inspected, tested and accepted; protect work against theft, injury or damage; and carefully store material and equipment received on site which are not immediately installed. Close open ends of work with temporary covers or plugs during construction to prevent entry of obstructing material. Cover and protect in an acceptable manner to the Commissioner, all equipment and materials from damage due to water, spray-on fireproofing, construction debris, etc.
- C. Provide adequate means for fully protecting finished parts of the materials and equipment against damage from whatever cause during the progress of the work until final acceptance. Protect materials and equipment in storage and during construction in such a manner that no finished surfaces will be damaged or marred, and moving parts kept clean and dry. If items are damaged, do not install, but take immediate steps to obtain replacement or restore.

3.13 ELECTRICAL EQUIPMENT AND ELECTRICAL ROOM PRECAUTIONS

- A. In general, do not install any piping systems in any switchgear, transformer, elevator equipment, telephone, or electrical equipment room.
- B. Do not install piping above switchboards, panelboards, transformers, control panels, motor control centers, individual motor controllers, etc.
- C. Provide drip pans under all piping installed in any electrical equipment room if in accordance with the NYCEC. Pan shall be water tight, extending 4" in each direction from the pipe wall and turned up at least one-half the diameter of the pipe, but not less than 2". The pan shall extend at least 1 foot beyond the electrical equipment. Provide a drain pipe to spill to the nearest service sink.

3.14 FASTENINGS

- A. Fasten electric work to the building structure in accordance with the best industry practice and the following.
 - 1. As a minimum procedure, where weight applied to the attachment points is 100 pounds or less, fasten to building elements of:
 - a. Wood: with wood screws.
 - b. Concrete and solid masonry: with bolts and expansion shields.
 - c. Hollow construction: with toggle bolts.
 - d. Solid metal: with machine screws in tapped holes or with welded studs.
 - e. Steel decking or subfloor: with fastenings as specified below for applied weights in excess of 100 pounds.
 - 2. As a minimum procedure, where weight applied to building attachment points exceeds 100 pounds, but is 300 pounds or less, conform to the following:
 - a. At concrete slabs utilize 24" x 24" x 1/2" steel fishplates on top with through bolts. Fishplate assemblies shall be chased in and grouted flush with the top of slab screed line, where no fill is to be applied.
 - b. At steel decking or subfloor for all fastenings, utilize through bolts or threaded rods. The tops of bolts or rods shall be set at lease one inch below the top fill screed line and grouted in. Suitable washers shall be used under bolt heads or nuts. In cases where the decking or subfloor manufacturer produces specialty hangers to work with his decking or subfloor such hangers shall be utilized.
 - 3. Where weight applied to building attachments points exceeds 300 pounds, coordinate with and obtain approval of the Commissioner and conform to the following:



- a. Utilize suitable auxiliary channel or angle iron bridging between building structural steel elements to establish fastening points. Bridging members shall be suitably welded or clamped to building steel. Utilize threaded rods or bolts to attach to bridging members.
- 4. For items which are shown as being ceiling mounted at locations where fastening to the building construction element above is not possible, provide suitable auxiliary channel or angle iron bridging tying to the building structural elements.

3.15 **OPERATING INSTRUCTIONS**

- A. Provide the services of a factory trained specialist to supervise the operation of all equipment specified herein and to instruct the City of New York's operators for a five (5) day operating instruction period. The operating instruction period is defined as straight time working hours and not including nights, weekends or travel time to and from the project. See individual sections for additional instructions by manufacturer's trained specialists.
- B. Notify the Commissioner in writing at least two (2) weeks before each operating instruction period begins. Commence no instruction period until the Commissioner has issued his written acceptance of the starting time.
- C. All operating instruction sessions shall be videotaped and submitted to the Commissioner.

3.16 CLEANING UP

- A. Contractor shall take care to avoid accumulation of debris, boxes, crates, etc., resulting from the installation of his work. Contractor shall remove from the premises each day all debris, boxes, etc., and keep the premises clean, subject to the Commissioner's instructions, which shall be promptly carried out.
- B. Contractor shall clean all light fixtures and equipment at the completion of the project.
- C. All panelboards, wireways, cabinets, enclosures, etc., shall be thoroughly vacuumed clean prior to energizing equipment and at the completion of the project. Equipment shall be opened for observation by the Commissioner as required.

3.17 WATERPROOFING

- A. Avoid, if possible, the penetration of any waterproof membranes such as roofs, machine room floors, and the like. If such penetration is necessary, perform it prior to the waterproofing and furnish all sleeves or pitch-pockets required. Advise the Commissioner and obtain written permission before penetrating any waterproof membrane, even where such penetration is shown on the Contract Drawings.
- B. If the Contractor penetrates any walls or surfaces after they have been waterproofed, he shall restore the waterproof integrity of that surface at his own expense and as directed by the Commissioner.

3.18 SUPPORTS

A. Support work in accordance with the best industry practice and the following.

- 1. Include supporting frames or racks extending from floor slab to ceiling slab for work indicated as being supported from walls where the walls are incapable of supporting the weight. In particular, provide such frames or racks in electric closets.
- 2. Include supporting frames or racks for equipment, intended for vertical surface mounting, which is required in a free standing position.
- 3. Supporting frames or racks shall be of standard angle, standard channel or specialty support system steel members. They shall be rigidly bolted or welded together and adequately braced to form a substantial structure. Racks shall be of ample size to assure a workmanlike arrangement of all equipment mounted on them.
- 4. Nothing (including outlet, pull and junction boxes and fittings) shall depend on electric conduits, raceways, or cable for support, except that threaded hub type fittings having a gross volume not in excess of 100 cubic inches may be supported from heavy wall conduit, where the conduit in turn is securely supported from the structure within five inches of the fitting on two opposite sides.
- 5. Nothing shall rest on, or depend for support on, suspended ceilings media (tiles, lath, plaster, as well as splines, runners, bars and the like in the plane of the ceiling). Branch circuit conduit up to 3/4" shall be permitted to be supported from ceiling hanger wires.
- 6. Provide required supports and hangers for conduit, equipment, etc., so that loading will not exceed allowable loadings of the structure.
- 7. Conduits shall not be supported to ductwork or piping.

3.19 EXAMINATION OF SITE

A. The Contractor shall visit the project site and shall familiarize himself with all conditions affecting the proposed installation and shall make provisions as to the cost thereof. Failure to comply with the intent of this paragraph will in no way relieve the contractor of performing all necessary work shown on the Contract Drawings.

3.20 PROGESS OF WORK

A. The Contractor shall schedule the progress of his work so as to conform to the progress of the work of other trades and shall complete the entire installation as soon as the conditions of the building will permit. Any cost resulting from the defective or ill-timed work performed under this section shall be done borne by the Contractor.

END OF SECTION 26 00 02



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SECTION 26 00 05 ACCESS DOORS IN GENERAL CONSTRUCTION FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.
- B. Access doors shall be provided for the operation and maintenance of concealed equipment, pullboxes, ballasts, etc.

1.2 WORK INCLUDED

- A. Access Doors in Drywall.
- B. Access Doors in Ceilings.
- C. Access Doors in Masonry.
- D. Fire Rated Access Doors.
- E. Color Coded Buttons.

1.3 GENERAL

- A. Wherever access is required through walls or ceilings to junction boxes, pull boxes, control panels, devices, or other concealed equipment installed under this Division, furnish a hinged access door with flush screwdriver operated cam locks and frame as follows:
- B. Provide access doors in rated construction with "B" label fire construction. Furnish a U.L. label on each access door.
- C. Access doors will be installed under another Division. Coordinate all sizes and locations with General Contractor.
- D. No access door shall be installed until location and type have been approved by the Commissioner.

- E. Furnish color coded buttons or tabs to indicate location of pull boxes, control panels, devices, or other equipment located above removable type ceilings where access doors are not required.
- F. Make access door size a minimum of 18" x 18".

PART 2 - PRODUCTS

2.1 GENERAL

- A. Wherever access is required through walls or ceilings to junction boxes, pull boxes, control panels, devices, or other concealed equipment installed under this Division, furnish a hinged access door with flush screwdriver operated cam locks and frame as follows:
 - (1) Drywall construction--Milcor Style DW, AHD, Nystrom or approved equal.
 - (2) Finished acoustical tile ceiling--Milcor Style AT, AHD, Nystrom or approved equal.
 - (3) Finished plaster ceiling--Milcor Style AP, AHD, Nystrom or approved equal.
 - (4) Finished plaster walls --Milcor Style K, AHD, Nystrom or approved equal.
 - (5) 1 ¹/₂ Hour rated shaft --Milcor Fire Rated MIFAB-MPFR, AHD, Nystrom or approved equal.
 - (6) Provide access doors in rated construction with "B" label fire construction. Furnish a U.L. label on each access door.
 - (7) Coordinate all sizes and locations with other trades.
 - (8) No access door shall be installed until location and type have been approved by the Commissioner.
- B. Furnish color coded buttons or tabs to indicate location of pull boxes, control panels, devices, or other equipment located above removable type ceilings where access doors are not required.
- C. Make access door size a minimum of 18" x 18".

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.



3.2 GENERAL

- A. Coordinate sizes and location of all access doors with other trades.
- B. Direct location and setting of access doors in hung ceilings, furred spaces, walls, etc., to provide access to all concealed work items requiring maintenance and/or adjustment and as directed by the Commissioner. Obtain acceptance of the Commissioner for the locations and sizes of such access doors.
- C. Locate and group equipment requiring access doors so that access door locations are aesthetically acceptable. Coordinate location of equipment requiring access with other trades to minimize number of access doors in one area. Prepare drawings of pull boxes, control panels, devices, etc. locations indicating proposed access door locations for review by the Commissioner prior to installation of pull boxes, control panels, devices, etc. Include equipment of other trades on the Contract Drawing.

END OF SECTION 26 00 05



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SECTION 26 02 65 ELECTRICAL TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 WORK INCLUDED

- A. Testing, adjusting, and balancing for:
 - 1. Wire and Cable (600 Volts and Below).
 - 2. Motor Controllers, including variable frequency drives.
 - 3. Motors.
 - 4. Ballasts.
 - 5. Air Handling Plenums and Luminaires.
 - 6. Grounding.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".

1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by NYC Building codes and by the Contract Documents comply with the latest applicable provisions and the latest recommendations of Industry standards and NETA.



PART 2 - PRODUCTS

2.1 GENERAL

A. Provide all labor and materials required by shop and field acceptance testing, adjusting, and balancing as specified in the Contract Documents.

2.2 SYSTEMS

- A. The following systems shall be tested, inspected and certified.
 - 1. Wire and Cable (600 Volts and Below):
 - a. Inspect all splices and terminations and make mechanically and electrically tight during a fifteen (15) day period immediately prior to final acceptance of the work.
 - b. Perform standard 600 volt insulation resistance test with "megger" tester and all conductors. Test shall show insulation resistance in excess of minimum values required by the NETA and continuity. Submit certification to the Commissioner.
 - 2. Motor Controllers:
 - a. Submit with certification in tabular form a complete listing of all motors on the project for which motor controllers, including variable frequency drives, have been furnished. Include on this listing, the nameplate full load amperes of each motor and the size overload heaters installed in each motor controller.
 - 3. Motors:
 - a. Test all motors under load and verify that motor rotation is correct.
 - 4. Life Safety Fire Alarm Systems:
 - a. All fire alarm system wiring must be inspected and tested to ensure that there are no grounds, opens or shorts. The minimum allowable resistance between any two conductors or between conductors and ground is ten (10) megohms as measured with a 500 volt megger after all conduit, conductors, detector bases, etc., have been installed, but before the detector devices are plugged into the bases or end-of-line devices installed.
 - b. The Contractor must perform all electrical and mechanical tests required by the equipment manufacturers. A checkout report shall be prepared by the technician and submitted in triplicate, one copy of which will be registered with the equipment manufacturer. The report shall include, but shall not be limited to:
 - 1) A complete list of equipment installed and wired.
 - 2) Indication that all equipment is properly installed and functions in conformance with these specifications.



- 3) Tests results of all individual zones.
- 4) Serial numbers, locations by zone and model number for each installed detector.
- 5) Voltage (sensitivity) settings for each ionization detector as measured in place.
- 6) Response time on all detectors.
- 7) Contractor shall submit a certified report indicating the following:
 - a) Operating all manual stations and all detectors that can be reset.
 - b) Verifying line supervision of each initiating and indicating circuit.
 - c) Verifying the operation of each initiating circuit.
 - d) Verifying the operation of all indicating devices.
 - e) Verifying the operation of all alarm-initiated functions.
 - f) Verifying full operation of the FACP.
- 5. Grounding:
 - a. Upon completion of the electrical grounding system, the contractor shall test the grounding system for stray currents, grounds, shorts, etc. These tests shall be performed with approved calibrated instruments.
 - b. Perform point-to-point tests to determine the resistance between the main grounding system and all electrical equipment frames, system neutral, and all derived neutral points.
 - c. The Contractor shall submit in writing to the Commissioner a letter indicating the ohmic resistance of the service grounds and a statement that the grounding system is free of all defects, stray currents, shorts, etc.

2.3 CALIBRATION

- A. Calibrate and adjust all components in accordance with manufacturer's procedures and recommendations or as required, for the following categories of equipment:
 - 1. 600V switchboards and switchgears.
 - 2. Lighting fixtures (lamp positions, reflector positions, etc., as required).
 - 3. Motor Control Centers and motor starters.
- B. Provide overloads in all motor starters, in accordance with motor nameplate data and as recommended by the manufacturer.



PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 GENERAL

- A. Notify the Commissioner seven (7) days prior to the testing dates. If the Commissioner so elect not to witness a specific test a statement of certification must be forwarded to the Commissioner for his approval.
- B. Conduct tests at a time agreeable to the Commissioner.
- C. Products which are found defective or do not pass such tests shall be removed and replaced at the Contractor's expense. All tests shall be repeated until equipment meets all testing criteria.
- D. Arrange for and conduct all test and inspections required by the NYC BC. All fees for testing and inspection shall be paid by the Contractor.
- E. All test results shall be submitted to the Commissioner.
- F. Refer to individual specification sections for additional equipment testing requirements.

END OF SECTION 26 02 65

SECTION 26 02 80 EQUIPMENT CONNECTIONS AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 WORK INCLUDED

- A. Equipment to receive final connections shall include but not be limited to the following:
 - 1. Motors and Equipment.
 - 2. Appliances.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".

1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. Food and Drug Administration.
 - 2. NFPA-96.



PART 2 - PRODUCTS

2.1 MOTORS AND EQUIPMENT

- A. Connections for and coordination of motors and equipment requiring electrical connections shall be included but is not be limited to the following:
 - 1. Install motor controllers and disconnect switches for each motor and each piece of equipment.
 - 2. Verify that the motor rotation is correct and reconnect if necessary.
 - 3. Provide separate ground conductor in flexible metal conduit so as to provide an electrically continuous ground path. Ground all equipment.
 - 4. Provide motor branch circuit conductors and connections to each individual motor controller and from each controller to the motor through an approved disconnect switch. Make final connection in a minimum of 24 inch length of liquid-tight, flexible, metal conduit.
 - 5. Provide all necessary wiring and connections for interlocking, remote and automatic controls. Installation of equipment and wiring shall be in compliance with the manufacturer's recommendations.
 - 6. Where equipment is fed from a branch circuit routed in or under the slab, terminate branch circuit at a junction box on 2 foot rigid conduit stub-up and make final connection to equipment in liquid-tight, flexible, metal conduit. Provide suitable knee brace on conduit stub-up.
 - 7. Where equipment is fed from overhead, support conduit feeder descending from ceiling on flanged floor fitting with conduit type fitting connecting to a motor with 24-inch minimum of liquid-tight flexible metal conduit.
 - 8. Where nameplate on equipment indicates fuse protection, the disconnecting means shall be equipped with time delay fuses.

2.2 APPLIANCES

- A. Connections for and coordination of appliances shall include but is not limited to the following:
 - 1. The basic requirements for motors and equipment specified above shall apply where applicable.
 - 2. Where cord and plugs are provided with the appliances, this Contractor shall coordinate the receptacle installation to match.
 - 3. Direct connected equipment shall be serviced by disconnecting means.



PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 EXAMINATION OF DOCUMENTS

- A. The Contractor shall familiarize himself with all conditions affecting the proposed installation of equipment requiring electrical connections and shall make provisions as to the cost thereof. Failure to comply with the intent of this paragraph shall in no way relieve the Contractor of performing all necessary work required for final electrical connections and equipment and the coordination thereof.
- B. Connections shall be made in accordance with the manufacturers' recommendations and reviewed shop drawings.

3.3 MOTORS AND EQUIPMENT

- A. Connections for and coordination of motors and equipment requiring electrical connections shall be included but is not be limited to the following:
 - 1. Install motor controllers and disconnect switches for each motor and each piece of equipment.
 - 2. Verify that the motor rotation is correct and reconnect if necessary.
 - 3. Provide separate ground conductor in flexible metal conduit so as to provide an electrically continuous ground path. Ground all equipment.
 - 4. Provide motor branch circuit conductors and connections to each individual motor controller and from each controller to the motor through an approved disconnect switch. Make final connection in a minimum of 24 inch length of liquid-tight, flexible, metal conduit.
 - 5. Provide all necessary wiring and connections for interlocking, remote and automatic controls. Installation of equipment and wiring shall be in compliance with the manufacturer's recommendations.
 - 6. Where equipment is fed from a branch circuit routed in or under the slab, terminate branch circuit at a junction box on 2 foot rigid conduit stub-up and make final connection to equipment in liquid-tight, flexible, metal conduit. Provide suitable knee brace on conduit stub-up.
 - 7. Where equipment is fed from overhead, support conduit feeder descending from ceiling on flanged floor fitting with conduit type fitting connecting to a motor with 24-inch minimum of liquid-tight flexible metal conduit.
 - 8. Where nameplate on equipment indicates fuse protection, the disconnecting means shall be equipped with time delay fuses.

3.4 APPLIANCES

A. Connections for and coordination of appliances shall include but is not limited to the following:

- 1. The basic requirements for motors and equipment specified above shall apply where applicable.
- 2. Where cord and plugs are provided with the appliances, this Contractor shall coordinate the receptacle installation to match.
- 3. Direct connected equipment shall be serviced by disconnecting means.

3.5 **REFRIGERATION MACHINES**

- A. Connections for and coordination of refrigeration machines shall include but is not limited to the following:
 - 1. The basic requirements for motors and equipment specified above shall apply where applicable.
 - 2. Receive motor controllers. Install same on a 4" high concrete housekeeping pads.
 - 3. Provide six (6) conductors from the load side of the controller to the lugs on the machine, in accordance with manufacturer's requirements. Coordinate lug quantities prior to the installation of the feeder to the machine.
 - 4. Provide 120 volt 20 amp circuit to each the oil pump and heater.

END OF SECTION 26 02 80



SECTION 26 02 90 CEILING, FLOOR AND WALL ELECTRICAL PENETRATION FIRE SEALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 WORK INCLUDED

A. Wall, ceiling and/or floor electrical penetration fire seals.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".

1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. ASTM E-814, "Fire Test of Penetration Fire Stops."
 - 2. ANSI/UL 1479, "Fire Tests of Through Penetration Firestops."
 - 3. ASTM E-119, "Fire Tests of Building Constructions and Materials."
 - 4. ANSI/UL263, "Fire Tests of Building Construction and Materials."
 - 5. ASTM E-84, "Surface Burning Characteristics of Building Materials."
 - 6. ANSI/UL723, "Surface Burning Characteristics of Building Materials."
- C. All products shall contain no VOC nor emit odors.



PART 2 - PRODUCTS

2.1 FIRE SEAL PUTTY SYSTEM

- A. System shall provide immediate fire seal, require no curing time and emit no hazardous or toxic fumes.
- B. Require no special tools and shall be capable of being installed from one side.
- C. No derating whatsoever required of wiring systems passing through seal.
- D. Field modified for additions or deletions of raceways or cables.
- E. Reusable materials to accommodate penetration changes.

2.2 MISCELLANEOUS FIRE SEAL PRODUCTS

- A. Firestop devices: Factory-assembled steel collars lined with intumescent material sized to fit specific outside diameter of penetrating item.
- B. Cast-In-Place Firestop Device: Single component molded firestop device installed on forms prior to concrete placement with totally encapsulated, tamper-proof integral firestop system and smoke sealing gasket.
- C. Composite Sheet: Intumescent material sandwiched between a galvanized steel sheet and steel wire mesh protected with aluminum foil.
- D. Fire Rated Grommet: Molded two-piece grommet made from plenum grade polymer with a foam inner core for sealing individual cable penetrations.
- E. Firestop Plugs: Re-enterable, foam rubber plug impregnated with intumescent material for use in spare sleeves and sleeves with cable.
- F. Firestop Putty: Intumescent, non-hardening, water resistant putties containing no solvents, inorganic fibers or silicone compounds.
- G. Firestop Putty Pads: Intumescent, non-hardening putty pads to be installed on metallic and nonmetallic electrical switch and receptacle boxes when horizontal separation between boxes is less than 24".
- H. Wrap Strips: Single component intumescent elastomeric strips faced on both sides with a plastic film.
- I. Latex Sealants: Single component latex formulations that upon cure do not emulsify during exposure to moisture.
- J. Silicone Sealants: Moisture curing, single component, silicone elastomeric sealant for horizontal surfaces (pourable or nonsag) or vertical surfaces (nonsag).
- K. Firestop Pillows: Re-enterable, non-curing mineral fiber core encapsulated with an intumescent coating contained in a flame retardant bag.



- L. Mortar: Portland cement based dry-mix product formulated for mixing with water at Project site to form a nonshrinking, water-resistant, homogenous mortar.
- M. Silicone Foam: Multicomponent, silicone-based liquid elastomers, that when mixed, expand and cure in place to produce a flexible, non-shrinking foam.

2.3 MANUFACTURERS

- A. Nelson Firestop
- B. Hilti
- C. 3M
- D. Dow Solutions
- E. STI Inc.
- F. Approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 PREPARATION

- A. Examination of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
- B. Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, scale, laitance, rust, release agents, water repellants, and any other substances that may inhibit optimum adhesion.
- C. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.3 GENERAL

- A. Install fire seal in accordance with the manufacturer's requirements.
- B. Place minimum of 0.5 inches of putty around each penetrating item. When not possible build up cone around penetrating items, using second layer of putty. Slope cone at 30 degrees from wall or floor.
- C. Wall openings shall not have unsupported space of putty greater than 4 inches and floor openings an unsupported opening of 1.5 inches.

- D. Provide ceramic wool temperature rated 2300°F in conjunction with putty in accordance with manufacturer's instructions.
- E. Provide ceramic fiberboard temperature rated 2000°F in conjunction with putty in accordance with manufacturer's recommendation.
- F. Firmly anchor penetrating items prior to putty installation. Provide all necessary anchor bolts, fittings, etc. as necessary.

3.4 FIELD QUALITY CONTROL

- A. Inspections: City of New York shall engage a qualified independent inspection agency to inspect throughpenetration firestop systems for special inspection.
- B. Keep areas of work accessible until inspection by the Commissioner.
- C. Where deficiencies are found, restore or replace through-penetration firestop systems so they comply with requirements.

3.5 ADJUSTING AND CLEANING

- A. Remove equipment, materials and debris, leaving area in undamaged, clean condition.
- B. Clean all surfaces adjacent to sealed openings to be free of excess through-penetration firestop system materials and soiling as work progresses.

3.6 INSTALLATION

- A. Provide fire seals at all cable, conduit and bus duct penetrations through fire-rated walls, floors and ceilings, and where noted on the Contract Drawings. Coordinate with Commissioner and structural drawings for location of fire-rated walls.
- B. Install in accordance with the manufacturer's directions to provide barrier rating equal to or greater than the barrier rating of wall.

END OF SECTION 26 02 90



SECTION 26 05 19 600 VOLT WIRE AND CABLE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract].

1.2 WORK INCLUDED

- A. Wire and Cable.
- B. Connectors and Terminations.
- C. Electrical Tape.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".

1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. Underwriters' Laboratories labeling of all insulations and jackets.
 - 2. NYCEC
 - 3. NRTL
 - 4. Connections
 - a. 486A & 486B.
- 5. Mineral Insulated (MI) Cable
 - a. U.L. 2196.

PART 2 - PRODUCTS

2.1 WIRE AND CABLE

- A. General
 - 1. Provide wire and cable with a minimum insulating rating of 600 volts, except for wire used in 50 volts or below applications. For control or signal systems, use 300 volt minimum or 600 volt where permitted to be incorporated with other wiring systems.
- B. Conductors
 - 1. Provide factory fabricated electrical grade, annealed copper conductors and fabricated in accordance with ASTM B3 standards.
- C. Stranding and Number of Conductors
 - 1. No. 12 and 10 AWG conductors shall be solid.
 - 2. Conductors larger than No. 10 AWG shall be stranded in accordance with ASTM Class B stranding designations.
 - 3. Control wires shall be stranded in accordance with ASTM Class B stranding designations.
- D. Insulated Single Conductors
 - 1. Type THW or THWN Thermoplastic insulation suitable for use in wet locations up to 75°C.
 - 2. Type THHN Flame Retardant: Heat-resistant thermoplastic insulation, nylon jacket rated for 90°C temperature rating.
- E. Multi-Conductor Control and Supervisory Control Cables
 - 1. Size No. 16 AWG, minimum.
 - 2. Temperature Rating: 75°C Wet or Dry.
 - 3. Uninsulated ground wire.
 - 4. Cross-linked polyethylene conductor insulation; thickness satisfying requirements of ICEA.
 - 5. Flame retardant overall polyvinyl jacket satisfying the requirements of ICEA.
 - 6. Individual conductors bound together with overall binder tape prior to jacket application.



7. Factory color coded.

F. Manufacturers

- 1. Products by any manufacturer meeting the performance requirements specified herein may be utilized, but are not limited to, the following manufacturers:
 - a. American Insulated Wire Corp.
 - b. General Cable Corporation
 - c. Southwire Company
 - d. Belden
 - e. Pyrotenax/Tyco
 - f. Approved equal

2.2 CONNECTORS

- A. Wire No. 10 AWG and Smaller
 - 1. Hand-Applied:
 - a. Coiled tapered, spring wound devices with a conducting corrosion-resistant coating over the spring steel and a plastic cover and skirt providing full insulation for splice and wired ends. Screw connector on by hand.
 - 2. Tool-Applied:
 - a. Steel cap, with conduction and corrosion resistant metallic plating, open at both ends, fitted around the twisted ends of the wire and compressed or crimped by means of a special die designed for the purpose. Specifically fitted plastic or rubber insulating cover wrap over each connector.
 - b. Hydraulic tool of same manufacturer as lug which shall emboss on the connector the proper die number for inspection.
- B. Manufacturers
 - 1. Hubbell
 - 2. OZ/Gedney
 - 3. Thomas & Betts.
 - 4. Approved equal.



2.3 INSULATING TAPE

- A. Provide vinyl plastic tape that meets the requirements of UL 510 and has the following characteristics:
 - 1. 8.5 mil minimum thickness.
 - 2. ASTM D-3005 Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape – Type 1.
 - 3. Rated 600 volts and 105°C, suitable for indoor and outdoor applications.
 - 4. Retains flexibility, adhesion, and applicable at temperature ranges from 0 through 100°F without loss of physical or electrical properties.
 - 5. Resistant to abrasion, moisture, alkalis, acid, corrosion, and sunlight.
 - 6. Manufacturer: 3M "Scotch Super 88", Lyltech, Tradegear or approved equal.

2.4 WIRE PULLING LUBRICANT

- A. Provide wire pulling lubricant that is compatible with the conductor insulation, has a maximum coefficient of friction of 0.055, and is stable up to a temperature of 180°F. For cold weather installations, provide wire pulling lubricant suitable for conduit temperature.
- B. Compatibility with conductor insulation shall be determined in accordance with IEEE Std 1210 Standard Tests for Determining Compatibility of Cable-Pulling Lubricants with Wire and Cable.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 WIRE AND CABLE

- A. Provide a complete system of conductors in a raceway system. Mount wiring through a specified raceway, regardless of voltage application.
- B. Contract Drawings do not indicate size of branch circuit wiring; use No. 12 AWG as a minimum. For 20 ampere branch circuits whose length from the panel to the furthest outlet exceeds 100 feet for 120-volt circuits or 150 feet for 277-volt circuits, use No. 10 AWG or larger for the entire branch circuit installation.
- C. Provide dedicated neutral conductor and equipment ground conductor for each branch circuit serving television broadcast equipment, audio visual equipment and sound system equipment. If isolated grounds are shown as required, they shall also be dedicated.
- D. Provide dedicated neutral conductor for each dimmer branch circuit and for each ground fault interrupter branch circuits.

- E. Provide a shared neutral conductor, one (1) standard wire size greater than the branch circuit phase conductor, for all branch circuits to receptacle loads.
- F. Conductor Types
 - 1. Type THW or THWN Use for lighting, receptacle and motor circuits and for panel and equipment feeders.
 - 2. Type THHN Use for lighting branch circuit wiring installed and passing through the ballast channels of fluorescent fixtures.
- G. Do not install wire in incomplete conduit runs nor until after concrete work and plastering is completed and moisture is swabbed from the conduits. Eliminate splices wherever possible. Where necessary, splice in readily accessible pull, junction, or outlet box.
- H. Provide cable supports for all vertical risers where required by the NYCEC not to exceed the following for copper conductors. Modify if aluminum conductors are used to meet the NYCEC requirements:

Copper Minimum Conductor Size	Vertical Supports
No. 18 AWG to No. 8 AWG	100 ft.
No. 6 AWG to No. 0 AWG	100 ft.
No. 00 AWG to No. 0000 AWG	80 ft.
211,601 CM to 350,000 CM	60 ft.
350,001 CM to 500,000 CM	50 ft.
500,001 CM to 750,000 CM	40 ft.

- I. Flashover or insulation value of joints to be equal to that of the conductor. Use Underwriters' Laboratories listed connectors rated at 600 volts for general use and 1,000 volts for use between ballasts and lamps of gaseous discharge lighting fixtures.
- J. Use terminating fittings, connectors, etc., of a type suitable for the specified cable furnished. Make bends in cable at termination prior to installing compression device. Make fittings tight.
- K. Color Coding
 - 1. Provide consistent color coding of all AC feeders, sub-feeders, motor circuits and the likes as follows:

	208Y/120 Volts Code	480Y/277 Volts Code
Phase A	Black	Brown
Phase B	Red	Orange



	208Y/120 Volts Code	480Y/277 Volts Code
Phase C	Blue	Yellow
Neutral	White	Grey
Ground	Green	Green
Isolated Ground	Green/Yellow Striped	N/A

- 2. Factory color code wire No. 2 AWG and smaller. Where color coding cannot be readily provided because of limited quantities involved, provide either of the following:
 - a. Plastic adhesive tape applied spirally and half-lapped over exposed portions of conductors within manholes, boxes, and similar enclosures. Tape shall be ³/₄" minimum.
 - b. Colored tubing cut and inserted over ends of wire prior to installing terminals.
 - c. Provide black conductor insulation where colored tape is used to for color coding.
- 3. Wire No. 1 AWG and larger may be color coded by color taping of the entire length of the exposed ends.
- 4. Color code wiring for control systems installed in conjunction with mechanical and/or miscellaneous equipment in accordance with the wiring diagrams furnished with the equipment.
- 5. DC power system conductors shall be color coded; Positive Red; Negative Black.

3.3 INSTALLATION

- A. General
 - 1. Provide tools, equipment and materials to pull all wire and cable into place and to make required splices and termination.
- B. Wire and Cable in Conduit, Duct or Wireway
 - 1. Utilize roller bearing swivel to prevent twisting of cables entering the conduit or duct.
 - 2. Take precautions to avoid entrance of dirt and water into the conduit and ducts.
 - 3. Clean conduits and ducts to remove any pulling compound prior to pulling of cables.
 - 4. Do not damage conductor insulation, braid jacket or sheath during installation. Any damaged conductors shall be replaced immediately.
 - 5. Do not bend conductors to less than the manufacturer's recommended radius.
 - 6. Lubricate cable if required for pulling.



- 7. Make splices only in pull boxes, junction boxes and outlet boxes.
- 8. Utilize cable reels on jacks for pulling through pull boxes, ducts and conduits so bends will not be excessive and conductors will not touch sharp edges; use feeding tube where required.
- 9. For large diameter cables, utilize properly sized pulling grips (endless woven basket two to four feet long of ductile steel).
- 10. Do not exceed maximum recommended pulling tension of wire and cable.
- 11. Fire seal around cables penetrating fire rated barriers.
- 12. Provide proper supports of the cables installed in cable support boxes, in accordance with the NYCEC.
- C. Splices, Terminations and Connections
 - 1. General: Except where lugs are furnished with the equipment, provide terminals and connectors suitable for the quantity, conductor size and direction of entry (top or bottom).
 - 2. Insulated Flanged Terminals: Provide for connection of conductors No. 12 AWG and smaller to device terminals; do not exceed three (3) terminals at any single connections.
 - 3. Circumferential Compression Type Connectors or Cytolok spring compression terminator (Provide for Splices and Connections No. 6 AWG and larger):
 - a. Use for incoming and outgoing cable connections at enclosures and for ground connections.
 - b. Use manufacturer's approved tool and correct size hex head which embosses die number on the connector or lug.
 - c. Make crimped indentations parallel with insulation putty.
 - d. Fill voids and irregularities with insulation putty.
 - e. Cover neatly with four (4) layers of vinyl plastic tape except where insulated covers are permitted; half-lap tape in two (2) directions.
 - f. Use spring-held bakelite covers over splices or taps only with the approval by the Commissioner.
- D. Wire Marker Identification Labels
 - 1. Utilize labels for those circuits where individual conductor identity is indicated on the Contract Drawings.
 - 2. Apply to wires and cables at terminals and in all pull, junction and splice boxes.
 - 3. Do not cut and splice multi-conductor control cable for purpose of labeling.
 - 4. Clean surfaces before applying labels.



3.4 FIELD TESTING

- A. Test system wiring for continuity, grounds and short circuits prior to connection of any equipment.
- B. Test final equipment connections for continuity of grounds and short circuits.
- C. Insulation Resistance of Feeders and Sub-feeders
 - 1. Test with megger for insulation resistance. Insulation resistance to comply with ICEA values.
 - 2. Correct faults and sections with faulty insulation.
- D. Remove and replace defective conductors and retest.

END OF SECTION 26 05 19



SECTION 26 05 26 GROUNDING SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 WORK INCLUDED

- A. Ground Connectors and Clamps; Grounding, Bushings and Locknuts.
- B. Welding Type Ground Connectors.
- C. Compression Type Grid Connectors.
- D. Ground Rods, Plates, and Clamps.
- E. Bonding Jumpers for Hinged Joints in Cable Trays.
- F. Electrical Insulating Tape.
- G. Compound for Compression Connectors.
- H. Grounding Test Well
- I. Test Reports
 - 1. Submit test reports certifying resistance values for buried or driven grounds and water pipe grounds.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".

- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. Underwriters Laboratory Standard No. U.L. 467 and 486A.
 - 2. ANSI/IEEE C2 National Electrical Safety Code.
 - 3. IEEE Standard No. 142-1982, 1100-1992, and 80-2000 and IEEE 837-2002
 - 4. NFPA 780 and UL 96.
 - 5. NETA.
 - 6. NYCEC
 - 7. ASTM B3, B8, and B33.
 - 8. NEMA GR1.
- C. Testing Agency Qualifications: An independent agency that is a member company of a nationally recognized testing laboratory (NRTL) as defined by OSHA.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Ground Conductors: Bare or green color coded, insulated, annealed stranded tinned copper conductor as indicated on the Contract Drawings; insulated conductor to conform to the requirements of the conductor specification section herein.
- B. Mechanical Connectors: Tin-plated aluminum alloy, U.L. approved and stamped for use with aluminum or copper conductors. Connectors shall be heavy duty type and be highly conductive.
- C. Ground Rods
- D. Copper-clad steel core and electrolytic-grade copper outer sheath fabricated by molten welding process.
- E. Diameter: 3/4 inch.
- F. Length: 10 feet.
- G. Plate Electrode: Highly conductive copper plates, minimum 1/4" thick, 24-inch square.
- H. Ground Lugs and Connectors for Cable Tray: Tin-plated aluminum alloy, suitable for use with aluminum or copper conductors.
- I. Bonding Jumper Braid: Copper braided tape, constructed of 30-gauge bare copper wires and properly sized for indicated applications.



J. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with insulators.

2.2 IDENTIFICATION AND LABELING

A. Grounding conductors shall be marked with tie wrap style cable markers.

2.3 MANUFACTURERS

- A. Erico Products, Inc
- B. Appleton Electric Company
- C. Kearney
- D. O-Z/Gedney Electric Company
- E. Raco, Inc.
- F. Thomas & Betts, Electrical
- G. Approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 GENERAL

- A. Purpose of the Grounding System.
 - 1. Adequate path for ground fault currents.
 - 2. Safety to personnel from accidental electric shock hazards.
 - 3. Prevention of hazardous discharge of static electricity.
- B. Whether or not indicated on the Contract Drawings, provide continuous ground path for all electrical circuits from point of utilization back to source through ground wires, bonded metallic conduit runs, grounded cable trays, and related items.
- C. Electrical Equipment: Provide complete exterior and interior grounding system, including grounding provisions for high and low voltage switchgear and transformers, motor control centers, lightning arrestors, motors and other equipment as indicated on the Contract Drawings or required by applicable standards.

- D. Miscellaneous Equipment: Provide complete grounding for metal lighting standards, supports for elevated metal floors, steel framework of the building, elevators, and other equipment as indicated on the Contract Drawings or required by applicable standards.
- E. Furnish and install electrical grounding systems as indicated on the Construction Documents and as specified herein.
- F. Grounding systems shall be installed in accordance with the requirements of the NYC Electrical Code, NEC Article 250, and subject to the review of the Commissioner.
- G. All ground conductors and bonding jumpers shall be stranded copper installed in conduit. All ground conductors shall be without joints and splices over its entire length.
- H. The system neutral shall be grounded at the service entrance only and kept isolated from the grounding systems throughout the building.
- I. Each system of continuous metallic piping and ductwork shall be grounded in accordance with the requirements of the NEC Article 250.
- J. Mechanical equipment shall be bonded to the building equipment grounding system. This shall include but is not limited to fans, pumps, chillers, etc.
- K. Non-metallic conduits and portions of metallic piping and duct systems which are isolated by flexible connections, insulated couplings, etc., shall be bonded to the equipment ground with a flexible bonding jumper or separate grounding conductor.
- L. Metal raceways, cable trays, cable armor, cable sheath, enclosures, frames, fittings and other metal noncurrentcarrying parts that are to serve as grounding conductors shall be effectively bonded where necessary to assure electrical continuity and the capacity to conduct safely any fault current likely to be imposed on them. Any nonconductive paint, enamel, or similar coating shall be removed at threads, contact points, and contact surfaces or be connected by means of fittings so designed as to make such removal unnecessary.

3.3 SERVICE GROUNDING SYSTEM

- A. Provide a bare copper bus mounted within the electrical switchboard room. Bus shall be 4" H x ¼" W x 2' L, equipped with type 304 stainless steel mounting brackets and fasteners. Provide the required insulators.
- B. Extend two (2) service grounding connectors in separate raceways from the ground bus to the ground bus in each switchboard.
- C. Extend conductors in raceway from service ground bus as indicated on the Contract Drawings.

3.4 SWITCHBOARD, UNIT SUBSTATIONS AND PRIMARY SWITCHGEAR

A. Bond each section of the switchboard, unit substations, and primary switchgear housing and service conduits entering same to the ground bus.

3.5 SEPARATELY DERIVED SYSTEMS

- A. Equipment grounding conductors shall be provided for separately derived systems and shall be grounded to building steel, cold water pipes, etc., or an alternate grounding means. Equipment grounding shall consist of but is not to be limited to the following:
 - 1. Lighting transformers.
 - 2. Power transformers.

3.6 RECEPTACLES

A. Receptacles shall be grounded to the outlet box by means of a bonding jumper between the outlet box and the receptacle grounding terminal.

3.7 OUTDOOR EQUIPMENT

A. Outdoor enclosures shall be connected with No. 2 bare copper (minimum) cable installed not less than 24 inches below grade, connecting to the required ground rods. Fence and equipment connections shall be bare copper No. 2. Fence shall be grounded at each gate post and corner post. Each gate section shall be bonded to the fence post through a 1/8-inch by one-inch flexible braided copper strap and approved clamps.

3.8 CONCENTRIC KNOCKOUTS

A. Provide grounding type bushings for conduits terminated through multiple concentric knockouts not fully knocked out on inside of the panelboards. Ground bushing with No. 12 AWG copper to panelboard ground bus.

3.9 ELEVATED TRANSFORMER VAULTS

A. Provide a No. 4/0 AWG bare copper ground ring around the vault on the inside wall and directly accessible to each transformer that is installed. The ground ring shall be tied-off at two (opposite) ends with No. 4/0 AWG bare copper conductor and connected to the building service ground bus.

3.10 TOGGLE SWITCHES

- A. Provide grounding clip on each toggle switch. Mount over device mounting strap such that contact is made between mounting strap, faceplate and outlet box.
- B. Provide devices with ground screw where required by NYC Code and bond this with No. 10 AWG conductor to the associated outlet box.

3.11 GROUNDING METHODS

A. Ground rods shall be copper-clad steel not less than 3/4 inch in diameter, ten (10) feet long, driven full length into the earth. The maximum resistance shall not exceed 5 ohms. If this resistance cannot be obtained with a single rod, additional rods shall be installed not less than six (6) feet on center. If sectional type rods are used, two additional sections may be coupled and driven with the first rod.



- B. The metal frame of the building, where effectively grounded.
- C. A metal underground water piping system used for grounding shall be in direct contact with the earth for ten feet or more and shall be electrically continuous. Provide bonding jumpers at the water meter and at the insulating joints.
- D. Steel reinforcing bars used for grounding shall be encased by at least two inches of concrete, located within and near the bottom of a concrete foundation or footing that is in direct contact with the earth. Reinforcing bars shall be minimum ¹/₂ inch diameter and consisting of twenty feet of one or more steel reinforcing bars.
- E. All bonding jumpers for the above grounding systems shall be sized in accordance with the NEC Article 250.

3.12 INSTALLATION

- A. Grounding Grid
 - 1. Install grounding grids with ground rods and cables as indicated on the Contract Drawings.
 - 2. Avoid splices in ground cables.
 - 3. Connectors:
 - a. Install mechanical connectors in above ground accessible locations only.
 - b. Install welding type ground connections or connection type grid grounding connectors underground, in manholes, or at inaccessible locations only.
 - c. Thoroughly clean contact surfaces before making connections.
 - d. Apply manufacturer's compound for compression connectors to conductors prior to crimping.
 - e. Made connections using compression type grid grounding connectors with approved manufacturer's hydraulic tool and correct size hex head die which, for inspection, embosses proper die number on connector.
 - 4. Make connection from ground grid to equipment ground buses as required by the NEC and as shown on the Contract Drawings.
 - 5. Provide for future disconnection for testing at all locations where building ground loop or grid connects to exterior or interior steel.
 - 6. Wrap conductors with self-fusing electrical tape and cover with vinyl electrical tape where insulation of grounding system connections is required.
- B. Cold Water Pipe Grounding
 - 1. Make connection with clamp type fitting; do not damage the incoming water pipe.
 - 2. Bond ground conductor and its conduit to the street side of the water pipe.



- 3. Install No. 4/0 AWG bonding jumper with ground clamps around the water meter.
- C. Ground Conductors
 - 1. Route along the shortest and straightest paths possible, except as otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
 - 2. Underground Grounding Conductors: Use bare copper wire. Bury at least 24 inches below grade.
 - 3. Size as shown on the Contract Drawings or as required by NEC Table 250-95.
 - 4. Where ground conductors are required, install insulated copper ground conductors in steel conduit or as indicated.
 - 5. Where ground conductors are protected by metallic conduit, bond the conductor to the conduit at both ends.
 - 6. Connect ground conductors to appropriate ground buses (as in switchboards and distribution panelboards, etc.).
- D. Grounding Rods: Locate a minimum of 1-rod length from each other and at least the same distance from any other grounding electrode.
 - 1. Drive until tops are 12 inches below finished floor or final grade, except as otherwise indicated.
 - 2. Interconnect with grounding-electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make these connections without damaging copper coating or exposing steel.
 - 3. Install in a ground well for future access and testing.
- E. Grounding Plates: Locate a minimum of six feet from each other and at least the same distance from any other grounding electrode.
 - 1. Install a minimum 30 inches below finished floor or final grade.
 - 2. Interconnect with grounding-electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make these connections without damaging copper coating or exposing steel.
- F. Conduit Attachment to Electrical Equipment
 - 1. Ground conduits to metal framework of the electrical equipment with double locknuts or grounding bushings and bonding jumpers unless otherwise noted.
 - 2. Install bonding jumpers at all electrical equipment to provide continuous ground return path through the metallic conduit system.
 - 3. Install NEC approved bonding jumpers across expansion fittings between conduit sections for ground path continuity.

- 4. Where motors or other utilization equipment are connected to the electrical system with flexible conduit, the conduit shall be equipped with a ground conductor.
- G. Cable Trays and Wiring Troughs
 - 1. Use metallic raceway system for principal ground return path.
 - 2. Bond together wiring troughs containing power circuits and tie to ground bus at the switchboards, panelboards; install minimum No. 4/0 AWG copper conductors for bonding between cable systems and switchboards ground buses.
 - 3. Install a minimum No. 2 AWG insulated copper conductors for bonding between cable support system and conduit dropouts, service equipment or cabinets.
 - 4. Apply antioxidant compound to contact surfaces for all bonding connections to cable trays.
 - 5. Install bonding jumpers across hinged joints.
- H. Receptacles and Switches
 - 1. Install bonding jumpers between the outlet box and receptacle grounding terminal except where contact device or yoke is provided for grounding purposes.
- I. Wireways
 - 1. Install grounding jumpers for bonding between wireways and other panelboards, conduits, switchboards, and at any other point where a solid connection would otherwise not be provided in supporting the system to insure a continuous ground path.
- J. Panelboards
 - 1. Install bonding jumpers inside all panelboards to bond the feeder conduit to panelboards, except ground panelboards containing branch circuits each having less than 150 amperes current carrying capacity, with two standard locknuts and bushings, one inside and one outside, run up wrench tight.
- K. Dry-Type Transformers
 - 1. Perform grounding in accordance with NEC Article 250.
 - 2. Install bonding jumper across flexible conduit from the transformer housing to the rigid conduit.
- L. Sheet Metal Boxes
 - 1. Install bonding jumpers inside all sheet metal boxes containing one or more feeders with current carrying capacity of 150 amperes or greater, to bond one conduit with another.
 - 2. Ground boxes containing branch circuits only or feeders each less than 150 amperes current carrying capacity, with two standard locknuts and bushings, one inside and one outside, run up wrench tight. two standard locknuts and bushings, one inside and one outside, run up wrench tight.

- 3. Install bonding in sheet metal boxes in systems over 600 volts, regardless of current carrying capacity.
- M. Floor Boxes
 - 1. Install grounding jumpers where adequate ground connections are not provided through locking screws between high potential power service fittings, cover plates, and conduit system.

3.13 FIELD QUALITY CONTROL

- A. Measure resistance values for system and equipment grounds, for each ground rod and ground grid.
- B. Testing Equipment: Vibroground by Associated Research, Inc.; or Megger Earth Tester by James G. Biddle Co., Fluke Electronics or approved equal.
- C. Method: Three (3) electrode fall of potential as prescribed by instrument manufacturer.
- D. Drive additional ten-foot ground rods spaced ten (10) feet apart if necessary, until total resistance of system is measured at five ohms or less.

3.14 PERSONNEL INSTRUCTION

A. Building Maintenance Personnel Instruction: Instruct the City of New York's building maintenance personnel in procedures for testing and determining resistance-to-ground values of the grounding system. Also instruct maintenance personnel in preparation and application of chemical solution for earth surrounding grounding rods for reducing ohmic resistance to the required levels.

END OF SECTION 26 05 26



Department of Design and Construction

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SECTION 26 05 33 RACEWAYS AND BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 WORK INCLUDED

- A. Rigid Steel Conduit.
- B. Rigid Aluminum Conduit.
- C. Electrical Metallic Tubing (EMT).
- D. Armor Clad (AC) Cable.
- E. Flexible Metal Conduit.
- F. Liquid-Tight Flexible Metal Conduit.
- G. Rigid Non-Metallic Conduit.
- H. Conduit Fittings.
- I. Wireways and Auxiliary Gutters.
- J. Outlet, Junction, Cable Support Boxes and Pull Boxes.
- K. Identification Labels.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".



1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. Rigid Steel and PVC Coated Rigid Galvanized Steel Conduit:
 - a. U.L. Standard 6.
 - b. ANSI C80-1 Conduit.
 - c. ANSI C80.4 Fittings.
 - d. NEMA RN-1 2005.
 - e. Federal Specification WW-C-581E.
 - 2. Rigid Aluminum Conduit:
 - a. ANSI C80-5.
 - 3. Electrical Metallic Tubing:
 - a. U.L. Standard 797.
 - b. ANSI C80.3.
 - c. Federal Specification WW-C-563.
 - 4. Armor Clad Cable:
 - a. U.L. Standard 4.
 - b. Federal Specification J-C-30B.
 - c. NEC Article 333.
 - 5. Flexible Metal Conduit:
 - a. U.L. Standard 1.
 - 6. Liquid-Tight Flexible Metal Conduit:
 - a. U.L. Standard 360.
 - b. UL514B Conduit, Tubing and Cable Fittings.



- c. UL 1660 Liquid Tight Flexible Nonmetallic Conduit.
- 7. Rigid Non-Metallic Conduit:
 - a. U.L. Standard 651.
 - b. ANSI Standard F512.
 - c. NEMA Standard TC-2.
 - d. Federal Specifications GSA-FSS and W-C-1094-A.
 - e. Corps of Commissioners Specification CE-303:01.
- 8. Wireways and Auxiliary Gutters:
 - a. U.L. Standard UL-870.

PART 2 - PRODUCTS

2.1 RACEWAYS

- A. Rigid Steel Conduit
 - 1. Rigid steel conduit shall be heavy wall, galvanized type.
- B. Rigid Aluminum Conduit
 - 1. Rigid aluminum conduit shall be heavy wall type.
- C. Electrical Metallic Tubing
 - 1. Continuous, seamless tubing galvanized or sheradized on exterior, coated on interior with smooth hard finish of lacquer, varnish or enamel.
- D. Armor Clad Cable
 - 1. Conductors rated at 90°C as specified elsewhere herein, uninsulated ground wire, moisture and fungi resistant fillers, and an interlocking steel armor shield.
- E. Flexible Metal Conduit
 - 1. Single strip, continuous, flexible interlocked double-wrapped steel, galvanized inside and outside forming smooth internal wiring channel.
- F. Liquid-Tight Flexible Metal Conduit
 - 1. Same as flexible metal conduit except with tough, inert watertight plastic outer jacket.



- G. Manufacturers
 - 1. Wheatland
 - 2. Allied Tube
 - 3. Carlon.
 - 4. Approved equal.

2.2 CONDUIT FITTINGS

- A. Rigid Steel Conduit
 - 1. Threaded type fittings.
- B. Rigid Aluminum Conduit
 - 1. Threaded type fittings.
- C. Electrical Metallic Tubing
 - 1. 2¹/₂-inch in size and larger may be set screw type. 2-inch in size and smaller, steel compression gland.
 - 2. In slab or concrete work, concrete-tight fittings.
- D. Armor Clad Cable
 - 1. Malleable iron or die-cast zinc with insulating bushing.
- E. Flexible Metal Conduit
 - 1. Compression-type metal fittings.
- F. Liquid-Tight Flexible Metal Conduit
 - 1. Cast malleable iron body and gland nut, cadmium plated with one-piece brass grounding bushings which thread to interior of conduit. Spiral molded vinyl sealing ring between gland nut and bushing and nylon insulated throat.
- G. Manufacturers
 - 1. Same as those listed for raceways.

2.3 WIREWAYS AND AUXILIARY GUTTERS

A. Wireways and gutters shall be of sizes and shapes indicated on the Contract Drawings and as required to meet the field conditions. Equipment shall be sheet metal, with enamel finish, NEMA 250 rated.



- B. Provide all necessary elbows, tees, connectors, adaptors, etc.
- C. Provide hinged cover secured with captive screws.
- D. Wire retainers shall be provided not less than twelve (12) inches on center.
- E. Manufacturers
 - 1. Square D
 - 2. Wiremold/Legrand
 - 3. Hubbell
 - 4. Approved equal.

2.4 OUTLET, JUNCTION AND PULL BOXES

- A. Cast Type Conduit Boxes, Outlet Bodies, and Fittings
 - 1. For rigid steel conduit, ferrous alloy box with inside threaded hubs.
 - 2. For rigid aluminum conduit, aluminum box with inside threaded hubs.
 - 3. For electrical metallic tubing, ferrous alloy box with compression or inside threaded hubs with adapter.
 - 4. Covers: Cast or sheet metal unless otherwise required.
 - 5. Tapered threads for hubs.
- B. Galvanized Pressed Steel Outlet Boxes
 - 1. General: Pressed steel, galvanized or cadmium-plated, minimum of 4" octagonal or square with galvanized cover or extension ring as required.
 - 2. Concrete Box: 4" octagon with removable backplate and 3/8" fixture stud, if required. Depth of box shall allow for a minimum of 1" of concrete to be poured above the backplate.
 - 3. Switch and Receptacle Box; Indoors: Nominal 4" square, 1¹/₂" or 2-1/8" deep as required, with raised cover unless otherwise indicated on the Contract Drawings.
 - 4. Lighting Fixture Box:
 - a. 4" octagon with 3/8" fixture stud.
 - b. For suspended ceiling work, 4" octagon with removable backplate where required, and two (2) parallel bars for securing to cross-furring channels and extend flexible metal conduit to each fixture.



- C. Sheet Steel Boxes Indoors
 - 1. No. 12 USS gauge sheet steel for boxes with a maximum side less than 40 inches, and a maximum area not exceeding 1,000 square inches; riveted or welded 3/4 inch flanges at exterior corners.
 - 2. No. 10 USS gauge sheet steel for boxes with a maximum side 40 to 60 inches, and a maximum area 1,000 to 1,500 square inches; riveted or welded 3/4 inch flanges at exterior corners.
 - 3. No. 10 USS gauge sheet steel riveted or welded to 1½" by 1½" by 1½" welded angle iron framework for boxes with a maximum side exceeding 60 inches and more than 1,500 square inches in area.
 - 4. Covers:
 - a. Same gauge steel as the box.
 - b. Subdivided single covers so no section of the cover exceeds 50 pounds.
 - c. Machine bolts, machine screws threaded into tapped holes or sheet metal screws as required; maximum spacing of 12 inches.
 - 5. Paint: Rust inhibiting primer; ANSI No. 61 light gray finish coat.
- D. Pull and Splice Boxes, Outdoors
 - 1. Aluminum reinforced, with removable covers secured by stainless steel machine screws.
- E. Outlet, Junction and Pull Boxes Manufacturers:
 - 1. Cooper Industries
 - 2. Appleton Electric Company
 - 3. Erickson Electrical Equipment Co.
 - 4. Hoffman
 - 5. Hubbell
 - 6. OZ Gedney
 - 7. RACO
 - 8. Thomas & Betts
 - 9. Wiremold/Legrand
 - 10. Approved equal.

2.5 IDENTIFICATION LABELS

- A. Plasticized Cloth
 - 1. Non-conductive.
 - 2. Waterproof.
 - 3. Capable of withstanding continuous temperatures of 235°F and intermittent temperatures to 300°F.
 - 4. Overcoating for protection against oil, solvents, chemicals, moisture, abrasion and dirt.
- B. Heavy, thermo-resistant industrial grade adhesive for adhesion of label to any surface without curling, peeling, or falling off.
- C. Legends: Sharp, bold-face, two (2) inch black letters on "Alert" orange background.
- D. Label Designations, Nominal System Voltages as 208 volts, etc.
- E. Manufacturers
 - 1. W.H. Brady Company
 - 2. Thomas & Betts Corporation
 - 3. DYMO
 - 4. Approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 APPLICATION OF RACEWAYS

A. The following applications must be adhered to. Raceways not conforming to this listing must be removed and replaced with specified material at no additional cost to the City of New York.

Raceway Types	Applications
Rigid Steel Conduit	Shall be used for all conduits shown on contract documents unless otherwise noted.
Rigid Aluminum Conduit	For 400 Hz feeders and branch circuits. Outdoor locations.



Raceway Types	Applications
E.M.T.	Shall not be used.
Armor Clad Cable	Lighting and receptacle branch circuits concealed in dry hollow spaces of a building. May not be used in corridors, places of assembly, or where prohibited by Code.
Flexible Metal Conduit	Use in dry areas for connections to lighting fixtures in hung ceilings, connections to equipment installed in removable panels of hung ceilings; at bus duct takeoffs; at all transformer or equipment raceway connections where sound and vibration isolation is required.
Liquid-Tight Flexible Metal Conduit	Use in areas subject to moisture where flexible metal conduit is unacceptable, at connections to all motors, and all raised floor areas.
Wireways and Auxiliary Gutters	Where indicated on the Contract Drawings and as otherwise specifically required.

3.3 RACEWAY SYSTEMS IN GENERAL

- A. Provide separate raceways for all wiring systems, including security, data, paging, low voltage et al. All 480Y/277 volt wiring must be kept independent of 208Y/120 volt wiring. Emergency system wiring must be kept independent of the normal system wiring. Provide grounding conductor within all circuits. Minimum size 3/4-inch for home runs and 1-inch minimum for power distribution. Wiring of each type and system must be installed in separate raceways.
- B. Install capped bushings on the raceways as soon as they are installed and remove only when cables are pulled. Securely tie embedded raceway in place prior to embedment. Raceways installed below or in floor slabs must extend a minimum of four (4) inches above the finished slab to the first connector. Lay out work in advance to avoid excessive concentrations of multiple raceway runs.
- C. Locate raceways so that the strength of structural members are unaffected and they do not conflict with services of other trades. Install 1-inch or larger raceways in or through structural members (beams, slabs, etc.) only when and in a manner accepted by the Commissioner. Draw up couplings and fittings full and tight. Protect exposed threads from corrosion with one (1) coat or zinc chromate after installation.
- D. Provide raceway installation (with appropriate seal-offs, explosion-proof fittings, etc.) in special occupancy area, as required. Provide conduit seal-offs where portions of the interior raceway system pass through walls, ceiling or floors which separate adjacent rooms having substantially different maintained temperatures, as in refrigeration or cold storage rooms.
- E. Provide labeled pull wire in all spare or empty raceways. Allow five (5) feet of slack at each end and in each pull box. Tag both ends of the cable denoting opposite and termination location with black india ink on flameproof linen tag.

- F. Above Grade: Defined as area above the finished grade for the building exterior and above the top surface of any slabs (or other concrete work) on grade for the building interior.
 - 1. Install concealed except at surface cabinets and for motor and equipment connections in electrical and mechanical rooms. Install a minimum of six (6) inches from flues, steam pipes, or other heated lines. Provide flashing and counter-flashing for waterproofing of raceways, outlets, fittings, etc., which penetrate the roof. Route exposed raceways parallel or perpendicular to the building lines with right-angle turns and symmetrical bends. Run concealed raceways in direct line and, where possible, with long sweep bends and offsets. Maximum length of six (6) feet for flexible metal conduit. Each section of flexible metal conduit shall contain bonding ground connector bonded at each end and sized as required. Provide connectors with insulating bushings. Provide sleeves in the forms for new concrete walls, floor slabs and partitions for passage of the raceways. Waterproof sleeved raceways where required.
 - 2. Provide raceway expansion joints for exposed and concealed raceways with necessary bonding ground conductor at building expansion joints and between buildings or structures and where required to compensate for raceway or building thermal expansion and contraction. Provide expansion fittings every 200 feet of conduit.
 - 3. Provide one (1) empty ³/₄-inch raceway for each three (3) spare unused poles or spaces of each flushmounted panelboard. Terminate empty 3/4 inch conduits in a junction box, which after completion, is accessible to facilitate future branch circuit extension. Provide pull lines in each raceway.
- G. Install no raceway in the concrete slab except with the permission of the Commissioner. Maximum conduit sizes embedded in structural concrete slabs:

Raceway Size	Min. Thickness of Concrete Slab
3/4 in.	4½ in.
1 in.	5 in.

- 1. Do not install raceways 1¹/₄ inch size and larger in structural concrete slabs.
- 2. In no case will the installation of raceways be permitted to interfere with proper placement of principal reinforcement.
- 3. Place raceways in the structural slabs between the upper and lower layers of reinforcing steel. Careful bending of the conduits is required.
- 4. Space the raceways embedded in concrete slabs not less than eight (8) inches on centers and as widely spaced as possible where they converge at panels or junction boxes.
- 5. Install raceways running parallel to slabs supports, such as beams, columns and structural walls, not less than 12 inches from such supporting elements.

6. Secure saddle supports for conduit, outlet boxes, junction boxes, inserts, etc. with suitable adhesives during concrete pour of the slab to prevent displacement.

3.4 WIREWAYS AND AUXILIARY GUTTERS

A. Place wireways installed in hung ceilings such that the covers will hinge upward from the side.

3.5 OUTLET, JUNCTION, AND PULL BOXES

- A. Provide outlet, junction, and pull boxes as indicated on the Contract Drawings and as required for the complete installation of the various electrical systems, and to facilitate proper pulling of the cables. Size the junction boxes and pull boxes per the NEC. Size the boxes on any empty conduit systems as if containing conductors of No.4 AWG.
- B. The exact location of outlets and equipment is governed by the structural conditions and obstructions, or other equipment items. When necessary, relocate outlets so that when fixtures or equipment are installed, they will be symmetrically located according to the room layout and will not interfere with other work or equipment. Verify final location of outlets, panels equipment, etc., with the Commissioner prior to installation.
- C. Back-to-back outlets in the same wall, or "thru-wall" type boxes are not permitted. Provide 12-inch minimum spacing for outlets shown on opposite sides of a common wall to minimize sound transmission.
- D. Fit outlet boxes in finished ceilings or walls with appropriate covers, set flush with the finished surface. Where more than one (1) switch or device is located at one (1) point, use gang boxes and covers unless otherwise indicated. Sectional switch boxes or utility boxes are not permitted. Provide tile box or 4 inch square box with tile ring in masonry walls not plastered or furred. Where drywall material is utilized, provide plaster ring. Provide outlet boxes of type and size suitable for the specific application. Where outlet boxes contain two (2) or more 277 volt devices, or where devices occur of different applied voltages, or where normal and emergency devices occur in the same box, provide suitable barrier(s).
- E. All outlet and device box depths shall have sufficient depth to prevent damage to the conductors when devices or utilization equipment are installed as intended in the box.

Location	Туре
Outlet	Galvanized pressed steel
Outlet exposed to moisture or outdoors	Cast type conduit fitting
Splice	Galvanized pressed steel
Splice exposed to moisture or outdoors	Cast type conduit fitting or sheet metal (4 ¹ / ₂ " x 5" x 3" minimum)
Pull or Junction	Cast type conduit fitting or sheet metal (4 ¹ / ₂ " x 5" x 3" minimum)
Pull or Junction - Outdoors	Aluminum (4 ¹ / ₂ " x 5" x 3" minimum)

F. Types of Boxes and Fittings for Various Locations



Location	Туре
Terminal	Sheet steel (6" x 6" x 3" minimum)
Terminal - Outdoors	Aluminum (6" x 6" x 3" minimum)

G. Pull Box Spacing

- 1. Provide pull boxes so no individual conduit run contains more than the equivalent of four (4) quarter bends (360° total).
- 2. Conduit Sizes 1¹/₄" and Larger:
 - a. Provide boxes to prevent cable from being excessively twisted, stretched or flexed during installation.
 - b. Provide boxes so that maximum pulling tensions do not exceed the cable manufacturer's recommendations.
 - c. Provide support racks for boxes with multiple sets of conductors so that the conductors do not rest on any metal work inside the box.
- 3. Conduit Sizes 1 Inch and Smaller, provide boxes at every (Maximum Distances):
 - a. 150 feet straight runs
 - b. 100 feet runs with one (1) 90° bend or equivalent
 - c. 75 feet runs with two (2) 90° bends or equivalent
 - d. 50 feet runs with three (3) or (4) four 90° bends or equivalent.

H. Sheet Steel Boxes

- 1. Boxes shall be sized to permit pulling, racking and splicing of the cables (if not indicated on the Contract Drawings). They shall be sized to avoid exceeding the manufacturer's minimum bending radius recommendations for the conductors.
- 2. Provide access for the removal and replacement of the conductors, splices and equipment.
- 3. Minimum Dimensions of Boxes in Runs of 1¹/₂" or Larger Conduit:
 - a. Straight Pulls: Size length eight (8) times nominal diameter of the largest conduit.
 - b. Angle or U-Pulls: Size such that the distance between the conduit entry and the opposite wall of box is six (6) times the nominal diameter of the largest conduit.
- 4. Covers: Fasten to the flange or framework of the box with machine bolts, machine screws threaded into tapped holes or sheet metal screws as required.



- 5. Plug any open knockouts not utilized.
- I. Pull and Splice Boxes, Outdoors
 - 1. Where size of the box is not indicated, size to permit pulling, racking and spicing of cables being installed.
 - 2. Braze ground connector suitable for copper cables to the inside of the box.
- J. Identification labels for all pull, splice and junction boxes in main feeder and subfeeder runs, shall indicate nominal system voltage:
 - 1. Apply labels after painting of any boxes, conduits, and surrounding areas are completed.
 - 2. Clean surfaces before applying labels; clean aluminum surfaces with solvent wipe.
 - 3. Apply labels on the cover and a minimum of one (1) fixed side; one (1) label visible from the floor where the boxes are installed exposed.

3.6 SLEEVES

- A. Where sleeves are required for the installation of electrical work passing through walls or floors, furnish and install under this Section of Specification unless indicated otherwise on the Contract Drawings. Use galvanized or back enameled rigid steel conduit or Schedule 40 black steel pipe. Do not use aluminum conduit. Where specific sizes are not indicated on the Contract Drawings, size sleeves shall provide ½ inch clearance around the outside surface of the item for which installed. Cut flush with the wall surfaces and extend two (2) inches above the finished floor level or as indicated on the Contract Drawings. In mechanical rooms, extend sleeve four (4) inches above the finished floor level.
- B. For interior walls and for floors, pack space between the conduit, ground cable or similar items and sleeves to the full depth of the wall or slab thickness with fire stopping material to maintain the required rating.

END OF SECTION 26 05 33



SECTION 26 05 53 SYSTEMS IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.
- B. The General and Supplementary Conditions accompanying these Specifications are hereby made a part of the requirements for the work under this Division of the Specification.

1.2 WORK INCLUDED

- A. Fixed identification for:
 - 1. Feeder Switches.
 - 2. Disconnect Switches/Enclosed Circuit Breakers.
 - 3. Feeder Switches (Fuse Identification).
 - 4. Wall Plates.
 - 5. Motor Controllers.
 - 6. Pullboxes, Enclosures and Cable Terminations.
 - 7. Luminaires.
 - 8. Capping and Staking.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".



1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. NFPA 70.
 - 2. ANSI AI13.1 and NFPA for color coding.
 - 3. ANSI Z535-4.
 - 4. OSHA Standards.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Unless otherwise noted, nameplates shall be black bakelite plates with white engraved upper-case letters enclosed by white border on beveled edge.
- B. Nameplates for equipment supplied by the emergency system shall be red bakelite with white lettering.
- C. All nameplates must be engraved and must be secured with rivets, brass or cadmium plate screws. The use of Dymo type or the like is unacceptable.
- D. Lettering heights unless otherwise noted must be as follows:

Item	Lettering Height
Panelboards, Load Centers & Lighting Panels	1/2"
Feeder Switches	1/4"
Disconnect Switches/Enclosed Circuit Breakers	1/2"
Feeder Switches (Fuse Identification)	1/4"
Remote Smoke Detector Lamps	1/8"
Wall Plates	1/8"
Motor Controllers	1/4"
Fire Alarm Panels	1/2"
Pullbox, Enclosures and Cable Terminations	1/8"
Fire Alarm Phone Jacks and Warden Station	1/8"



- E. Cable tags must be flameproof secured with flameproof non-metallic cord.
- F. Nameplate inscriptions must bear the name and number of the equipment to which they are attached as indicated on the Contract Drawings. The Commissioner reserves the right to make modifications in the inscriptions as necessary.
- G. The Commissioner reserves the right to request additional nameplates at the time of review of shop drawings and upon site observations. These shall be furnished at no additional cost to the City of New York.
- H. Do not manufacture or install nameplates until approved by the City of New York.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 PANELBOARDS, LOAD CENTERS AND TRANSFORMERS

- A. Furnish and install a nameplate for each panelboard and load center engraved with the identification indicated on the Contract Drawings. Mount at top of panel.
- B. After installations are complete, provide and mount under sturdy transparent shield in the directory frame of each panel door, a neat, accurate and carefully typed directory properly identifying the lighting, receptacles, outlets, and equipment each overcurrent device controls.
- C. Include on directory the panel or load center identification, the cable and raceway size of panel feeder, and the feeder origination point.
- D. Provide a nameplate for each transformer engraved with the primary and secondary feeder sizes.

3.3 DISCONNECT SWITCHES AND ENCLOSED CIRCUIT BREAKERS

A. Furnish and install a nameplate for each disconnect switch and enclosed circuit breaker engraved with the equipment designation.

3.4 MOTOR CONTROLLERS

- A. Furnish and install a nameplate for each motor controller or combination motor controller for both individual motor controllers and those in a motor control center, etc. Engraving must indicate the motor served and the type of service (e.g., AC-1 1st floor supply, EF-2 electric closet exhaust).
- B. Final equipment names shall be coordinated with the Mechanical Contractor and City of New York prior to fabrication.



3.5 FEEDER SWITCHES

- A. Furnish and install for each feeder switch including, but not limited to those in switchboards, those in switch and fuse panelboards, those take-offs at bus ducts, those in motor control centers, those in meter centers, etc. two (2) nameplates as follows.
 - 1. The first nameplate must be white background with red lettering. Engrave with the words "REPLACE ONLY WITH _____ FUSE". Engrave with proper fuse trade name and ampere rating (i.e. Bussmann LPS-R 100) or approved equal.
 - 2. The second nameplate shall indicate the load served, the size and type of cable and raceway example:

Panels LP-4, LP-5, LP-6 4#500 MCM-THHN-CU-3-1/2"C. REMOTE SMOKE DETECTOR LAMPS AND TEST STATIONS

- A. Furnish and install a nameplate on each remote smoke detector lamp and/or test station. Engraving must indicate the address of the device to which the lamp is connected as per the shop drawings marked "No Exceptions Noted."
- B. Provide additional fire alarm device labeling as indicated in the fire alarm specification section.

3.7 WALL PLATES

3.6

- A. Furnish and install an engraved wall plate for each switch controlling loads which are not local to the switch. Engraving shall be as directed by the City of New York.
- B. Furnish and install engraved wall plate for each receptacle indicating the panel and circuit number.

3.8 PULLBOXES, ENCLOSURES AND CABLE TERMINATIONS

A. Furnish and install cable tags on each cable which enters a pullbox, enclosure, switchboard and at terminations. Mark tags with type written inscription noting the load served, type and size of cable and the overcurrent device protecting the cable.

3.9 FIRE ALARM PHONE JACKS AND WARDENS STATIONS

A. Furnish and install an engraved wall plate on each warden's station and portable fire alarm phone jack. Engraving must indicate the floor and location of the device per the shop drawings marked "No Exceptions Noted."

3.10 CAPPING AND STAKING

- A. Wherever raceways are for future use and are terminated outside of the structure, stake the location with a 2' long 1" x 1" wooden stake having a conspicuous colored flag.
- B. Provide metal markers inserted into 8" D x 12" concrete ballast at all raceway terminations exterior to the structure. Inserts must state the date the raceway was installed, the size of the raceway and the point of the raceway termination.



3.11 LUMINAIRES

A. Where connected to other than 120 volt circuit, provide each fluorescent or high intensity discharge fixture with the ballast voltage stenciled on the ballast cover in letters not less than ¹/₂ inch high.

END OF SECTION 26 05 53



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SECTION 26 08 00 COMMISSIONING OF ELECTRICAL

PART 1 - GENERAL

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 commissioning process requirements for Electrical systems, assemblies, and equipment.
- B. Related Sections:
 - DDC General Conditions Section 01 91 13 "General Commissioning Requirements for MEP Systems."

1.3 DESCRIPTION

- A. Commissioning: Commissioning is a systematic process of ensuring that all building systems, including the mechanical and electrical systems, have been installed in the prescribed manner, are functionally checked and capable of being operated and maintained to perform with the design intent and have documentation to support proper installation and operation. The Commissioning Agent (CxA) shall provide the City of New York with an unbiased, objective view of the system's installation, operation and performance. This process does not eliminate or reduce the responsibility of the Contractor to provide a finished product. Commissioning is intended to enhance the quality of each system installation, startup and transfer to beneficial use by the City of New York.
- B. Commissioning during the construction phase is intended to achieve the following specific objectives, according to the Contract Documents:
 - 1. Verify that applicable equipment and systems are installed according to the manufacturer's recommendations and to industry accepted minimum standards and that they receive adequate operational checkout by the Contractor.
 - 2. Verify and document proper performance of equipment and systems.
 - 3. Verify that Operation & Maintenance documentation is complete and transferred to the City of New York.
 - 4. Verify that the City of New York's maintenance personnel are adequately instructed.
- C. The Commissioning process shall be a team effort and encompass, as well as coordinate, the traditionally separate functions of system documentation, system installation, equipment startup, control system calibration, testing, balancing and verification and performance checkouts.
- D. The CxA will work closely with the construction team, cooperating on and coordinating all Cx activities with the Commissioner and Contractor.
- E. The Cx process shall not reduce the responsibility of the Contractor to comply with the Contract Documents.


1.4 DEFINITIONS

A. Refer to the DDC General Conditions for definitions.

1.5 SUBMITTALS

- A. Refer to the DDC General Conditions Section 01 91 13 "General Commissioning Requirements for MEP Systems" for CxA's role.
- B. Refer to the DDC General Conditions Section 01 33 00 "Submittal Procedures" and Section 01 91 13 "General Commissioning Requirements for MEP Systems" for specific requirements.
- C. In addition, provide the following:
 - 1. Certificates of readiness
 - 2. Certificates of completion of installation, prestart, and startup activities.
 - 3. O&M manuals
 - 4. Test reports

1.6 QUALITY ASSURANCE

 A. Test Equipment Calibration Requirements: The Contractor will comply with test equipment manufacturer's calibration procedures and intervals. Recalibrate test instruments immediately after instruments have been repaired resulting from being dropped or damaged. Affix calibration tags to test instruments. Furnish calibration records to CxA upon request.

1.7 COORDINATION

A. Refer to the DDC General Conditions Section 01 91 13 "General Commissioning Requirements for MEP Systems" for requirements pertaining to coordination during the commissioning process.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

- A. All standard testing equipment required to perform startup, initial checkout and functional performance testing shall be provided by the Contractor for the equipment being tested. The Contractor shall provide all standard testing equipment for the electrical systems and controls systems in Division 26. The Contractor shall ensure a sufficient quantity of two-way radios are provided.
- B. Special equipment, tools and instruments (specific to a piece of equipment and only available from vendor) required for testing shall be included in the base bid price to the City of New York and left on site, except for stand-alone data logging equipment that may be used by the CxA.
- C. The Contractor shall ensure that proprietary test equipment and software required by any equipment manufacturer for programming and/or start-up, whether specified or not, shall be provided by the manufacturer of the equipment. Manufacturer shall provide the test equipment, demonstrate its use, and assist in the commissioning process as needed. Proprietary test equipment (and software) shall become the property of the City of New York upon completion of the commissioning process.
- D. Data logging equipment and software required to test equipment will be provided by the CxA, but shall not become the property of the City of New York.
- E. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Contract Documents. If not otherwise noted,



the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration within the past year to accuracy of 0.5° F and a resolution of + or - 0.1° F. Pressure sensors shall have an accuracy of + or - 2.0% of the value range being measured (not full range of meter) and have been calibrated within the last year.

PART 3 - EXECUTION

3.1 GENERAL DOCUMENTATION REQUIREMENTS

- A. With assistance from the Contractor, the CxA will prepare Pre-Functional Checklists for all commissioned components, equipment, and systems
- B. Red-lined Drawings:
 - 1. The Contractor will verify all equipment, systems, instrumentation, wiring and components are shown correctly on red-lined drawings.
 - 2. Preliminary red-lined drawings must be made available to the Commissioning Team for use prior to the start of Functional Performance Testing.
 - 3. Changes, as a result of Functional Testing, must be incorporated into the final as-built drawings, which will be created from the red-lined drawings.
 - 4. The Contractor will create the as-built drawings.
- C. Operation and Maintenance Data:
 - 1. The Contractor will provide a copy of O&M literature within 45 days of each submittal acceptance for use during the commissioning process for all commissioned equipment and systems.
 - 2. The CxA will review the O&M literature once for conformance to project requirements.
 - 3. The CxA will receive a copy of the final approved O&M literature once corrections have been made by the Contractor.
- D. Demonstration and Instruction:
 - 1. The Contractor will provide demonstration and instruction as required by the Contract Documents.
 - 2. A complete instruction plan and schedule must be submitted by the Contractor to the CxA four weeks (4) prior to any instruction.
 - 3. An instruction agenda for each instruction session must be submitted to the CxA one (1) week prior the instruction session.
 - 4. The CxA shall be notified at least 72 hours in advance of scheduled tests so that testing may be observed by the CxA and the Commissioner. A copy of the test record shall be provided to the CxA and the Commissioner.
 - 5. Engage a Factory-authorized service representative to instruct the City of New York's maintenance personnel to adjust, operate, and maintain specific equipment.
 - 6. Instruct the City of New York's maintenance personnel on procedures and schedules for starting and stopping, trouble shooting, servicing, and maintaining equipment.
 - 7. Review data in O&M Manuals.

3.2 CONTRACTOR'S RESPONSIBILITIES

- A. Perform commissioning tests as per the written procedure and at the direction of the CxA.
- B. Attend construction phase controls coordination meetings.
- C. Participate in Electrical systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the CxA.
- D. Provide information requested by the CxA for final commissioning documentation.
- E. Include requirements for submittal data, operation and maintenance data, and instruction in each purchase order or sub-contract written.
- F. Prepare preliminary schedule for Electrical system orientations and inspections, operation and maintenance manual submissions, instruction sessions, equipment start-up and task completion for the City of New York. Distribute preliminary schedule to commissioning team members.
- G. Update schedule as required throughout the construction period.
- H. During the startup and initial checkout process, execute the related portions of the prefunctional checklists for all commissioned equipment.
- I. Perform all verification and functional performance tests in the presence of the CxA as required.
- J. Provide measuring instruments and logging devices to record test data and provide data acquisition equipment to record data for the complete range of testing for the required test period.
- K. Gather operation and maintenance literature on all equipment and assemble in binders as required by the specifications. Submit to CxA 45 days after submittal acceptance.
- L. Coordinate with the CxA to provide 72-hour advance notice so that the witnessing of equipment and system start-up and testing can begin.
- M. Notify the CxA a minimum of two weeks in advance for start of the testing work.
- N. Participate in, and schedule vendors and subcontractors to participate in the instruction sessions.
- O. Provide written notification to the Commissioner and CxA that the following work has been completed in accordance with the Contract Documents, and that the equipment, systems, and sub-system are operating as required.
 - 1. Electrical equipment including switchgear, panel boards, motor control centers, lighting, receptacles, and all other equipment furnished under this Division.
- P. The Contractor shall ensure that the equipment suppliers shall document the performance of his equipment.
- Q. Provide a complete set of red-lined drawings to the CxA prior to the start of Functional Performance Testing.
- R. Provide instruction to the City of New York's maintenance personnel using expert qualified personnel, as specified.
- S. Contractor shall direct equipment suppliers to:
 - 1. Provide all requested submittal data, including detailed start-up procedures and specific requirements needed to keep warranties in force.
 - 2. Assist in equipment testing.



- 3. Provide information requested by CxA regarding equipment sequence of operation and testing procedures.
- T. Refer to the DDC General Conditions for additional Contractor responsibilities.

3.3 CxA'S RESPONSIBILITIES

A. Refer to the DDC General Conditions Section 01 91 13 "General Commissioning Requirements for MEP Systems" for CxA's responsibilities.

3.4 TESTING PREPARATION

- A. Certify in writing to the CxA that Electrical systems, subsystems, and equipment have been installed, meggerred, calibrated, and started and are operating according to the Contract Documents.
- B. Certify in writing to the CxA that Electrical instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents, and that pretest set points have been recorded.
- C. Certify in writing that testing procedures have been completed and that testing reports have been submitted, discrepancies corrected, and corrective work approved.
- D. Place systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).
- E. Inspect and verify the position of each device and interlock identified on checklists.
- F. Check safety cutouts, alarms, and interlocks with smoke control and life-safety systems during each mode of operation.
- G. Testing Instrumentation: Install measuring instruments and logging devices to record test data as directed by the CxA.

3.5 GENERAL TESTING REQUIREMENTS

- A. Provide technicians, instrumentation, and tools to perform commissioning test at the direction of the CxA.
- B. Scope of Electrical testing shall include the entire Electrical installation, from the incoming power equipment throughout the distribution system. Testing shall include measuring, but not limited to resistance, voltage, and amperage of system(s) and devices.
- C. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.
- D. Prepare detailed testing plans, procedures, and checklists for Electrical systems, subsystems, and equipment with guidance from CxA.
- E. Tests will be performed using design conditions whenever possible, as determined by the Commissioner.
- F. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.

- G. The CxA may direct that set points be altered when simulating conditions is not practical.
- H. If tests cannot be completed because of a deficiency outside the scope of the Electrical system, document the deficiency and report it to the Commissioner. After deficiencies are resolved, reschedule tests.
- I. If the testing plan indicates specific seasonal testing, complete appropriate initial performance tests and documentation and schedule seasonal tests.

3.6 ELECTRICAL SYSTEMS, SUBSYSTEMS, AND EQUIPMENT TESTING PROCEDURES

- A. Equipment Testing and Acceptance Procedures: Testing requirements are specified in individual Division 26 sections. Provide submittals, test data, inspector record, infrared camera and certifications to the CxA.
- B. Electrical Instrumentation and Control System Testing: Field testing plans and testing requirements are specified in Division 26. Assist the CxA with preparation of testing plans.
- C. The work included in the commissioning process involves a complete and thorough evaluation of the operation and performance of all components, systems and sub-systems. The scope of commissioning work shall include but not limited to the following equipment and systems:
 - 1. Associated Electrical Work

3.7 OPERATION AND MAINTENANCE MANUALS

- A. The Operation and Maintenance Manuals shall conform to Contract Documents requirements.
- B. Refer to the DDC General Conditions Section 01 78 39 "Contract Record Documents" and Section 01 91 13 "General Commissioning Requirements for MEP Systems" for the Commissioner and CxA roles in the Operation and Maintenance Manual contribution, review and approval process.

3.8 INSTRUCTION OF CITY OF NEW YORK PERSONNEL

- A. Refer to the DDC General Conditions Section 01 79 00 "Demonstration and Owner's Pre-Acceptance Orientation" and Section 01 91 13 "General Commissioning Requirements for MEP Systems" for requirements pertaining to instruction.
- B. Contractor's instruction responsibilities pertaining to Electrical work:
 - 1. Provide the CxA with an instruction plan four weeks before the planned instruction.
 - 2. Provide comprehensive instruction in the understanding of the systems and the operation and maintenance of each major piece of commissioned electrical equipment or system to city of New York's maintenance personnel.
 - 3. Instruction shall be recorded by the CxA and start with classroom sessions, if necessary, followed by hands on instruction on each piece of equipment, which shall illustrate the various modes of operation, including startup, shutdown, fire/smoke alarm, power failure, etc.
 - 4. During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system will be repaired or adjusted as necessary and the demonstration repeated.



Design and Construction

- 5. The appropriate trade or manufacturer's representative shall provide the instructions on each major piece of equipment. This person may be the start-up technician for the piece of equipment, the installing subcontractor or manufacturer's representative. Practical building operating expertise as well as in-depth knowledge of all modes of operation of the specific piece of equipment is required. More than one party may be required to execute the instruction.
- 6. The instruction sessions shall follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference.
- 7. Instruction shall include:
 - Use the printed installation, operation and maintenance instruction material included а in the O&M manuals.
 - Include a review of the written O&M instructions emphasizing safe and proper b. operating requirements, preventative maintenance, special tools needed and spare parts inventory suggestions. The instruction shall include start-up, operation in all modes possible, shut-down, seasonal changeover and any emergency procedures.
 - Discuss relevant health and safety issues and concerns. c.
 - Discuss warranties and guarantees. d.
 - Cover common troubleshooting problems and solutions. e.
 - Explain information included in the O&M manuals and the location of all plans and f. manuals in the facility.
 - Discuss any peculiarities of equipment installation or operation. g.
 - i. Hands-on instruction shall include start-up, operation in all modes possible, including manual, shut-down and any emergency procedures and preventative maintenance of all pieces of equipment.
 - Fully explain and demonstrate the operation, function and overrides of ii. any local packaged controls, not controlled by the central control system.
 - Instruction shall occur after functional testing is complete, unless iii. approved otherwise by the Commissioner.

END OF SECTION 26 08 00



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SECTION 26 09 23 LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 **RELATED DOCUMENTS**

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 DESCRIPTION

A. Provide automatic lighting control devices in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Occupancy Sensors.
- B. Vacancy Sensors.
- C. Daylight Sensors.
- D. Time Clocks.
- E. Photocells.
- F. Power Packs and Relays.
- G. Control Wiring and Conduit.

1.4 SUBMITTAL PROCEDURES

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".
- B. Product Data
 - 1. Submit manufacturer's catalog cuts, wiring devices, and specifications for all lighting control devices indicated on the Contract Documents. Highlight exact model being proposed in the submittal, indicating compliance to these specifications.



- 2. Submit samples for finish, color, and texture as requested by the Commissioner.
- C. Shop Drawings shall include:
 - 1. Load schedules indicating actual connected load, load type, voltage per circuit, circuits and their respective control zones, circuits that are on emergency, capacity, phase, and corresponding circuit numbers.
 - 2. Schematic wiring diagrams of the systems and sub-systems, specifically all field installed devices.
 - 3. Lighting plans clearly marking product type, location, and orientation of each sensor.
- D. Field Test Reports.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. U.L.
 - 2. NEMA
 - 3. IEEE C62.41
 - 4. NFPA
 - 5. ISO 9002
 - 6. ASHRAE
- C. All sensors shall be capable of operating normally with all specified lamp types, motor loads and any other passive infrared or microwave systems.
- D. Obtain each type of device through a single manufacturer where available.

1.6 WARRANTY

A. Provide a five (5) year manufacturers' warranty for all components.

1.7 COORDINATION

A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression system, and partition assemblies.



- B. Any wall mounted devices shall be coordinated with the Commissioner prior to installation to avoid devices from visual blockage.
- C. The color of all devices shall be selected by the Commissioner.

PART 2 - PRODUCTS

2.1 COMPONENTS

- A. Occupancy Sensors
 - 1. Wall Switch: Dual technology, ultrasonic or infrared, in-line wall switch, suitable for switchbox mounting; 120 or 277 volt as required; adjustable time delay up to 30 minutes; coverage up to 1000 square feet, monitoring within a 180° view angle; and single circuit. Provide an integral bypass manual "override ON" switch on each sensor. Provide manufacturer's cover plates.
 - 2. Ceiling Mounted Sensor: Dual technology, infrared or ultrasonic, 120 or 277 volt as required; adjustable time delay up to 30 minutes; coverage up to 1200 square feet; and 360° vision. Sensor shall be supplied with relay transformer power pack which can be installed remote from the sensor using low voltage wire in conduit. Where indicated on the Contract Documents; provide wall override switch and cover plate.
 - 3. Corridor and Hallway Sensors:
 - a. Sensors shall be capable of detecting motion in a 14-foot wide and 80-foot long corridor with one (1) sensor ceiling mounted 10 feet above the floor.
 - b. Sensor shall be capable of detecting motion in a warehouse aisle 10 feet wide and 60 feet long, when mounted 14 feet above the floor; or 100 feet long when mounted 22 feet above the floor.
 - c. All sensors shall be capable of being wired in a master-slave configuration to extend the area of coverage.
 - 4. Sensors shall be equipped with an auxiliary dry contact for BMS occupied/unoccupied control.
- B. Vacancy Sensors
 - 1. Same as occupancy sensors listed above.
 - 2. The occupancy/vacancy sensor shall be programmed to operate as an occupancy sensor (automatic "ON" and automatic "OFF" functionality) or a vacancy sensor (manual "ON" and automatic "OFF" functionality.)
 - 3. Sensors shall be equipped with an auxiliary dry contact for BMS occupied/unoccupied control.
- C. Daylight Sensors

- 1. The daylight sensor shall have a 1-10V dimming functionality to auto calibrate a space for daylight harvesting operation when dimming is indicated on the Contract Documents.
- 2. When dimming is not required, sensors shall be switching type for ON/OFF control.
- 3. All sensors located in corridors or large spaces shall be dual relay type.
- 4. Ceiling sensor shall be provided with wall station to all user control.
- 5. Line voltage shall be either 120 or 277 volts.
- 6. Sensor shall be equipped with an auxiliary dry contact for BMS occupied/unoccupied control.

D. Time Clocks

- 1. Provide solid state, programmable type time clock with alphanumerical display complying with UL917.
- 2. The control shall have 24 hour, 365 day, or astronomic capability with 128 events available. It shall also have 4 user-definable durations and duty cycle lengths plus automatic daylight savings time and leap year adjustments. Control shall have remote override capabilities (timed, toggle, or enable type.) Control shall have keyboard override until overridden again or until next event is reached. It shall be capable of switching loads based on user-definable temperature and light levels with 32 events available. Control shall have momentary (latching relay) capability and shall have astonomic features plus 30 definable holidays and 6 pre-programmed holidays. Wiring terminals shall have the capability to accommodate #8 AWG wire.
- 3. Control shall be housed in a NEMA 3R enclosure with clear-view cover and shall be lockable to guard against vandalism or tampering.
- 4. Rated for 120V or 277V as indicated on lighting circuiting Contract Documents.

E. Photocells

- 1. Provide time-delay relays that fail in the "ON" position, factory set to turn light unit "ON" at 1.5 to 3 foot candles, "OFF" at 4.5 to 10 foot candles with 15 second minimum time delay. Provide directional lens in front of the photocell to prevent fixed light sources to cause turnoff.
- 2. Units shall be twist lock complying with NEMA C136.10, with base.



- 3. Sensor devices: Each sensor employs photo diode technology to allow linear response to daylight within illuminance range.
 - a. Exterior lighting: Hooded sensor, horizontally mounted, employing flat lens, and working range 1-10 footcandles in 10 percent increments. Entire sensor shall be encased in optically clear epoxy resin.
 - b. Indoor Lighting: Sensor with Fresnel lens providing for 60 degree cone shaped response area to monitor indoor lighting levels.
 - c. Skylights: Sensor with translucent dome with 180-degree field of view and responds to ranges of 1,000-10,000 footcandles.
- F. Sensor Power Supplies
 - 1. Provide power supplies as required to meet the design indicated on the Contract Documents.
 - 2. The power supplies shall be integrated, self-contained unit consisting internally of an isolated load switching control relay and a power source to provide low voltage power.
 - 3. Wiring between sensors and power packs shall be Class 2, No. 18 AWG stranded, Teflon jacketed cable. All line voltage conductors shall be installed in conduits.
 - 4. Control module shall be available to accept 120V or 277V line voltages.
- G. Relays
 - 1. Provide auxiliary SPDT relay contacts for each detection zone.
- H. Conductors and Cables
 - 1. Power Wiring to the Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG, installed in conduit.
 - 2. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 24 AWG.
 - 3. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG.

2.2 MANUFACTURERS

- A. Lutron
- B. Watt Stopper/Legrand
- C. Leviton



- D. Eaton Controls
- E. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

- A. Coordinate device layouts and installation with all other adjacent devices and any wall or ceiling obstructions prior to any work.
- B. Install and aim sensors in locations to achieve not less than 90% coverage of the areas indicated. Do not exceed coverage limits specified in the manufacturer's written instruction.
- C. Fastenings: Securely fasten the devices into the outlet boxes and attach appropriate plates.
- D. All power packs shall be installed in accessible locations.
- E. All devices shall be flush mounted and level.

3.3 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports.
 - 1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance and requirements.
 - 2. Operational Test: Verify actuation of each sensor and adjust time delays.
- B. Remove and replace lighting control devices where test results indicate that they do not comply with the specified requirements.
- C. Additional testing and inspecting, at the Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- D. All devices shall be provided with identification as indicated in the identification specification section.

3.4 CLEANING

A. Clean equipment and devices internally and externally using methods and materials recommended by the manufacturer and restore any damaged finishes.



3.5 SERVICE AND SUPPORT

- A. Startup and Programming
 - 1. Provide a factory-certified field service engineer to visit the site to ensure proper system installation and operation under the following parameters:
 - a. Qualifications for factory-certified field service engineer:
 - 1) Minimum experience of two (2) years instructing in the electrical/electronic field.
 - 2) Certified by the equipment manufacturers on the systems installed.
 - b. Perform site visits upon completion of the lighting control systems, installation, and;
 - 1) Verify connections and locations of all control devices.
 - 2) Verify systems operation control by control, zone by zone.
 - 3) Verify proper integration of the manufacturers' interfacing equipment.
 - 4) Obtain sign-off on all system functions.

3.6 WIRING INSTALLATION

- A. Wiring Method: Minimum conduit size shall be ³/₄ inch.
- B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and non-power-limited conductors according to conductor manufacturer's written instruction.
- C. Size conductors according to the lighting control device manufacturer's written instructions, unless otherwise indicated.
- D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in the junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.7 OPERATIONS AND MAINTENANCE MANUALS

- A. Include interconnection wiring diagrams of the complete field installed system with identified and numbered, system components and devices.
- B. Include operation and maintenance manuals for equipment and devices, including sensors, power supplies, and other equipment furnished.
- C. Include recommended preventive maintenance procedures and materials.
- D. Include systems descriptions, set points, and controls settings and adjustment.
- E. Include inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.



END OF SECTION 26 09 23



SECTION 26 24 16 PANELBOARDS

PART 1 - GENERAL

1.1 **RELATED DOCUMENTS**

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 DESCRIPTION

A. Provide all panelboards as specified herein and in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Panelboards.
- B. Circuit Breakers.
- C. Surge Protective Devices (SPD)

1.4 SUBMITTAL PROCEDURES

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".
- B. Shop Drawings
 - 1. Submit manufacturer's data, including main devices and lug sizes; branch circuit device sizes and arrangement; bus ampacities; voltage, ampere, withstandability and short circuit rating of the panelboard and overcurrent protective devices; dimensions and construction; gutter and backbox dimensions; nameplate and legend; protective coating; and all pertinent details of the panel, enclosure, cover, and method of securing cover and lock.
 - 2. Include fully detailed and dimensioned plan elevations of each panel at a minimum of ¹/₄" scale.
 - 3. Submit plans indicating maximum dimensions for panelboards including clearances between the panelboards and adjacent surfaces and other items to meet the NEC. Contract Documents indicate



maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

- 4. Submit wiring diagrams for all panelboards showing all connections to incoming and outgoing feeders.
- C. Product Data
 - 1. Submit manufacturer's catalog data for all circuit breakers and switch assemblies.
 - 2. Submit certification of U.L. compliance to integrated short circuit withstand requirements.
 - 3. Seismic restraint calculations and certificates. Panels shall be fabricated and tested in accordance with IEEE 344 to withstand seismic forces defined in the specifications.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and recommendations of the following:
 - 1. Panelboards:
 - a. U.L. Standards #50 and #67.
 - b. Federal Specification W-P-115A Type II, Class 1.
 - c. NEMA Standard PB-1.
 - d. CSA Standard C22.2 No. 29-M.
 - e. NFPA 70
 - 2. Circuit Breakers:
 - a. U.L. Standard #489.
 - b. Federal Specification W-C-375B
 - c. NEMA Standard AB-1.
 - d. CSA Standard C22.2 N. 5-M91.
 - 3. Ground Fault Circuit Interrupters (GFCI):
 - a. UL 943.
 - 4. Testing Agency Qualifications



a. Member company of NETA and NRTL

PART 2 - PRODUCTS

2.1 PANELBOARDS

- A. Provide panelboards consisting of an assembly of branch circuit switching and protective devices (circuit breakers, switch and fuse units, or combination thereof) mounted inside a dead front enclosure. All panelboards shall be door-in-door construction. Provide the number and size of these branch circuit devices as indicated by the circuiting, on the Contract Drawings, and in the Schedules. Locations of circuit breakers shall be as indicated in the schedules.
- B. Rate equipment for continuous operation under the following conditions unless otherwise noted:
 - 1. Ambient temperature not exceeding minus 22°F to plus 104°F.
 - 2. Altitude not exceeding 6,600 feet.
- C. Provide the following modifications and additional equipment as shown on the Contract Drawings:
 - 1. Main circuit breakers.
 - 2. Ground fault circuit interrupting (GFCI) circuit breakers.
 - 3. Oversized gutters.
- D. Interiors
 - 1. Provide a rigid removable assembly of copper bus bars and interchangeable bolted branch circuit devices.
 - 2. Material: Hard-drawn copper, 98 percent conductivity.
 - 3. Copper bus bars shall have sufficient cross-sectional area to provide a current density of 1000A per square inch.
 - 4. Bus bars shall be sized per NYC Electrical Code Section 408.60(E).
 - 5. Bus bars drilled to permit branch circuit devices of all sizes and number of poles to be interchangeable and installed in any spare space of sufficient size, without disturbing adjacent units; without removing main bus or branch circuit connectors and without machining, drilling, or tapping in the field.
 - 6. Bus shall be arranged in sequence or distributed phasing so that a multi-pole circuit breaker can replace any group of single circuit breakers of the same size.
 - 7. Provide full-size neutral bus in each panelboard, unless otherwise noted.

- 8. Provide ground bus in each panelboard. On 208Y/120 volt panelboards provide isolated ground bus when served from a feeder that includes an isolated ground conductor. Each isolated ground bus shall be capable of terminating one (1) conductor per panelboard pole position minimum.
- 9. Bus bars shall be designed, supported and braced for a minimum short circuit equal to the short circuit interrupting rating of the panelboard as described on the Contract Documents.
- 10. Bus bars shall be sized to limit the temperature rise within the panelboard to 50°C over a 40°C ambient temperature.

E. Enclosure

- 1. Enclosure shall be code gauge hot zinc dipped galvanized steel box, in accordance with UL 50 requirements.
- 2. Provide a bolt-on ground connector to inside of enclosure.
- 3. Enclosure shall be flush mounted in finished areas and where indicated. Enclosure shall be surface mount elsewhere.
- 4. Gutter Extension and Barrier: Same gauge and finish as the panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.

F. Front

- 1. Doors shall be provided on all lighting and power panels.
- 2. Doors shall be heavy code gauge galvanized steel as required to maintain panel face flat.
- 3. Front shall be held closed with trim clamps.
- 4. Front door frame shall be hinged with captive screws. Circuit breaker section door shall be hinged.
- 5. Provide as-built typewritten directory for total number of poles. Install behind plastic transparent protective cover on the panel frame.
- 6. Provide approved lock. All panels shall be keyed alike. Furnish four (4) sets of matching keys to the Commissioner.
- 7. Provided welded angle rest at the bottom of the door to facilitate cover installation.
- 8. Doors over 48" in height shall have auxiliary fasteners at top and bottom of door in addition to lock and catch.
- 9. Enclosure shall be factory finished in ANSI 61 gray enamel or two (2) coats of air-drying lacquer over a rust inhibiting primer.
- G. Terminal Lugs

- 1. Main lugs shall be located properly at top or bottom, depending where main feeder enters.
- 2. Lugs shall be rated for 75°C terminations.
- H. Electrical Ratings
 - 1. Panelboards shall be rated 208Y/120 volts, 4 wire, full neutral with ampacities as indicated on the Contract Drawings (unless otherwise noted).
 - 2. Panelboards shall be fully rated for the available short circuit current indicated on the Contract Drawings. Each panelboard, as a complete and finished product, shall receive a single U.L. approved integrated equipment rating by the manufacturer. The integrated equipment short-circuit rating shall certify that all equipment is capable of withstanding the thermal and magnetic stress of a fault equal to the value specified on the Contract Drawings. Such rating shall be established by actual tests by the manufacturer on similar equipment. This certification shall be permanently affixed to each panelboard.
 - 3. Where indicated, provide panelboards having a "service entrance" Type U.L. label with neutrals factory bonded to the frame or enclosure.
- I. Circuit Breaker Devices
 - 1. Circuit breakers shall be plastic molded case bolt on type with a completely sealed enclosure and toggle type operating handle. Trip ampere rating and "ON/OFF" indication shall be clearly visible. Plug-in type circuit breakers shall not be permitted.
 - 2. Circuit breakers shall be thermal-magnetic trip-free, trip-indicating, quick-make/quick-break, with inverse time delay characteristics. Single-handle and common tripping multi-pole breakers shall be provided.
 - 3. Provide with silver alloy contacts with auxiliary arc-quenching devices.
 - 4. Interrupting capacities shall match the ratings of the existing panels being replaced. As a minimum, 208Y/120 volt devices shall be not less than 10,000 AIC; 480Y/277 volt devices shall not be less than 14,000 AIC; and 42,000 AIC interrupting capacity for distribution style panels.
 - 5. Provide main breakers in panels served from transformers unless separate transformer secondary protection is provided. Main circuit breakers shall be provided in the first section only when multi-section panelboards are provided.
 - 6. Each breaker or space unit shall be provided with an individual number.
 - 7. Provide handle padlocking device for designated breakers.
 - 8. For HVAC equipment provide U.L. listed "HACR" type devices.
- J. Ground Fault Circuit Interrupters (GFCI)
 - 1. Ground fault circuit interrupter branch circuit breakers shall be provided as indicated on the Contract Drawings. Circuit breakers shall be circuit interrupting which will operate manually for normal



switching functions and automatically under overload, short circuit, and 0.005 amp line-to-ground fault conditions. The operating mechanism shall be entirely trip-free so that contact cannot be held closed against an abnormal overcurrent, short circuit, or ground fault condition. The device shall be bolt-on type with insulated case construction and shall be interchangeable with standard single pole breakers utilized in the panelboard.

2.2 MANUFACTURERS

- A. Electrotech
- B. All City Switchboard
- C. Lincoln Electric.
- D. General Electric
- E. Square 'D'
- F. Eaton
- G. Siemens
- H. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

- A. All panels shall be mounted at a maximum height of six feet six inches to the top disconnect switch or circuit breaker unless otherwise noted.
- B. Surface type panels shall be mounted a minimum one (1) inch off the wall on channels.
- C. Feed-through panels shall be connected to a main feeder by insulated parallel gutter taps. Full-size tap shall be provided for two (2) or more panels on a common feeder.
- D. Where panels are flush mounted, the fire integrity of the wall in which it is installed shall be maintained. Utilize additional fire rating equipment to maintain wall rating.
- E. Branch circuit conductors shall be neatly arranged and shall be tied together in each gutter with nylon premanufactured cable ties at four inch intervals.
- F. All knockouts removed and not utilized shall be plugged.



- G. Provide nameplate and fill out as-built typewritten panel directory.
- H. Provide grounding and bonding jumpers per the grounding specification section herein and as indicated on the Contract Drawings.
- I. All branch circuit conductors, within panelboards, shall be labeled with respective circuit number.
- J. Stub three (3)-1" empty conduits from each recessed panelboard into the ceiling cavity above for future use.
- K. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

3.3 TOUCH UP AND CLEANING

- A. All backboxes shall be vacuumed clean of debris after installation and prior to final payment.
- B. Scratch marks, etc., shall be touched up with matching paint.

3.4 OBSERVATIONS

A. Panel fronts shall be removed when directed by the Commissioner for observation and reinstalled immediately thereafter the observations.

3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Retain a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- B. Do not deliver or install equipment until spaces are enclosed and weathertight.

3.6 SPARE MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Keys: Two (2) spares for each type of panelboard cabinet lock.
 - 2. Circuit Breakers Including GFCI and Ground Fault Equipment Protection (GFEP) Types: Two (2) spares for each panelboard.

3.7 WARRANTY

A. Provide a two (2) year warranty from the date of substantial completion.

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 related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 WORK INCLUDED

- A. Switches.
- B. Wall Plates.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".

1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. Switches.
 - a. NEMA Standards WD-1 and WD-6.
 - b. Federal Specification Standard WS-896E.
 - c. U.L. 20.
- C. Obtain each type of wiring device through a single manufacturer, where available.



PART 2 - PRODUCTS

2.1 SWITCHES

- A. Switches shall be commercial specification grade, flush mounting, quiet-operating AC type, decora rocker type, heat-resistant plastic housing and self-grounding metal strap. Provide silver alloy contacts. Switches shall be rated 20A at 120-277V and capable of full capacity on all lamp loads. Switches shall be designed for side or back wiring with up to No. 10 AWG wire. Switches shall be rectangular (decorator) style in all areas.
- B. Provide single-pole, double-pole, 3-way, 4-way, pilot or keyed type switches, as indicated on the Contract Drawings or required.
- C. Switch with Pilot Light: Switches indicated with an illuminated rocker switch in the "OFF" position for visual load monitoring shall be provided as indicated on the Contract Drawings.
- D. Provide 3-position, momentary contact, center "OFF" type switches, which control lighting by way of a low voltage lighting control relays as indicated on the Contract Drawings.
- E. Provide illuminated type switches controlling lighting connected to emergency power illuminated when switches are in the "OFF" position.
- F. The color of all devices shall be selected by the Commissioner.
- G. Manufacturers
 - 1. Switches
 - a. Leviton
 - b. Hubbell
 - c. Bryant
 - d. Pass & Seymour/Legrand
 - e. Lutron
 - f. Approved equal

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 SWITCHES

A. Install all switches vertically with the "ON" position on top, unless noted or specified otherwise.



- B. Where switches are indicated near doors, corner walls, etc., install not less than two (2) inches and not more than twelve (12) inches from the trim.
- C. Carefully coordinate locations of switches to insure locations are at the strike side of doors.
- D. Furnish and install an engraved legend for each switch that controls motors, equipment systems, etc., not located within the sight of the controlling switch.
- E. Install wall dimmers to achieve indicated rating after derating for ganging according to the manufacturer's written instructions.
- F. Install unshared neutral conductors on the line and load sides of the dimmers according to the manufacturers' written instructions.

3.3 RECEPTACLES

- A. Unless otherwise noted, mount receptacles vertically with U-shaped ground position at the top.
- B. Coordinate device layouts and installation with all other adjacent devices and any wall obstruction prior to any work.

3.4 GROUND FAULT CIRCUIT INTERRUPTERS (G.F.C.I.)

- A. Swab all conduits and outlet boxes clear of moisture.
- B. Do not combine G.F.C.I. protected circuits with other circuits in the same raceway; only one (1) G.F.C.I. circuit per raceway.
- C. Do not substitute G.F.C.I. circuit breakers for G.F.C.I. receptacles.
- D. All G.F.C.I. receptacles shall be installed in a readily accessible location per the NYCEC.

3.5 DEVICE GROUNDING

- A. Provide a No. 12 AWG grounding conductor from the device grounding terminal to the panelboard ground bus.
- B. Provide a No. 12 AWG grounding conductor from the device grounding terminal to the outlet box.

3.6 INSTALLATION

- A. All devices shall be flush-mounted except as otherwise noted on the Contract Documents.
- B. Locations
 - 1. Comply with layout drawings for general location.
 - 2. Relocate outlets obviously placed in a location or manner not suitable to the room finish.



- 3. Avoid placing outlets behind open doors.
- C. Mounting heights and positions are specified in the Special Conditions specification section and as indicated on the Contract Documents. Commissioner direction takes precedence over heights and positions specified in the electrical specifications.
- D. Ganging of Switches: Provide steel barriers between ganged 277 volt switches of different phases between all ganged dimmers; and between normal and emergency sources.
- E. Fastening: Securely fasten the devices into the outlet boxes and attach appropriate wall plates.
- F. Testing
 - 1. After installing wiring devices and after circuiting has been energized, test for proper polarity, ground continuity, and other requirements indicated on the Contract Documents.
 - 2. Test GFCI operation with local fault simulation according to the manufacturer's instructions.
 - 3. Replace all malfunctioning devices with new and retest as specified above.
- G. All devices shall be provided with identification as indicated in the identification specification section.

3.7 CLEANING

A. Clean equipment and devices internally and externally using methods and materials recommended by the manufacturer and restore any damaged finishes.

3.8 STOCK ITEMS

A. Provide five (5) spare devices for each type used on the project.

3.9 SERVICE AND SUPPORT

- A. Startup and Programming
 - 1. Provide a factory-certified field service commissioner to visit the site to ensure proper system installation and operation under the following parameters:
 - a. Qualifications for factory-certified field service commissioner:
 - 1) Experience in the electrical/electronic field.
 - 2) Properly instructed by the equipment manufacturers on the systems installed.
 - b. Perform site visits upon completion of the wiring device systems, installation, and;
 - 1) Verify connections and locations of all control devices.
 - 2) Verify systems operation control, zone by zone.



- 3) Verify proper integration of the manufacturers' interfacing equipment.
- 4) Obtain sign-off on all system functions.

END OF SECTION 26 27 26



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SECTION 26 28 13 FUSES (600 V AND LESS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 WORK INCLUDED

- A. Fuses and Accessories.
- B. Spare Fuse Cabinets.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".

1.4 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest recommendations of the following:
 - 1. U.L. Standard #198.
 - 2. U.L. Standard #977.
 - 3. NYCEC, Article 100.
 - 4. ANSI
- C. All fuses shall be the same type within a piece of equipment.



PART 2 - PRODUCTS

2.1 MATERIALS

- A. Mains, Feeders and Branch Circuits
 - 1. Circuits 601 to 6000 amperes shall be protected by Class L, Bussmann System 300 Low Peak Yellow Time-Delay fuses, type KRP-C (amp) SP, Thomas & Betts, Square D or approved equal with 200,000 RMS symmetrical interrupting current rating.
 - 2. Circuits 0 to 600 amperes shall be protected by Class RKI, Bussmann System 300 Low Peak Yellow dual element fuses, type LPN-RK (amp) SPI, Thomas & Betts, Square D or approved equal for 250 volt applications and LPS RK (amp) SPI for 600 volt applications, with 200,000 RMS symmetrical interrupting current rating. Provide open fuse indicator.
 - 3. A minimum 2:1 ratio must be allowable between the ampere rating of the main fuse and that of the feeder fuse, and between the feeder fuse and branch circuit fuse to obtain selective coordination and minimize switch size.
 - 4. Metal end caps of fuses rated 61 through 600 amperes shall be electrically connected to the fuse blades to facilitate voltage testing during OSHA required lock out/tag out procedures.
 - 5. All fuses shall be of the same manufacturer.
- B. Motor Protection
 - 1. All the individual motor circuits shall be protected by class RK1, Class J, or Class L time delay type fuses. Motors under 10 HP may utilize Class CC fuses with blown indicators.
 - 2. Fuse sizes for motor protection shall be appropriate for starting current of the motor.
- C. Spares: Upon completion of the project, provide the Commissioner with spare fuses as indicated below:
 - 1. 10 percent (minimum of 3) of each type and rating of installed fuses shall be supplied as spares.
 - 2. Spare fuse cabinets shall be provided to store the above spares. The cabinet shall be constructed of minimum .080 heavy duty aluminum, with baked ASA61 gray enamel paint. The wall mounted cabinet door shall be equipped with a locking handle and cylinder lock. Mounting holes with key slots 16 inches on center shall be provided.
 - 3. Spare fuse cabinets shall be provided as a minimum in the following locations:
 - a. Each main normal and emergency rooms.
 - b. Each major mechanical equipment room.
- D. Labels

1. "Low-Peak Yellow" or equivalent notice labels to alert the end user of the engineered level of protection of the electrical equipment shall be field installed by the Electrical subcontractor. They shall be obtained from the fuse manufacturer, marked with the proper fuse rating per the specifications and placed in a visible location in the enclosure.

2.2 MANUFACTURERS

A. Fuses

- 1. Cooper Bussmann
- 2. Mersen
- 3. Littelfuse
- 4. Approved equal
- B. Spare Fuse Cabinet
 - 1. By fuse supplier.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 GENERAL

- A. Do not install fuses until equipment is ready to be energized.
- B. Provide all fuses except as otherwise noted. All fuses shall be new.
- C. Replace any fuses which are not functioning.
- D. Labels: Install appropriate label supplied the by fuse manufacturer within each switch, motor starter, or panelboard door, or at location next to the fuse clips.
- E. Coordinate fuse ratings with HVAC, refrigeration, and plumbing equipment limitations for maximum fuse size prior to any installation.
- F. Arrange fuses so rating information is readable without removing fuses.

END OF SECTION 26 28 13



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SECTION 26 28 16 DISCONNECT SWITCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 DESCRIPTION

A. Provide disconnect switches in accordance with the Contract Documents.

1.3 WORK INCLUDED

- A. Safety Switches (Fused and Non-Fused Types).
- B. Manual Control Switches.

1.4 SUBMITTAL PROCEDURES

- A. Refer to DDC General Conditions 01 33 00 "Submittal Procedures".
- B. Product Data
 - 1. Submit manufacturers' data for all disconnect switches, including dimensional data, ratings, fuse ratings and types, and cable terminal sizes.
 - 2. Identify motor or equipment served by each switch; indicate nameplate inscription.

1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements."
- B. Except as modified by governing codes and by the Contract Documents, comply with the latest applicable provisions and latest applicable recommendations of the following:
 - 1. U.L. Standards #98.

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- 2. NEMA Standard KS1.
- 3. U.L. 20 and Federal Specification Test Standards for Toggle Switches.

PART 2 - PRODUCTS

2.1 SAFETY SWITCHES

- A. Provide heavy-duty, horsepower rated, single-throw knife switch with quick-make/quick-break mechanism, capable of full load operations. Switches shall meet NEMA and U.S. Government specifications for Class A switches.
- B. Provide with contact arc-quenching devices, such as magnetic blowouts or snuffing plates. Provide selfaligning switchblades with silver alloy contact areas, designed so that arcing upon making and breaking does not occur on final contact surfaces. Provide with high-pressure, spring-loaded contact. Switch parts shall be mounted on high-grade insulating base.
- C. Enclosure: Shall be NEMA 1 with hinged door and defeatable interlock when switch is in "ON" position, able to be padlocked in "ON" and "OFF" positions. Provide NEMA 3R (rain-tight) enclosure for exterior installations and NEMA 12 in warehouse and mechanical rooms.
- D. Size, fusing and number of poles shall be provided as shown on the Contract Documents or as required. Where fused, the switch shall be provided with U.L. listed rejection feature to reject all but Class R fuses. Provide horsepower rated switch to match motor load if size is not shown. Provide 3 pole plus solid neutral switches on four wire circuits and 3 pole switches on all other circuits, unless otherwise noted.
- E. Lugs shall be U.L. listed for copper conductors and be front removable.
- F. Provide six (6) pole switches for connection to motors with the following starter types:
 - 1. Non-reversing two step part winding star connected.
 - 2. Non-reversing full voltage two speed separate winding.
 - 3. Non-reversing full voltage two speed single winding.
 - 4. Where otherwise required.
- G. Provide auxiliary contacts for switches where required or where indicated on the Contract Documents.
- H. Viewing Windows Provide viewing windows for all safety switches to provide blade visibility when the switch door is closed.

2.2 TOGGLE TYPE MANUAL CONTROL SWITCHES

A. Provide switches which operate at their full rating with fluorescent, tungsten, and resistance loads and at 80% of their rated capacity with motor loads.

- B. Switches shall be heavy duty type and shall have:
 - 1. Arc-resisting bodies.
 - 2. Slow make-and-break mechanisms.
 - 3. Silver alloy contact buttons.
 - 4. Side or back wiring with up to No. 10 AWG solid conductors.

2.3 MANUFACTURERS

- A. Safety Switches
 - 1. Square 'D'
 - 2. Eaton/Cutler Hammer
 - 3. General Electric
 - 4. Siemens
 - 5. Approved equal
- B. Toggle Type Manual Control Switches
 - 1. Square D
 - 2. Eaton/Cutler-Hammer
 - 3. General Electric
 - 4. Siemens
 - 5. Approved equal

PART 3-EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.


3.2 APPLICATIONS

- A. Provide each motor over 1/2 HP with a horsepower rated safety-type disconnect switch.
- B. Provide each piece of equipment utilizing multi-phase power with a safety-type disconnect switch.
- C. Provide each piece of equipment utilizing single-phase power but protected at over 30 amperes with a safetytype disconnect switch.
- D. Equipment other than that mentioned above shall utilize toggle type manual control switch properly sized and rated for equipment it disconnects.
- E. Factory installed disconnect switches may be used to satisfy the above requirements.
- F. Disconnect switches serving the fire alarm system shall be painted RED.

3.3 MOUNTING

- A. Provide connections and wiring to and from each disconnect switch.
- B. Disconnect switches shall be mounted on adjacent wall or from the floor with independent supports. Switches shall not be mounted on the equipment housings.
- C. Switch enclosure shall be rigidly mounted and with proper alignment on building structure or steel supports with centerline of operating handle not more than 6 feet above finished floor unless otherwise required. Steel supports fabricated from standard rolled structural steel shapes or framing channel shall be used to provide one-inch separation between enclosure and building wall for vertical flow of air.
- D. Fuses shall be used as specified in this Division.
- E. Completed installation shall contain no extraneous openings.
- F. All viewing windows shall be cleaned.

3.4 **IDENTIFICATION**

A. Provide nameplate identification of all disconnect switches in accordance with these specifications.

3.5 FIELD TESTING

- A. The following field acceptance tests shall be performed and test report submitted:
 - 1. Compile a comprehensive listing of building motor loads, including voltage, phase, HP, FLA, and location.
 - 2. Compare equipment nameplate data with the Contract Drawings and specifications.
 - 3. Command inductive motor loads to start through respective manual or computer controls.

- 4. With individual motor loads running break power to the load with respective disconnect switch and/or safety stop.
- 5. Wait until motor loads come to a complete stop.
- 6. Re-connect power to the motor load with the respective disconnect switch and/or safety stop.
- 7. Compare fuse size with motor full-load current rating to verify correct sizing.
- 8. Verify that no visible or audible arcing is present.

END OF SECTION 26 28 16



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SECTION 26 50 00 LUMINAIRES AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 DESCRIPTION

A. Provide luminaires and accessories in accordance with the Contract Documents.

1.3 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Lamps shall be of the same manufacturer.
- C. Drivers and power supplies shall be of the same manufacturer for each fixture type.
- D. Equipment shall be certified for use in the City of New York shall meet the NYC Energy Code, NEC and NYC Building Code ordinances.

1.4 INSTALLER QUALIFICATIONS

- A. Any company specializing in performing work of the type specified in this section must:
 - 1. Have a minimum of three (3) years of documented experience
 - 2. Be properly trained by system manufacturer

1.5 STANDARDS

- A. Ballasts: ANSI C82.2 and C82.11, FCC CFR 47 Part 18, Public Law 100-357, and UL 935 and 1029.
- B. Cords: UL 62.

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- C. Exit Signs and Emergency Luminaires: NFPA 70 and UL 101 and 924.
- D. Lamp Holders and Starters: UL 496, 542, and 879.
- E. Luminaires: UL 57, 676, 1570, 1571, and 1572.
- F. Photometric data: Independent testing laboratory certified.

1.6 SUBMITTAL PROCEDURES

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".
- B. Manufacturer's product data sheets for each luminaire indicating luminaire type, dimensions, driver quantity and type, module quantity and type, photometric data, materials, finishes, accessories, voltage, input watts, CFM data, and photographic image of luminaire.
- C. Scaled and dimensioned detail plan and elevation drawings of custom and continuous row type luminaires including joints, mounting points and type, power connection location(s), and emergency or separate switching configurations.
- D. Seismic restraint calculations.
- E. Manufacturer's product data sheets for each LED module specified. Include the following:
 - 1. Module wattage
 - 2. Modules voltage where applicable
 - 3. Rated lamp life
 - 4. Mean lumen output
 - 5. Correlated Color Temperature
 - 6. Color Rendering Index (CRI)
- F. Manufacturer's data for LED lighting systems for each luminaire type. Including:
 - 1. Luminaire dimensions
 - 2. Mounting
 - 3. Power supply type and maximum remote mounting distance
 - 4. System wiring diagram, differentiating between manufacturer-installed and field-installed wiring
 - 5. Control diagrams



PART 2 - PRODUCTS

- 2.1 MANUFACTURERS
 - A. Focal Point
 - B. Axis
 - C. Selux
 - D. Elliptipar
 - E. Fluxwerx
 - F. Or approved equal

2.2 SOLID STATE LIGHTING FIXTURES

- A. Housing, where applicable:
 - 1. Steel bonderized or equal rust protected, or aluminum, rigid construction. Minimum gauge thickness shall be as follows:
 - a. Interior locations: No. 20 gauge steel, No. 16 gauge aluminum.
- B. Finish:
 - 1. Baked enamel finish (except when otherwise specified).
 - 2. Concealed interior surfaces (this applies to interior hardware, circuit boards, etc.) matte black.
 - 3. Concealed exterior surfaces: matte black.
 - 4. Visible surfaces: color and texture as specified below for each fixture type or as selected.
 - 5. Exterior fixture finish: refer to "Exterior Fixture Finishes" on Contract Drawings.
- C. Light Emitting Diode (LED) requirements:
 - 1. Correlated color temperature (CCT) for phosphor-coated white LEDs must have one (1) of the following designated CCT's and fall within the following binning standards:
 - a. 2700K defined as 2725 +/- 145K
 - b. 3000K defined as 3045 +/- 175K
 - c. 3500K defined as 3465 +/- 245K
 - d. 4000K defined as 3985 +/- 275K

- 2. Color spatial uniformity shall be limited to variations in chromaticity for different directions (i.e. changes in viewing angle) within 0.004 from the weighted average point on the CIE 1976 (u',v') diagram.
- 3. Color maintenance shall be limited to a maximum change in chromaticity of 0.007 on the CIE 1976 (u',v') diagram over the lifetime of the product.
- 4. Color rendering index (CRI)
 - a. Color rendering index to be determined using ANSI C78.377-2008 and applicable IESNA standards.
 - b. Laboratory tests must be produced using specific module(s)/array(s) and power supply combination that will be used in production.
 - c. Manufacturers must provide a test report from a laboratory accredited by National Voluntary Laboratory Accreditation (NVLAP) or one of its Mutual Recognition Agreements (MRA) signatories
- 5. Lumen Depreciation
 - a. Lumen depreciation to be measured using IESNA LM-80-08 standard for IES approved method of measuring lumen maintenance of LED light sources.
 - b. Phosphor coated white LED module(s)/array(s) shall deliver at least 70% of initial lumens for a minimum of 35,000 hours when installed in-situ and operated at 100% output and the maximum specified operating temperature.
 - c. Colored LED module(s)/array(s) shall deliver at least 50% of initial lumens for a minimum of 35,000 hours when installed in-situ and operated at 100% output and the maximum specified operating temperature.
- D. Luminaire Efficacy:
 - 1. Luminaire efficiency shall be measured using IESNA LM-79-08 standard for electrical and photometric measurements of solid state lighting products.
 - 2. Manufacturer shall provide published luminaire efficacy, which is defined as luminaire light output divided by luminaire input power measured in a 25 degree Celsius environment. Efficacy shall include power supply, thermal, optical, and fixture losses.
- E. Thermal Management:
 - 1. Solid state light fixture shall not exceed LED manufacturer's maximum junction temperature requirements when operated in-situ at fixture manufacturer's maximum ambient operating temperature and 100% light output.

- 2. Solid state light fixtures shall be thermally protected using one of more of the following thermal management techniques:
 - a. Metal core board
 - b. Gap pad
 - c. Internal monitoring firmware
- 3. Solid state lighting fixture housing shall be designed to transfer heat from the LED board to the outside environment.
- F. Power Supplies/Drivers:
 - 1. Power supply shall have a power factor of 0.90 or greater for primary application.
 - 2. Power supply input current shall have Total Harmonic Distortion (THD) of less than 20%.
 - 3. Power supply shall have a minimum operating temperature of minus 20 degrees Celsius or below when used in luminaires intended for outdoor applications.
 - 4. Power supply output operating frequency to be equal to or greater than 120 Hz.
 - 5. Power supply shall operate with sustained input variations of +/- 10% (voltage and frequency) with no damage to the driver.
 - 6. Power supply shall tolerate sustained open circuit and short circuit output conditions without damage and without need for external fuses or trip devices.
 - 7. Power supply output shall be regulated to \pm 5% across published load range.
 - 8. Power supply shall have a Class A sound rating.
 - 9. Power supply outputs shall have current limiting protection.
 - 10. Power supply shall operate LEDs at constant and regulated current levels. LEDs shall not be overdriven beyond the diode manufacturer's specified nominal voltage and current.
- G. Solid State Lighting Controls:
 - 1. Control interface to dimmable power supplies shall consist of one of the following:
 - a. Line Voltage Dimming. Controls to be rated for magnetic or electronic low voltage transformer operation.
 - b. Low voltage (0-10V) control. Controls to be compatible with either current sink or current source operation.
 - c. DMX control



- 2. Dimmable LED power supplies shall use pulse width modulation (PWM) to regulate power to LEDs
 - a. Dimmable power supplies shall have 12-bit or greater resolution to obtain flicker-free operation throughout the dimming range.
- H. System Installation:
 - 1. All hardwired connections to solid state lighting fixtures shall be reverse polarity protected and provide high voltage protection in the event connections are reversed or shorted during the installation process.
 - 2. All solid-state lighting fixtures (100% of each lot) shall undergo a minimum eight-hour burn-in test during manufacturing.
 - 3. In addition to requirements identified in Article 1.5 'Standards', solid state lighting installations shall be UL Listed as a low-voltage lighting system including, but not limited to, luminaire, power supply, controller, keypad, and wiring.
- I. Warranty:
 - 1. All luminaires, drivers, and controllers for solid state lighting systems shall be covered by a five-year warranty against defects in workmanship or material.

2.3 MATERIALS AND FABRICATION

- A. Luminaires shall be completely factory assembled and wired, and equipped with necessary modules, drivers, power supplies, wiring, shielding, reflectors, channels, lenses, and other parts necessary to complete the luminaire installation.
- B. Luminaire hardware shall be concealed. Weld exposed metal at joints, fill with weld material, grind smooth, and make free from light leaks. Weld ballast support studs, socket saddle studs, and reflector support studs to luminaire body; self-threading screws are not acceptable. Luminaires shall be designed for bottom relamping, unless otherwise noted.
- C. Construct luminaires with a minimum number of joints. Unexposed joints by shall be welded, screwed or bolted; soldered joints are not acceptable. Do not use self-tapping methods or rivets for fastening removable parts used to gain access to electrical components requiring service or replacement, or for fastening electrical components or their supports.
- D. Cast or extruded parts of luminaires shall be close grained and free from imperfections or discolorations, rigid, true to pattern, of ample weight and thickness, and properly fitted, filed, ground, and buffed to provide finished surfaces and joints free of imperfections.
- E. Housings for luminaires shall be designed to make electrical components easily accessible and replaceable, without removing the luminaire body from its mounting.



2.4 FINISHES

- A. Luminaire finishes shall provide a durable, wear resistant surface. Surfaces shall be chemically cleaned and treated with corrosion inhibiting (phosphating) material to assure positive paint adhesion. Exposed metal surfaces (brass, bronze, aluminum, etc.) and finished castings (except chromium plated or stainless steel parts) shall have an even coat of high grade methacrylate lacquer or transparent epoxy. Anodize exposed aluminum surfaces in a 20-minute bath for corrosion resistance. Sheet steel luminaire housings, and iron and steel parts which have not received phosphating treatment, or which are to be utilized in exterior applications, shall be zinc or cadmium plated, or hot dip zinc galvanized after completion of all forming, welding, and drilling operations.
- B. Screws, bolts, nuts, and other fastening or latching hardware shall be cadmium plated.
- C. Provide luminaires with a high temperature baked enamel coating of selected color and finish, unless otherwise noted. White baked enamel finished surfaces shall have a minimum reflectance of 86%, unless otherwise noted.
- D. Where the term "Custom Color" is used in the Luminaire Schedule and elsewhere in the contract documents, it indicates that the luminaire shall be factory painted to match a color chip provided by the Commissioner. Unless noted otherwise, each luminaire type identified as a custom color shall be considered to be a different color from other "Custom Color" luminaire types.

2.5 **REFLECTORS**

- A. Aluminum Reflectors:
 - 1. Reflectors and reflecting cones or baffles shall be fabricated from #12 aluminum reflector sheet, minimum 0.057 inches thick (15 gauge). Material shall be free of tooling marks, spinning lines, and marks or indentation caused by riveting or other assembly techniques. No rivets, springs, or other hardware shall be visible after installation.
 - 2. Reflectors and baffles shall be polished, buffed, and anodized (Alzak), with finish color as selected by the Commissioner.
- B. Painted Reflectors:
 - 1. Painted reflectors shall be formed before application of primer and paint. Reflectors and reflector bodies for luminaires with baked white enamel finish shall meet the following requirements and tests:
 - a. After 100 hours of exposure to fade-o-meter, reflectance shall be not less than 86%, and finish shall show no visible color change.
 - b. After 100 hours of exposure to 100% humidity at 100°F, (cook box test) finish shall show no blistering or other degraded effects.
 - c. After 150 hours of exposure to salt spray (20% sodium chloride) shall cause no breakdown of film.



2.6 LENSES, FACEPLATES AND TRIMS

- A. Plastic lenses shall be of virgin methyl methacrylate, unless otherwise indicated. Polystyrene lenses are not acceptable.
- B. Lenses, louvers, and other light diffusing components shall be contained in frames. Lenses shall be removable but positively held within the frames so that hinging or other motion of the frame will not cause the diffusing components to drop out.
- C. Faceplates on recessed luminaires shall open for access to the interior of the luminaire, serve as a ceiling trim, and positively held to the luminaire body by adjustable means that permit the faceplate to be drawn up to the ceiling as tight as necessary to insure complete contact of faceplate with the finished ceiling.
- D. Provide ceiling trims for rectangular recessed luminaires with mitered corners, continuously welded and smoothed before shop finishing. Lapping of trim metal is not acceptable.

2.7 LUMINAIRE WIRING

- A. Provide wiring between LED modules and drivers of same or heavier gauge than the leads furnished with the drivers and having same or higher insulating and heat resisting characteristics. Internal wiring of luminaires shall contain a minimum number of splices. Splices shall be made with suitable mechanical insulated steel spring type connectors.
- B. Wiring channels and wireways shall be free from projections and rough or sharp edges. Provide bushings at points or edges over which conductors pass.

2.8 EXTERIOR FIXTURES

- A. Provide fixtures designed and manufactured specifically for outdoor service. Make components, including nuts, bolts, rivets, springs, and similar parts, of corrosion resistant materials or of materials which will assure such resistance.
- B. Provide fixtures for use outdoors, or in areas designated as damp locations, which are suitably and effectively gasketed to prevent access of moisture into electrical components or enclosing diffusers, lenses or globes. Outdoor fixtures which are directly exposed to the elements shall be rated for wet locations. Fixtures which are aimed up, shall be approved for wet locations in this position.
- C. Metal parts of fixtures requiring painting, shall be painted with suitable weather and moisture-resisting paint equal to epoxy-based coatings.
- D. Provide anodized aluminum for aluminum parts of exterior fixtures which are not specified as requiring a painted finish.
- E. Installations shall be UL labeled as "Suitable for Wet Locations."
- F. Surfaces shall be prepared, primed and material applied in accordance with manufacturer's requirements.

- G. Supply pole luminaires with davit arms, brackets, pole hand-hole covers, base components, and all other accessories complete by specified manufacturer who will be responsible for proper fitting of all elements.
- H. Manufacturer will supply pole luminaire assembly to withstand a minimum of 100-mile-per hour winds with a 1.3 gust factor without permanent deflection.

2.9 ACCESSORIES

- A. Where utilized as raceways, luminaires shall be suitable for use as raceways. Provide feed through splice boxes where necessary.
- B. Provide installation and supporting hardware including stems, plates, plaster frames, hangers, and similar items, for support of luminaires for the ceiling construction in which they shall be installed. Provide plaster frames made of non-ferrous metal, or of steel that has been suitably rustproofed after fabrication.
- C. Provide fastening devices of a positive locking type, which do not require special tools to apply or remove them. Do not use tie wires in place of fastening devices.
- D. Attach reflectors to housing by means of safety chains to prevent reflectors from falling. No part of the chain shall be visible after installation.
- E. Provide a ceiling canopy for each stem. Canopy finish shall match stem finish.
- F. Provide stems (size verified in field) to extend the exit signs to be lowered such that the fixture bottom is equal to surrounding fixtures.
- G. Luminaires installed in air plenums shall be enclosed and gasketed.
- H. Provide additional feed points in pendant mounted luminaires connected to the emergency power system or provided with integral battery packs to accommodate the additional wiring.

2.10 EMERGENCY LIGHTING

- A. General
 - 1. Provide emergency lighting as required by referenced standards and indicated on the Contract Documents. The main function of emergency lighting is to direct building occupants safely out of the building in the event of an emergency.
 - 2. Connect emergency lighting to the emergency power distribution systems.
 - 3. Provide integral battery ballast power for emergency lighting where an emergency power distribution system does not exist. Provide all long-life batteries. High temperature, maintenance free, nickel-cadmium batteries are acceptable, however, lead-calcium type are not.
 - 4. All battery ballasts shall be capable of providing full illumination in emergency mode.
- B. Exit Signs

- 1. Exit signs shall have cast-aluminum housings and stencil edge-lit faces. Letters shall be red and 8" high. Light source shall be light emitting diodes (LED). Exit signs shall employ a diffuser lens for even illumination of letters. Products that exhibit "dots" or "hot spots" shall not be acceptable. Exit signs shall have internal sealed lead calcium maintenance free battery rated for 90 minutes.
- C. LED Battery Systems
 - 1. Emergency battery power supply suitable for installation remote from or in the driver compartment of the LED luminaire. Unit shall be capable of providing normal fixture operation in a switched fixture. Include "TEST" switch and "AC ON" indicator light capable of installation in the luminaire or remote from the luminaire. Power supply shall have self-test diagnostic feature.
 - 2. Emergency battery power supply shall be capable of operating the LED fixtures specified.
 - 3. Provide LED battery with the following:
 - a. Rated input and output voltage and wattages.
 - b. Temperature rating.
 - c. Illumination time (minimum 90 minutes)
 - d. Suitable for indoor and damp locations and for sealed and gasketed features.
 - 4. LED battery shall meet all associated UL ratings, including UL924.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 GENERAL

- A. Luminaire locations as indicated on the Contract Drawings are general and approximate. Verify exact location of luminaires with Commissioner prior to installation. Verify adequacy of clearance with other equipment such as ducts, pipes, conduit, or structural elements. Bring conflicts to Commissioner's attention before proceeding with work.
- B. Verify ceiling construction and furnish appropriate luminaire mounting supports, hardware, trim, and accessories for each luminaire.
- C. Install luminaires in mechanical equipment rooms after ductwork and piping installation. Locate and mount luminaires as indicated on the Contract Drawings unless mechanical equipment prohibits or makes it impractical to do so. In such cases, chain or wall mount luminaires so that serviceable equipment is illuminated.

- D. Luminaires shall be installed free of light leaks, warps, dents, or other irregularities. Light leaks are not acceptable.
- E. Install reflector cones, aperture plates, lenses, diffusers, louvers, and decorative elements of luminaires after completion of wet work, plastering, painting, and general clean up in the area of the luminaires.
- F. Provide final focusing and adjusting of adjustable lighting equipment. Focusing and adjusting shall be performed under the Commissioner's supervision after normal working hours.
- G. Parabolic luminaires shall be installed with mylar cover over louvers. Cover shall be UL listed for temporary lighting. Upon completion of work, remove mylar cover with white gloves.
- H. Visible hanging devices shall be finished to match the luminaire finish, unless otherwise noted. Suspended fixtures shall hang level and aligned when installed in rows.
- I. Provide fire rated enclosures around recessed luminaires that are installed in fire rated ceilings.
- J. Provide attachment devices, brackets, plaster rings, saddle hanger and tie bars made of formed, rolled, or cast metal shapes with the requisite rigidity and strength to maintain continuous alignment and support of installed luminaires.
- K. Luminaires mounted in suspended ceilings shall be attached to the main runners of the ceiling system with appropriate mounting hardware. Provide independent 450 slack cables from corners of luminaires to structure above.
- L. Equipment requiring access for service and maintenance shall be installed so that components requiring access are readily accessible.
- M. Immediately prior to occupancy clean reflectors, reflector cones, aperture plates, lenses, trim rings, faceplates, louvers, lamps and decorative elements.
- N. Replace defective modules and noisy or defective drivers.
- O. All fixtures shall be fully cleaned prior to occupancy.

3.3 FIELD QUALITY CONTROL

- A. Inspect each installed fixture for damage then replace damaged fixtures and components. Verify normal operation of each fixture after installation.
- B. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify normal transfer to battery power or emergency power source and retransfer to normal.
- C. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. Retest to demonstrate compliance with specification requirements where adjustments are made. Replace fixtures with damage or corrosion during warranty period.

END OF SECTION 26 50 00



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SECTION 28 31 00 FIRE ALARM LIFE-SAFETY SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following related documents apply to all required work for the project:
 - 1. The Contract Drawings.
 - 2. The Specifications.
 - 3. The General Conditions.
 - 4. The Addendum.
 - 5. The City of New York Standard Construction Contract.

1.2 GENERAL

- A. It is the intent of this section to provide expansion and modification to the existing fire alarm system to accommodate the needs of the building areas associated with the roof HVAC equipment installation to provide compliance with presently applicable codes.
- B. Unless otherwise noted or required by code or the manufacturer, all fire alarm equipment and devices (control modules, smoke detectors, etc.) shall match the existing building fire alarm system.

1.3 DESCRIPTION

- A. Provide necessary equipment and/or devices reprogramming of the existing building fire alarm system to meet the requirements of new work.
- B. Reprogramming of the base building fire alarm system to accept new device tie in shall be made by the original vendor.
- C. Interconnect to the existing fire alarm system to points identified by the building manager. Coordinate with building fire alarm system manufacturer and perform final tie-in of all devices under the supervision of the building fire alarm system vendor Edwards.

1.4 SMOKE DETECTION

- A. Provide addressable type duct smoke detectors.
- B. Activation of duct smoke detector will initiate the fire alarm following base building sequence of operations and shut down the associated ac unit and fan.



1.5 QUALITY ASSURANCE

- A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".
- B. Secure permits and approvals, prior to installation.
- C. Prior to commencement and after completion of work: Notify Fire Department and building City of New York.
- D. Meeting requirements of:
 - 1. NEC, NYC Building & Electrical Codes,
 - 2. NFPA National Fire Code. NFPA 70, Articles 300, 400, 685
 - a. 72.
 - b. 90A.
 - 3. Local Code.
 - 4. Local Fire Department.
 - 5. Underwriters Laboratories or Factory Mutual Inc.
- E. Install and connect in accordance with manufacturer's recommendations and instructions.

1.6 SEQUENCE OF OPERATION

- A. Operation of all new devices connected to existing fire alarm system shall match present operation.
- B. Duct smoke detection activation will shut down the corresponding active unit via Fire Alarm System.

1.7 JOB CONDITIONS

- A. Maintain operation of building existing alarm system and devices during construction. Coordinate with building manager for scheduling system shutdown and interconnections.
- B. Test and document existing fire alarm system prior to start of construction.

1.8 SUBMITTAL PROCEDURES

- A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".
- B. Submit letter of approval from FDNY for installation before requesting acceptance of system.
- C. Shop drawings:

- 1. Provide complete dimensioned shop drawings including mounting and installation details, sequence of operations and wiring diagrams and catalog cut sheets for the following equipment;
 - a. Smoke and heat detectors.
 - b. Signal and communication wires.
 - c. Duct detectors, including remote indicator lights or mimic panel.
 - d. Relays for HVAC units control, fan shutdown and damper closing.

1.9 SPARE PARTS

A. Supply a list of recommended spare parts.

1.10 WARRANTY

- A. Two-year warranty shall begin after system is accepted by the City of New York.
- B. Warranty shall cover all labor and parts.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Flush and surface mounted combination horn/strobes, area smoke and duct detectors, wiring, addressable manual pull station, etc., are to comply with the existing building standard.
- B. Area smoke detectors shall be photo-electric type.
- C. Strobes shall meet the requirements of the A.D.A.
- D. Speaker/strobe units shall be semi-flush mounted with all necessary trim.

2.2 MANUFACTURER

A. Edwards ETS3 system, no substitutions.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

- A. Install new manual pull stations and fire alarm devices to new wall surfaces and in accordance with ADA requirements. Install new combination horn/strobes in accordance with ADA requirements.
- B. Provide connection to fire alarm panel for new devices, relays, strobe panel.
- C. Reprogram the main control board and fire command station to accept the new equipment and devices.
- D. Adjust speaker taps for proper coverage of the area.
- E. New smoke duct detectors to report to the fire alarm control panel. Coordinate with building fire alarm system vendor.
- F. All hard wiring to be Teflon in EMT conduit to conform to NEC and NYC Building & Electrical Code requirements.

END OF SECTION 28 31 00

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

ADDENDA CONTROL SHEET

BID SUBMISSION DATE/ TIME:June 16, 2021; between 11:30am and 2:00pmBID OPENING DATE/ TIME:June 16, 2021; 2:30pm

PROJECT No. : LQQBHHVAC

TITLE:

Queensboro Hill Public Library HVAC Replacement

			APPROVED BY:	
	NO. OF		ARCHITECTURE	/ GENERAL
ADDENDA ISSUED	DWG	DATE	ENGINEERING	COUNSEL
#1 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		6/8/22	Sarah Zomick	RW 06.08.2022

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

June 8, 2022

ADDENDUM No. #1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

8502B0083 – LQQBHHVAC

Queensboro Hill Public Library HVAC Replacement

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

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

- 1. Bidders Questions and Responses to Questions: See Attachment A.
- 2. Revisions to Documents: See Attachment B.
- 3. Revisions to PASSPort forms: See Attachment C.

<u>Transferring Data Between Rounds of an RFX:</u> A new document titled "Transferring Data Between Rounds of an RFX" has been added to the Documents section of the View RFx tab. Please refer to this document when an addendum has been issued. Note: Whenever an addendum is issued, the RFX item grid will be cleared. You can import the work you have already done by following the steps on this document.

DDC strongly advises vendors to finalize and submit bids 48 hours prior to due date and time. The City is not responsible for technical issues (e.g. internet connection, power outages, technology malfunction, computer errors, etc.) related to bid submissions.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1041 or by email at <u>CSB projectinguiries@ddc.nyc.gov.</u>

Richard Jones, PE CWI Executive Director, Specifications

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	There are Proprietary Item but no Amounts. Please provide.	Proprietary items do not include allowances and will be procured in the same manner as all other items.
2	Drawing M-001 says the Library will be open 24Hrs, 365 Days. That is not possible with the Ceiling and Ductwork that has to be done. Please advise.	Library will remain open for exterior work only, so as not to interfere with operation of the library. All work required for the Ceiling and Ductwork must be coordinated with the Commissioner.
3	Drawing M-101 says to provide a new 9' 0" Louver. Drawing M-201 says the Louver is to remain. Please clarify.	Louvers are existing to remain. The scope on Drawing M-101 is to clean the existing to remain louvers – see keyed note 8. Drawing notes have been modified to clarify.
4	M-201 shows a wall opening and says to refer to S-100; however, there is nothing on S-100 about this. Please provide.	This is an HVAC opening, and details on S-100 are not required. Drawing note on M-201 has been modified to clarify.
5	M-100 says the Duct to remain will be cleaned by the Library. Please confirm.	Confirmed. Ducts to remain will be cleaned by Library.
6	Who is doing the DX Removal and disposal?	The Contractor is responsible for all demolition and removal as indicated in the contract documents.
7	General Conditions Section 015000-22 calls for a Work Fence. Is one needed?	Yes, refer to Addendum to the General Conditions, page 4.
8	General Conditions Section 015000-28 calls for us to provide Security Guards. Are they needed?	Security Guards / Fire Guards on Site during construction hours only. Refer to Addendum to the General Conditions, page 4.
9	There is no Condensate Piping shown for the A/C Units. Please provide.	Condensate drains shall be provided and installed per Specification section 235210, Article 3.13C.

Attachment B Addendum #1 6/8/2022

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT B - REVISIONS TO THE DOCUMENTS

Revisions to the Drawings:

M-101 – updated notes per question 3.

M-201 – updated note per question 4.

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT C - REVISIONS TO PASSPORT FORMS

This Addendum initiates Round 2 of the procurement.

Please note that numbering of addenda is independent of rounds.

Bid Opening Changes:

Link: The Bid Opening will be held virtually at the following YouTube link: <u>https://www.youtube.com/playlist?list=PLKYRN_jd7vvfhJ3NGqCkJ2n32mGvlcpVR</u>

Questionnaire Changes:

None

Item Grid Changes:

None

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

ADDENDA CONTROL SHEET

BID SUBMISSION DATE/ TIME:June 23, 2022; between 11:30am and 2:00pmBID OPENING DATE/ TIME:June 23, 2022; 2:30pm

PROJECT No. : LQQBHHVAC

TITLE:

Queensboro Hill Public Library HVAC Replacement

			APPROVED BY:	
	NO. OF		ARCHITECTURE	/ GENERAL
ADDENDA ISSUED	DWG	DATE	ENGINEERING	COUNSEL
#1 Questions from Bidders and Responses to Questions;				
Revisions to Documents; Revisions to PASSPort Forms		6/8/22		
#2 Revised Bid Opening Date; Questions from Bidders				
and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		6/15/22	Sarah Zomick	NA
	1			

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

June 15, 2022

ADDENDUM No. # 2

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

8502B0083 – LQQBHHVAC

Queensboro Hill Public Library HVAC Replacement

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

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

1. The Bid Opening for the contract described below scheduled for June 16, 2022, at 2:30 pm is rescheduled to June 23, 2022 at 2:30 pm.

Contract #1 – General Construction Work

- 2. Bidders Questions and Responses to Questions: See Attachment A.
- 3. Revisions to Documents: See Attachment B.
- 4. Revisions to PASSPort forms: See Attachment C.

<u>Transferring Data Between Rounds of an RFX:</u> A new document titled "Transferring Data Between Rounds of an RFX" has been added to the Documents section of the View RFx tab. Please refer to this document when an addendum has been issued. Note: Whenever an addendum is issued, the RFX item grid will be cleared. You can import the work you have already done by following the steps on this document.

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If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1041 or by email at <u>CSB_projectinguiries@ddc.nyc.gov.</u>

Richard Jones, PE CWI Executive Director, Specifications

Attachment A Addendum #2 6/15/2022

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

NOT USED

Attachment B Addendum #2 6/15/2022

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT B - REVISIONS TO THE DOCUMENTS

NOT USED

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT C - REVISIONS TO PASSPORT FORMS

This Addendum is included in Round 2 of the procurement.

Please note that numbering of addenda is independent of rounds.

Bid Opening Changes:

The Bid Opening scheduled for June 16, 2022 at 2:30pm is rescheduled for June 23, 2022 at 2:30pm.

Questionnaire Changes:

None

Item Grid Changes:

None

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

ADDENDA CONTROL SHEET

BID SUBMISSION DATE/ TIME:July 7, 2022; between 11:30am and 2:00pmBID OPENING DATE/ TIME:July 7, 2022; 2:30pm

PROJECT No. : LQQBHHVAC

TITLE:

Queensboro Hill Public Library HVAC Replacement

		APPROVED BY:		
	NO. OF		ARCHITECTURE	/ GENERAL
ADDENDA ISSUED	DWG	DATE	ENGINEERING	COUNSEL
#1 Questions from Bidders and Responses to Questions;				
Revisions to Documents; Revisions to PASSPort Forms		6/8/22		
#2 Revised Bid Opening Date; Questions from Bidders		6/45/00		
and Responses to Questions; Revisions to Documents;		0/15/22		
#3 Revised Bid Opening Date: Questions from Bidders				
and Responses to Questions; Revisions to Documents;		6/22/22	Sarah Zomick	NA
Revisions to PASSPort Forms			Obd but Zomion	

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

June 22, 2022

ADDENDUM No. # 3

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

8502B0083 - LQQBHHVAC

Queensboro Hill Public Library HVAC Replacement

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

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

1. The Bid Opening for the contract described below scheduled for June 23, 2022, at 2:30 pm is rescheduled to July 7, 2022 at 2:30 pm.

Contract #1 – General Construction Work

- 2. Bidders Questions and Responses to Questions: See Attachment A.
- 3. Revisions to Documents: See Attachment B.
- 4. Revisions to PASSPort forms: See Attachment C.

<u>Transferring Data Between Rounds of an RFX:</u> A new document titled "Transferring Data Between Rounds of an RFX" has been added to the Documents section of the View RFx tab. Please refer to this document when an addendum has been issued. Note: Whenever an addendum is issued, the RFX item grid will be cleared. You can import the work you have already done by following the steps on this document.

DDC strongly advises vendors to finalize and submit bids 48 hours prior to due date and time. The City is not responsible for technical issues (e.g. internet connection, power outages, technology malfunction, computer errors, etc.) related to bid submissions.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1041 or by email at <u>CSB projectinguiries@ddc.nyc.gov.</u>

Richard Jones, PE CWI Executive Director, Specifications

Attachment A Addendum #3 6/22/2022

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

NOT USED

Attachment B Addendum #3 6/22/2022

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT B - REVISIONS TO THE DOCUMENTS

NOT USED

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT C - REVISIONS TO PASSPORT FORMS

This Addendum is included in Round 2 of the procurement.

Please note that numbering of addenda is independent of rounds.

Bid Opening Changes:

The Bid Opening scheduled for June 23, 2022 at 2:30pm is rescheduled for July 7, 2022 at 2:30pm.

Questionnaire Changes:

None

Item Grid Changes:

None

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

ADDENDA CONTROL SHEET

BID SUBMISSION DATE/ TIME: BID OPENING DATE/ TIME: July 27, 2022; between 11:30am and 2:00pm July 27, 2022; 2:30pm

PROJECT No. : LQQBHHVAC

TITLE:

Queensboro Hill Public Library HVAC Replacement

			APPROVED BY:	
	NO. OF		ARCHITECTURE	/ GENERAL
ADDENDA ISSUED	DWG	DATE	ENGINEERING	COUNSEL
#1 Questions from Bidders and Responses to Questions;				
Revisions to Documents; Revisions to PASSPort Forms		6/8/22		
#2 Revised Bid Opening Date; Questions from Bidders				
and Responses to Questions; Revisions to Documents;		6/15/22		
Revisions to PASSPort Forms				
#3 Revised Bid Opening Date; Questions from Bidders		0,00,000		
and Responses to Questions; Revisions to Documents;		6/22/22		
Revisions to PASSPort Forms				
and Responses to Questions: Revisions to Documents:		7/1/22	Caraly Tourist	NA
Revisions to PASSPort Forms		111122	Saran Zomicu	

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

July 1, 2022

ADDENDUM No. #4

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

8502B0083 – LQQBHHVAC

Queensboro Hill Public Library HVAC Replacement

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

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

1. The Bid Opening for the contract described below scheduled for July 7, 2022, at 2:30 pm is rescheduled to July 27, 2022 at 2:30 pm.

Contract #1 – HVAC Work

- 2. Bidders Questions and Responses to Questions: See Attachment A.
- 3. Revisions to Documents: See Attachment B.
- 4. Revisions to PASSPort forms: See Attachment C.

<u>Transferring Data Between Rounds of an RFX:</u> A new document titled "Transferring Data Between Rounds of an RFX" has been added to the Documents section of the View RFx tab. Please refer to this document when an addendum has been issued. Note: Whenever an addendum is issued, the RFX item grid will be cleared. You can import the work you have already done by following the steps on this document.

DDC strongly advises vendors to finalize and submit bids 48 hours prior to due date and time. The City is not responsible for technical issues (e.g. internet connection, power outages, technology malfunction, computer errors, etc.) related to bid submissions.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1041 or by email at <u>CSB projectinguiries@ddc.nyc.gov.</u>

Richard Jones, PE CWI Executive Director, Specifications
Attachment A Addendum #4 7/1/2022

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

Attachment B Addendum #4 7/1/2022

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT B - REVISIONS TO THE DOCUMENTS

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT C - REVISIONS TO PASSPORT FORMS

This Addendum is included in Round 2 of the procurement.

Please note that numbering of addenda is independent of rounds.

Bid Opening Changes:

The Bid Opening scheduled for July 7, 2022 at 2:30pm is rescheduled for July 27, 2022 at 2:30pm.

Questionnaire Changes:

None

Item Grid Changes:

None

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

ADDENDA CONTROL SHEET

BID OPENING DATE/ TIME:

BID SUBMISSION DATE/ TIME: August 16, 2022; between 11:30am and 2:00pm August 16, 2022; 2:30pm

PROJECT No. : LQQBHHVAC

TITLE:

Queensboro Hill Public Library HVAC Replacement

			APPROVED BY:		
	NO. OF		ARCHITECTURE	/ GENERAL	
ADDENDA ISSUED	DWG	DATE	ENGINEERING	COUNSEL	
#1 Questions from Bidders and Responses to Questions;					
Revisions to Documents; Revisions to PASSPort Forms		6/8/22			
#2 Revised Bid Opening Date; Questions from Bidders					
and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		6/15/22			
#3 Revised Bid Opening Date; Questions from Bidders					
and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		6/22/22			
#4 Revised Bid Opening Date; Questions from Bidders					
and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		7/1/22			
#5 Revised Bid Opening Date; Questions from Bidders					
and Responses to Questions; Revisions to Documents;		7/22/22	Sarah Zomick	NA	
Revisions to PASSPort Forms					

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

July 22, 2022

ADDENDUM No. # 5

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

8502B0083 - LQQBHHVAC

Queensboro Hill Public Library HVAC Replacement

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

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

1. The Bid Opening for the contract described below scheduled for July 27, 2022, at 2:30 pm is rescheduled to August 16, 2022 at 2:30 pm.

Contract #1 – HVAC Work

- 2. Bidders Questions and Responses to Questions: See Attachment A.
- 3. Revisions to Documents: See Attachment B.
- 4. Revisions to PASSPort forms: See Attachment C.

<u>Transferring Data Between Rounds of an RFX:</u> A new document titled "Transferring Data Between Rounds of an RFX" has been added to the Documents section of the View RFx tab. Please refer to this document when an addendum has been issued. Note: Whenever an addendum is issued, the RFX item grid will be cleared. You can import the work you have already done by following the steps on this document.

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If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-1041 or by email at <u>CSB projectinguiries@ddc.nyc.gov.</u>

Richard Jones, PE CWI Executive Director, Specifications

Attachment A Addendum #5 7/22/2022

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

Attachment B Addendum #5 7/22/2022

DDC PROJECT #: LQQBHHVAC

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT B - REVISIONS TO THE DOCUMENTS

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT C – REVISIONS TO PASSPORT FORMS

This Addendum is included in Round 2 of the procurement.

Please note that numbering of addenda is independent of rounds.

Bid Opening Changes:

The Bid Opening scheduled for July 27, 2022 at 2:30pm is rescheduled for August 16, 2022 at 2:30pm.

Questionnaire Changes:

None

Item Grid Changes:

None

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

ADDENDA CONTROL SHEET

BID OPENING DATE/ TIME:

BID SUBMISSION DATE/ TIME: August 16, 2022; between 11:30am and 2:00pm August 16, 2022; 2:30pm

PROJECT No. : LQQBHHVAC

TITLE:

Queensboro Hill Public Library HVAC Replacement

		APPROVED BY:		
	NO. OF		ARCHITECTURE	/ GENERAL
ADDENDA ISSUED	DWG	DATE	ENGINEERING	COUNSEL
#1 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		6/8/22		
#2 Revised Bid Opening Date; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		6/15/22		
#3 Revised Bid Opening Date; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		6/22/22		
#4 Revised Bid Opening Date; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		7/1/22		
#5 Revised Bid Opening Date; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		7/22/22		
#6 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		8/9/22	Sarah Zomick	AW 08.09.2022

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

August 9, 2022

ADDENDUM No. #6

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

8502B0083 – LQQBHHVAC

Queensboro Hill Public Library HVAC Replacement

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

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

- 1. Bidders Questions and Responses to Questions: See Attachment A.
- 2. Revisions to Documents: See Attachment B.
- 3. Revisions to PASSPort forms: See Attachment C.

<u>Transferring Data Between Rounds of an RFX:</u> A new document titled "Transferring Data Between Rounds of an RFX" has been added to the Documents section of the View RFx tab. Please refer to this document when an addendum has been issued. Note: Whenever an addendum is issued, the RFX item grid will be cleared. You can import the work you have already done by following the steps on this document.

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Richard Jones, PE CWI Executive Director, Specifications

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	We assume the all concrete pads are to remain and we are only responsible for pad extensions as required please confirm.	Confirmed.
2	Please confirm that this project does not have a PLA.	Confirmed - No PLA.
3	Kindly advise if Temporary Heating is required since the Boiler System will remain.	Temporary Heating is required – see Addendum to the General Conditions, p.3.
4	Kindly advise if Temporary cooling is required.	Temporary Cooling is not required.
5	Will the Library be occupied during the construction?	No, it will not be occupied.
6	The specified air handling units do not ship in sections small enough to fit through the existing openings into the mechanical room for delivery. Please advise how units are to be brought into place. If additional GC work for larger wall openings, etc. will be required, please modify the drawings to indicate this with applicable details.	It is expected that units can be knocked down into sections (less than 3 ft) that will fit thought the door to the mechanical penthouse and/or existing louver to be temporarily removed & reinstalled, then reassembled in place. See updates to Volume 3, Section 236210 "Air Cooled Air Conditioning Units" included with this Addendum.

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT B – REVISIONS TO THE DOCUMENTS

Revisions to Volume 3:

Specifications - 23 62 10 – Air Cooled Air Conditioning Units – Added section 3.2 for clarification.

Schedule B - MWBE Utilization + Waiver Instructions: updated July 2022 version:

Please note that a recent update to the PASSPort system has resulted in a change to this solicitation (EPIN: 85022B0070). The system will now <u>require</u> certain information related to the MWBE requirements to be submitted along with the bid/proposal submission. Please also note that there is a new Schedule B document ('Schedule B - MWBE Utilization + Waiver Instructions [July 20220]') that fully replaces the prior Schedule B document ('Schedule B - MWBE Utilization + Waiver Instructions'). The revised Schedule B provides detail about how to enter the required information into PASSPort.

PROJECT NAME: Queensboro Hill Public Library HVAC Replacement

ATTACHMENT C - REVISIONS TO PASSPORT FORMS

This Addendum initiates Round 3 of the procurement.

Please note that numbering of addenda is independent of rounds.

Bid Opening Changes:

None

Questionnaire Changes:

None

Item Grid Changes:

None

FMS ID: LQQBHHVAC

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

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

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

CONTRACT NO. 1 HVAC WORK

Queensboro Hill Branch Library HVAC Replacement

LOCATION: 60 BOROUGH: Qu CITY OF NEW YORK

60-05 Main St. Queens, NY 11355

Contractor

Dated

, 20

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated



Department of Design and Construction

